

May 2025 Office of Chemical Safety and Pollution Prevention

Data Quality Evaluation and Data Extraction Information for Environmental Fate and Transport for Dibutyl Phthalate (DBP) (1,2-Benzenedicarboxylic acid, 1,2-dibutyl ester)

## Systematic Review Support Document for the Draft Risk Evaluation

CASRN: 84-74-2



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This supplemental file contains information regarding the data extraction and evaluation results for data sources that were considered for the *Draft Risk Evaluation for Dibutyl Phthalate (DBP)* and that underwent systematic review. EPA used the TSCA systematic review process described in the *Draft Systematic Review Protocol Supporting TSCA Risk Evaluations for Chemical Substances* (referred to hereafter as the '2021 Draft Systematic Review Protocol'). The systematic review steps are further described in the *Draft Systematic Review Protocol for Dibutyl Phthalate (DBP)*. EPA conducted data extractions and data quality evaluations based on author-reported descriptions and results; additional analyses (*e.g.*, statistical analyses) potentially conducted by EPA are not contained in this supplemental file. Additionally, the overall quality determination (OQD) for each reference represents the data as a whole for each study and not for individual metric domains within a study.

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<b>Other Properties</b>					
List of Abbreviations and Acros	nyms for Data Quality Evaluation and Extraction Tables	719			

Study Citation:	Lei, Y., Zhu, C., L hydroxyl radicals f	Lei, Y., Zhu, C., Lu, J., Zhu, Y., Zhang, Q., Chen, T., Xiong, H. (2018). Photochemical oxidation of di-n-butyl phthalate in atmospheric hydrometeors by hydroxyl radicals from nitrous acid. Environmental Science and Pollution Research 25(31):31091-31100.				
Template:	Filotorysis ili Ali					
HERO ID:	4829240					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Di-n-butyl phthalate				
Confidentiality, Type, Guid	leline	None; Experimental; other: Indirect photolysis with hydroxyl radicals				
Solvent, Reactivity, Storag	e, Stability	to enhance the solubility of DBP, acetonitrile was added to aqueous solution and the volume ratio of acetonitrile to water was 3:7; NR; NR; NR				
Radiolabel, Source, State,	Purity	NR; Aladdin Industrial Corporation (Shanghai, China); NR; >98% Notes: DBP				
Duration and Test Tempera	ature	Not specified; 25±2°C				
Light Source, Intensity, and additional light de-		UV lamp; 1.5 mW/cm; 15W				
tails Source Wavelength Lower and Upper		350 nm; 400 nm (peak 365 nm)				
Test Details and Control		cylindrical photoreactor; steady state; pH adjusted by HClO4; potential for hydrolysis tested; hydrolysis of DBP is not expected to be an important sink pathway in atmospheric droplets				
Initial Concentration, Refe	rence	Not reported Not reported; Not reported				
Compound						
Substance Wavelength Lov	ver and Upper	Not reported; 290 nm				
Direct Quantum Yield Res	sults, Direct Half Life	Not reported; Not reported; Not reported				
Indirect Type Results Indi	rect Rate	absolute rate constant with hydroxyl radicals = $5.7\pm0.1E9/M$ s <sup>2</sup> and order rate constant (for specific addition to aromatic ring) = $3.7\pm0.2E9/M$ s <sup>2</sup>				
Constant Lower and Upper		3.7±0.2E9/M·s; 5.7±0.1E9/M·s				
Method Details Results and Products		HPLC-UV-VIS (detection wavelength 224 nm); transformation products identified via GC-MS; major transient intermediates: DBP-OH adducts,				
Details Results		MBP, PA, m-OH-DBP, m-NO2-DBP				
Parameter Value and Parameter Results		Not reported; Not reported				
Reference Substance Resu	ilts, Percent Degrada-	Not reported; Not reported; Not reported				
tion Results and Standard						
Deviation Results Results Remarks Sample	time Results. Results	Not reported: Not reported: Not reported				
Details						

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Subst	ance			
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.
Domain 2. Test Desig	-			
Domain 2: Test Desig	n			
	Metric 3:	Study Controls	High	Controls were included; analytical blanks not specified.
	Metric 4:	Test Substance Stability	Medium	The test substance preparation was reported; acetonitrile used to increase solubility.

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		contin	ued from prev	vious page		
Study Citation:	Lei, Y., Zhu, C., I hydroxyl radicals	Lei, Y., Zhu, C., Lu, J., Zhu, Y., Zhang, Q., Chen, T., Xiong, H. (2018). Photochemical oxidation of di-n-butyl phthalate in atmospheric hydrometeors by hydroxyl radicals from nitrous acid. Environmental Science and Pollution Research 25(31):31091-31100.				
<b>OECD Harmonized</b>	Photolysis in Air					
Template:						
HERO ID:	4829240					
		I	EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 3: Test Conditi	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate.		
	Metric 7:	Testing Consistency	High	There were no inconsistencies reported in the testing conditions.		
	Metric 8:	System Type and Design	High	The system was appropriate.		
Domain 4: Test Organis	sms					
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.		
Domain 5: Outcome As	ssessment					
	Metric 11:	Test Substance Identity	Medium	Details for the outcome assessment methodology were limited.		
	Metric 12:	Test Substance Purity	Medium	Sampling method details were limited.		
Domain 6: Confounding	g/variable Control Matria 12:	Confounding Variables	Madium	Courses of uncontainty including notantial officet of contantials ware discussed		
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type		
	Meure 14.	Exposure	IV/A	The neure is not applicable to the study type.		
Domain 7: Data Present	tation and Analysis					
	Metric 15:	Data Reporting	Medium	Analytical detail was limited; mass balance and recoveries not reported.		
	Metric 16:	Statistical Methods and	High	Statistical analysis and kinetic calculations were clearly described and appropriate.		
		Kinetic Calculations				
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	Medium	The study results are reasonable.		
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.		
<b>Overall Quali</b>	ty Determin	ation	High			

Study Citation:	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC			
<b>OECD Harmonized</b>	Photolysis in Air			
Template:	,			
HERO ID:	5348332			
		EXTRACTION		
Parameter		Data		
CASRN and Test Material		84-74-2; DBP		
Confidentiality, Type, Guide	eline	no; calculation; None		
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR		
Radiolabel, Source, State, F	Purity	NR; NR; NR		
Duration and Test Temperat	ture	NR; NR		
Light Source, Intensity, and additional light de-		NR; Not Reported; Not Reported		
tails Source Wavelength Lower and Upper		Not Reported; Not Reported		
Test Details and Control	11	Not Reported; NR		
Initial Concentration, Refer	rence	NR Not Reported; NR		
Compound				
Substance Wavelength Low	er and Upper	Not Reported; Not Reported		
Direct Quantum Yield Rest	ults, Direct Half Life	Not Reported; Not Reported; Not Reported		
Indirect Type Results, Indir	ect Rate	reaction with OH radicals; 9.277X10-12 cm3/molecule/s; Not Reported		
Constant Lower and Upper	Constant Lower and Upper			
Method Details Results and Products		NR; NR		
Details Results Parameter Value and Parameter Results 21.4 hours (0.80 days): half-life		21.4 hours (0.89 days): half-life		
Reference Substance Resul	lts Percent Degrada-	NR·NR		
tion Results and Standard	ilis, i ciccini Degrada			
Deviation Results				
Results Remarks, Sample 1	time Results, Results	Not Reported; Not Reported; Not Reported		
Details				

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	Domain 1: Test Substance					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.		
	Metric 2:	Test Substance Purity	N/A	The metric is not applicable to the study type.		
Domain 2: Test Design						
-	Metric 3:	Study Controls	N/A	The metric is not applicable to the study type.		
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to the study type.		

Domain 3: Test Conditions

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Study Citation:	Peterson, D. R., S 30:85-124	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC				
<b>OECD Harmonized</b>	Photolysis in Air					
Template:						
HERO ID:	5348332					
		E	VALUATION			
Domain		Metric	Rating	Comments		
	Metric 5:	Test Method Suitability	Medium	Details regarding this metric were not reported in the secondary source.		
	Metric 6:	Testing Conditions	Medium	Details regarding this metric were not reported in the secondary source.		
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to the study type.		
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.		
Domain 4 <sup>.</sup> Test Organia	sms					
Domain 1. Test Organis	Metric 9.	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.		
		Sumpling Intenieds	1.011			
Domain 5: Outcome As	ssessment					
	Metric 11:	Test Substance Identity	Medium	Details regarding this metric were not reported in the secondary source.		
	Metric 12:	Test Substance Purity	N/A	The metric is not applicable to the study type.		
Domain 6: Confoundin	g/Variable Control					
	Metric 13:	Confounding Variables	Medium	Details regarding this metric were not reported in the secondary source.		
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.		
		Exposure				
Domain 7: Data Presen	tation and Analysis					
	Metric 15:	Data Reporting	Low	There was insufficient information reported, preventing meaningful interpretation of study results.		
	Metric 16:	Statistical Methods and	Low	Statistical analysis or kinetic calculations were not described clearly and the lack of		
		Kinetic Calculations		information was likely to have a substantial impact on study results.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.		
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.		
<b>Overall Quali</b>	ty Determin	ation	Medium			

\* Related References: cites: Atkinson R (2000) Atmospheric oxidation. In: Boethling RS, Mackay D (eds) Handbook of property estimation methods for chemicals, environmental and health sciences. Lewis, Boca Raton, FL, p 335, chap 14 (not in distiller)

Study Citation: OECD Harmonized	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment. Hydrolysis				
Template:					
HERO ID:	5676112				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Not Reported			
Confidentiality, Type, Guide	eline	Not Reported; not specified; other: not specified; abiotic hydrolysis			
Solvent, Reactivity, Storage	, Stability	Not Reported; Not Reported; Not Reported			
Radiolabel, Source, State, P	urity	Not Reported; Not Reported; Not Reported; Not Reported			
Buffer, Test Temperature, N	lumber of Replicates	Not Reported; Not Reported; Not Reported			
Positive Controls and Negat	tive Controls	Positive: Not Reported; Negative: Not Reported			
pH and Duration		Not Reported; Not Reported			
Sampling Frequency and Te	est Setup	Not Reported; Not Reported			
Concentration		Not Reported			
Analytical Method, Analytical Details, and Statistics		Not Reported; Not Reported; Not Reported			
Transformation Products		Not Reported			
Reference Substance and Re	eference	Not Reported; Not Reported			
Substance Results Percent Recovery, Hydrolysis Rate		Not Reported; Not Reported; ca. 22 years			
Results Remarks		Not Reported			

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substar	ice					
	Metric 1:	Test Substance Identity	High	The test substance was identified.		
	Metric 2:	Test Substance Purity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.		
Domain 2: Test Design						
	Metric 3:	Study Controls	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.		
	Metric 4:	Test Substance Stability	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.		
Domain 3: Test Conditi	ons					
	Metric 5:	Test Method Suitability	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.		
	Metric 6:	Testing Conditions	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.		
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Study Citation: OECD Harmonized	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment. Hydrolysis						
HERO ID:	5676112						
		]	EVALUATION				
Domain		Metric	Rating	Comments			
	Metric 7:	Testing Consistency	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
	Metric 8:	System Type and Design	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
Domain 4: Test Organis	ms						
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
	Metric 12:	Test Substance Purity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
Domain 6: Confounding	z/Variable Control						
	Metric 13:	Confounding Variables	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study.			
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of Results	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study.			
Overall Qualit	ty Determina	ation	Medium				

\* Related References: Source cited: EPA 1989 -PB 89-220479; EPA/600/3-89/063; HERO ID 5348004 (not in distiller at time of extraction)

Study Citation:	ECHA, (2012). Committee for Risk Assessment (RAC) Committee for Socio-economic Analysis (SEAC): Background document to the Opinion on the Annex XV dossier proposing restrictions on four phthalates.					
Template:	Hydrofysis					
HERO ID:	3661424					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		Not Reported; Dibutylphthalate				
Confidentiality, Type, Guide	eline	None; experimental; other: Not specified				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	urity	NR; NR; NR Notes: NR				
Buffer, Test Temperature, N	umber of Replicates	NR; 50°C; NR				
Positive Controls and Negat	ive Controls	Positive: NR; Negative: NR				
pH and Duration		9; NR				
Sampling Frequency and Te	st Setup	NR; NR				
Concentration		Not Reported				
Analytical Method, Anal	ytical Details, and	NR; NR; NR				
Statistics						
Transformation Products		NR				
Reference Substance and Re	eference	NR; NR				
Substance Results Percent Recovery Hydrolysis Rate		NR NR 65 8 hours				
Constant, and Half-life						
Results Remarks		<10% hydrolysis after 5 days at pH 4.0 and 7.0 (temperature not specified under these conditions)				

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ice					
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.		
	Metric 2:	Test Substance Purity	Medium	The test substance source was not reported and the test substance purity was low or not reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	Low	Control details were not reported.		
	Metric 4:	Test Substance Stability	Low	The test substance stability, homogeneity, preparation, and storage conditions were not reported and these factors likely influenced the test substance or are likely to have a substantial impact on the study results.		
Domain 3: Test Conditi	ons					
	Metric 5:	Test Method Suitability	Low	The test method was not reported in detail.		
	Metric 6:	Testing Conditions	Low	Testing conditions were not reported in detail.		
	Metric 7:	Testing Consistency	Low	Testing consistency details were not reported.		
Continued on next page						

		continu	ued from pre-	vious page				
Study Citation:	ECHA, (2012). C Annex XV dossier	ommittee for Risk Assessment (RAC) Co	ommittee for	Socio-economic Analysis (SEAC): Background document to the Opinion on the				
OECD Harmonized	Hydrolysis	Hydrolysis						
Template: HERO ID:	3661424							
		Η	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 8:	System Type and Design	Low	System type and design details were not reported.				
Domain 4: Test Organis	sms							
c	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.				
	Metric 12:	Test Substance Purity	Low	Details regarding sampling methods of the outcome(s) were not fully reported, and the omissions were likely to have a substantial impact on study results.				
Domain 6: Confounding	y/Variable Control							
	Metric 13:	Confounding Variables	Low	Sources of variability and uncertainty in the measurements and statistical techniques and between study groups (if applicable) were not considered or accounted for in data evaluation resulting in some uncertainty.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7: Data Present	tation and Analysis							
Domain 7. Data Fresch	Metric 15:	Data Reporting	Medium	The target chemical and transformation product(s) concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.				
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis or kinetic calculations were not conducted or were not described clearly.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.				
	Metric 18:	Results QSAR Models	N/A	A QSAR model was not reported.				
Overall Quali	ty Determina	ation	Low					

\* Related References: Primary source not reported.

Study Citation:	Khan, M. N., Khai	n, A. A. (1977). A generalized treatment for the kinetics of two consecutive irreversible second order reactions: Kinetics of hydrolysis						
	of di-n-butyl phtha	of di-n-butyl phthalate. Indian Journal of Chemistry. Section A 15(3):220-225.						
OECD Harmonized	Hydrolysis							
Template:								
HERO ID:	5495544							
		EXTRACTION						
Parameter		Data						
CASRN and Test Material		not reported; Di-n-butyl phthalate						
Confidentiality, Type, Guid	deline	no; experimental; None: Alkaline hydrolysis by NaOH in 80% ethanol						
Solvent, Reactivity, Storag	e, Stability	NR; NR; NR						
Radiolabel, Source, State,	Purity	NR; BDH; NR; NR Notes: NR						
Buffer, Test Temperature, I	Number of Replicates	not reported; 50°C; not reported						
Positive Controls and Nega	ative Controls	Positive: not reported; Negative: not reported						
pH and Duration		not reported; 282.0 minutes						
Sampling Frequency and T	Test Setup	periodically; NaOH solution added to vessel with shaking of reaction mixture in an inert atmosphere; ionic strength 0.2M and 0.4M; double surface						
	*	condenser used to minimize volatilization.						
Concentration		= 0.025 - mol/L (M)						
Analytical Method, Ana	alytical Details, and	not reported; Kinetic calculations, (second order rate constants of two consecutive reactions), performed using a Fortran program based on Newton-						
Statistics		Raphson methods and Simpson's 1/3 Rule with Richardson's extrapolations.; not reported						
Transformation Products		not reported						
Reference Substance and Reference		not reported; not reported						
Percent Recovery, Hydroly	vsis Rate	not reported: $k_1 = 23.5 \times 10^2$ liter/mole-min (average based on rate constants observed at 10-80% reaction): $k_2 = 21.4 \pm 0.9 \times 10^2$ liter/mole-min						
Constant, and Half-life		(calculated from $n = k2/k1$ ); not reported						
Results Remarks		at 50°C in 80% ethanol-water						

EVALUATION								
Domain		Metric	Rating	Comments				
Domain 1: Test Substan	ice							
	Metric 1:	Test Substance Identity	High	The test substance was identified.				
	Metric 2:	Test Substance Purity	Low	Purity was not reported but source was.				
Domain 2: Test Design	Metric 3: Metric 4:	Study Controls Test Substance Stability	Low Medium	No controls were included, including solvent only controls. The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.				
Domain 3: Test Conditi	ons Metric 5:	Test Method Suitability	Uninformative	The test method was not applicable to environmental conditions; no controls relative to environmental conditions were reported.				
	Continued on next page							

PUBLIC RELEASE DRAFT May 2025 Hydrolysis

		co	ntinued from previous page					
Study Citation:	Khan, M. N., Kha of di-n-butyl phtha	Khan, M. N., Khan, A. A. (1977). A generalized treatment for the kinetics of two consecutive irreversible second order reactions: Kinetics of hydrolysis of di-n-butyl phthalate. Indian Journal of Chemistry. Section A 15(3):220-225.						
OECD Harmonized Template:	Hydrolysis							
HERO ID:	5495544							
			EVALUATION					
Domain		Metric	Rating	Comments				
	Metric 6:	Testing Conditions	Medium	There were reported deviations or omissions in testing conditions (e.g., temperature was not constant or was not in a standard range for the test but, results can be extrapolated to approximate appropriate temperatures); however, sufficient data were reported to determine that the deviations and omissions were not likely to have a substantial impact on study results.				
	Metric 7:	Testing Consistency	High	Exposure details were consistent across groups.				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this type of study.				
Domain 4. Test Organis	ms							
Domain 1. Test Organis	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this type of study.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this type of study.				
Domain 5: Outcome As	sessment Metric 11: Metric 12:	Test Substance Identity Test Substance Purity	Uninformative High	The intended outcome of interest, aqueous hydrolysis, was not addressed. Sampling methods were appropriate.				
Domain 6: Confounding	y/Variable Control Metric 13:	Confounding Variables	Medium	Sources of variability and uncertainty in the measurements and statistical techniques and between study groups (if applicable) were reported in the study. the differences in the measurements and statistical techniques and between study groups were considered or accounted for in data evaluation with minor deviations or omissions.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this type of study.				
Domain 7: Data Present	ation and Analysis Metric 15: Metric 16:	Data Reporting Statistical Methods and Kinetic Calculations	Low High	Analytical details were not reported. Calculations were described.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Results	Low	Reported values are reasonable; however, results are based on alkaline hydrolysis in 80% ethanal.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this type of study.				
Overall Qualit	ty Determina	ation	Uninformative					

Study Citation:	Lertsirisopon, R., Soda, S., Sei, K., Ike, M. (2009). Abiotic degradation of four phthalic acid esters in aqueous phase under natural sunlight irradiation. Journal of Environmental Sciences 21(3):285-290.					
OECD Harmonized	Hydrolysis					
Template: HERO ID:	680048					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Not Reported				
Confidentiality, Type, Guide	eline	No; Experimental, pH dependent, half-life reported, reaction rate reported; None				
Solvent, Reactivity, Storage	e, Stability	Artificial river water; NR; NR; NR				
Radiolabel, Source, State, F	Purity	NA; Kishida Chemical, Osaka, Japan; Liquid; Analytical grade				
Buffer, Test Temperature, N	lumber of Replicates	HCl or NaOH; 0.4 - 27.4 deg C; Average = 10.8 deg C; 1				
Positive Controls and Negat	tive Controls	Positive: NR; Negative: NR				
pH and Duration		5.0, 6.0, 7.0, 8.0, 9.0; 140 days				
Sampling Frequency and Test Setup		Approx. every 10 days; 30 mL solution at pH 5.0, 6.0, 7.0, 8.0, or 9.0, placed in 50 mL pyrex glass test tube and sealed with rubber stopper, and wrapped with aluminum foil. Tubes kept on the roof of a building at Osaka University, Japan (34 N, 135 E) from September 2004 to March 2005.				
Concentration		0.52 mmol/L				
Analytical Method, Analytical Details, and Statistics		HPLC UV-Vis at 254 nm; Aliquot of the sample was extracted with acetonitrile and centrifuged, retaining the supernatant for analysis. Errors for PAE's was <5%.; NR				
Transformation Products NR						
Reference Substance and R	eference	NR; Not Reported				
Substance Results Percent Recovery, Hydrolysis Rate Constant, and Half-life Results Remarks		NR; 1.4E-3 /d (pH 5), 1.1E-3 /d (pH 6), 5.3E-4 /d (pH 7), 1.3E-3 /d (pH 8), 1.6E-3 /d (pH 9); 510 d (pH 5), 620 d (pH 6), 1300 d (pH 7), 530 d (pH 8), 430 d (pH 9) Not Reported				

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.		
	Metric 2:	Test Substance Purity	Medium	The test substance source was reported, the purity was reported qualitatively as analytical grade.		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	Controls are not required for this study type.		
	Metric 4:	Test Substance Stability	Medium	Test substance storage was not reported, mixing was reported and appropriate.		
Domain 3: Test Condition	ons Metric 5:	Test Method Suitability	Low	The test substance was tested above its water solubility, but was treated with an ultrason- icator to ensure homogenization.		
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		contin	ued from prev	vious page				
Study Citation:	Lertsirisopon, R., Journal of Enviror	Lertsirisopon, R., Soda, S., Sei, K., Ike, M. (2009). Abiotic degradation of four phthalic acid esters in aqueous phase under natural sunlight irradiation. Journal of Environmental Sciences 21(3):285-290.						
<b>UECD Harmonized</b> Template:	Hydrolysis							
HERO ID:	680048							
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 6:	Testing Conditions	High	Appropriate testing conditions (temperature, pH) were reported. Due to the nature of the study, there was a wide range of temperatures used; this however may provide results which are closer to environmental behavior.				
	Metric 7:	Testing Consistency	High	Test conditions were consistent across study groups.				
	Metric 8:	System Type and Design	N/A	Not applicable.				
Domain 4: Test Organis	ms							
Domain 1. Test organis	Metric 9:	Outcome Assessment Methodology	N/A	Not applicable.				
	Metric 10:	Sampling Methods	N/A	Not applicable.				
		1 0						
Domain 5: Outcome Ass	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining hydrolytic loss.				
	Metric 12:	Test Substance Purity	Medium	Sampling methods were reported generally, frequency was reported graphically and was acceptable for rate determination.				
Domain 6: Confounding	Variable Control							
2 onnam of Controlling	Metric 13:	Confounding Variables	Low	Variability was not addressed as only one replicate per test condition was used.				
	Metric 14:	Health Outcomes Unrelated to	N/A	Not applicable.				
		Exposure						
Domain 7: Data Present	ation and Analysis							
Domain 7. Data Present	Metric 15:	Data Reporting	Medium	The analytical method was appropriate; limits of detection and extraction recovery were not reported. Raw data was reported graphically.				
	Metric 16:	Statistical Methods and	High	Kinetic calculations were described and applied appropriately.				
		Kinetic Calculations						
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Results	Low	The results were reasonable based on the method but the test substance was tested above the water solubility and the half-life was considerably lower than a previously reported value (3650 at pH 7, 30 deg C)				
	Metric 18:	QSAR Models	N/A	Not applicable.				
<b>Overall Qualit</b>	ty Determin	ation	Low					

Study Citation: OECD Harmonized	Wolfe, N. L., Steen Hydrolysis	, W. C., Burns, L. A. (1980). Phthalate ester hydrolysis: Linear free energy relationships. Chemosphere 9(7):403-408.				
Template: HERO ID:	5335927					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, Type, Guide	eline	None; Experimental; other: Alkaline hydrolysis rate determination				
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR				
Radiolabel, Source, State, F	Purity	NA; Purchased commercially; NR; No further purification, used as received				
Buffer, Test Temperature, Number of Replicates		Not reported; 30.00±0.05°C; 2				
Positive Controls and Negative Controls		Positive: Not reported; Negative: Not reported				
pH and Duration		10 - 12; Not reported				
Sampling Frequency and Te	est Setup	Not reported; Not reported				
Concentration		less than 10E-5 M				
Analytical Method, Anal Statistics	lytical Details, and	GLC (3% SE-30, electron capture) or acid quenching of reaction and analysis by LC (ODS - 50% methanol-water, UV detector 230 n); Test substance extracted with barrane before GLC analysis: $\pm 0.05 \times 100.2$ Mo $\pm 0.05 \times 100.2$				
Transformation Products		Monoacid and diacid				
Reference Substance and Reference		Not reported: Not reported				
Substance Results Percent Recovery, Hydrolysis Rate		Not reported; 1.0x10-2 M-1 sec-1; Not reported				
Results Remarks		Second order alkaline hydrolysis rate constant average of two determinations				

	EVALUATION						
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity were not reported.			
Domain 2: Test Design							
	Metric 3:	Study Controls	Medium	A concurrent negative control was not included.			
	Metric 4:	Test Substance Stability	Medium	Limited method details reported in this source, may have been reported elsewhere.			
Domain 3: Test Condition	ons						
	Metric 5:	Test Method Suitability	High	The test method was suitable.			
	Metric 6:	Testing Conditions	High	Key test conditions were reported.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples and study groups.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.			

Domain 4: Test Organisms

Continued on next page ...

		continu	ied from pre	vious page
Study Citation: OECD Harmonized	Wolfe, N. L., Stee Hydrolysis	en, W. C., Burns, L. A. (1980). Phthalate e	ster hydrolysi	s: Linear free energy relationships. Chemosphere 9(7):403-408.
HERO ID:	5335927			
		E	VALUATIO	N
Domain		Metric	Rating	Comments
	Metric 9: Metric 10:	Outcome Assessment Methodology Sampling Methods	N/A N/A	The metric is not applicable to this study type. The metric is not applicable to this study type.
Domain 5: Outcome As	sessment			
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed outcomes of interest.
	Metric 12:	Test Substance Purity	Medium	Sample methods and frequency were not reported but assumed to be appropriate.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	High	Variability in trials was accounted for in data evaluation.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Present	tation and Analysis			
	Metric 15:	Data Reporting	Medium	Target chemical concentrations, extraction efficiency, and limit of detection were not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Kinetic calculations were appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quali</b>	ty Determin	ation	High	

Sampling Frequency and Test Setup

37 - µmol/L

Concentration

Study Citation:	Zhang, D., Wu, L., dation of phthalate	, Yao, J., Vogt, C., Richnow, H. H. (2019). Carbon and hydrogen isotopic fractionation during abiotic hydrolysis and aerobic biodegra- esters. Science of the Total Environment 660:559-566.		
<b>OECD Harmonized</b>	Hydrolysis			
Template:				
HERO ID:	5433324			
		EXTRACTION		
Parameter		Data		
CASRN and Test Material		84-74-2; DBP		
Confidentiality, Type, Guideline		None; Experimental; other: none indicated		
Solvent, Reactivity, Storage, Stability		NR; NR; NR		
Radiolabel, Source, State, Purity		NR; NR; NR; NR Notes: The list of materials and chemicals was reported in an appendix to the article.		
Buffer, Test Temperature, Number of Replicates		100mM carbonate buffer (pH 10: Na2CO3 + NaHCO3); 30°C; Not reported		
Positive Controls and Negative Controls		Positive: Not reported; Negative: Buffer control		
pH and Duration		10; Not reported		

Not reported; dual stable isotope fraction 13C & 2H in glass bottles sealed with PTFE-coated rubber stoppers and aluminumcrimp seals.

Analytical Method, Analytical Details, and	Concentrations of residues were measured using a GC-FID. The carbon and hydrogen isotopic compositions were measured using a GC coupled
Statistics	via a GC-Isolink interface to an isotope ratio mass spectrometry (GC-IRMS); Additional details were provided in an appendix to the article; control
	experiments at pH 7 and 20°C showed no significant decrease within 1200 hours
Transformation Products	Not specifically analyzed for but assumed to be monobutylphthalate and butanol
Reference Substance and Reference	Not reported; Not reported
Substance Results	
Percent Recovery, Hydrolysis Rate	Not reported; 130.3x10-4/nours; 43.4 nours
Constant, and Half-life	
Results Remarks	Results from hydrolysis studies at pH 2 at 80°C and pH 7 at 80°C were also reported; the elevated temperature was to "accelerate the hydrolysis
	rate"

			EVALUATIO	N	
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	Medium	Information was provided in an appendix but this will likely not effect the results.	
	Metric 2:	Test Substance Purity	Medium	Information was provided in an appendix but this will likely not effect the results.	
Domain 2: Test Design					
	Metric 3:	Study Controls	High	Positive controls were run in this study.	
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.	
Domain 3: Test Condition	ons				
	Metric 5:	Test Method Suitability	Medium	Test details were provided in an appendix to the submission, though this will not likely effect the results.	
	Metric 6:	Testing Conditions	High	Test conditions were typical for this type of study.	
	Continued on next page				

		continu	ued from pre	vious page
Study Citation:	Zhang, D., Wu, L dation of phthalat	., Yao, J., Vogt, C., Richnow, H. H. (2019 e esters. Science of the Total Environment	). Carbon and t 660:559-566	hydrogen isotopic fractionation during abiotic hydrolysis and aerobic biodegra-
<b>OECD Harmonized</b>	Hydrolysis			
Template:				
HERO ID:	5433324			
		I	EVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 7:	Testing Consistency	Medium	Test details were provided in an appendix to the submission, though this will not likely effect the results.
	Metric 8:	System Type and Design	High	Test design was typical for this type of study.
Domain 4: Test Organis	ms			
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	sessment			
	Metric 11:	Test Substance Identity	High	Methodology was reasonable for this type of study.
	Metric 12:	Test Substance Purity	Medium	Test details were provided in an appendix to the submission, though this will not likely effect the results.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	High	Limitations of overall method for widespread applications were noted by the authors.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Present	ation and Analysis			
	Metric 15:	Data Reporting	Medium	Test details were reported in an appendix to the article.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Test details were reported in an appendix to the article.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The difference in test conditions with previously published results make plausibility of the results difficult to determine.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Qualit</b>	ty Determin	ation	High	

Study Citation:	Lau, T. K., Chu, W Chemosphere 60(8	, Graham, N. (2005). The degradation of endocrine disruptor di-n-butyl phthalate by UV irradiation: a photolysis and product study.			
<b>OECD Harmonized</b>	Photolysis in Water				
Template:					
HERO ID:	807120				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; DBP			
Confidentiality, Type, Guide	eline	None; Experimental; EPA OTS 796.3700 (Direct Photolysis Rate in Water by Sunlight): Photolysis UV irradiation			
Solvent, Reactivity, Storage	e, Stability	18 M omega deionized distilled water; NR; NR; NR			
Radiolabel, Source, State, P	Purity	NA; Sigma-Aldrich; NR; 98.7% Notes: Pestenal reported as trade-name. Standards prepared monthly and stored in the dark at 4°C			
Duration and Test Temperat	ture	60 minutes; 23±2°C			
Light Source, Intensity, and	d additional light de-	Eight phosphor-coated low-pressure mercury lamps; 1.5E-6 / Einstein s; Each lamp 35 W			
tails	1.1.1				
Source Wavelength Lower a	and Upper	Not reported; 234 nm			
Test Details and Control		1 L quartz beaker with magnetic stirring placed in the center of a Rayonet RPR-200 UV photo-reactor with eight lamps attached. Tested at pH 3, 5, 7, 9, 11; Not reported			
Initial Concentration and Re	eference Compound	2 - 10 (kinetics); $\hat{4}$ (photolysis product identification) $\mu$ M; Not reported			
Substance Wavelength Low	er and Upper	Not reported; Not reported			
Direct Quantum Yield Rest	ults, Direct Half Life	Not reported; Not reported			
by Loss Lower and Upper	var and Unnar	0.07-0.00			
Method Details Desults and Droducts		0.07, 0.09 Therma Quest Finnigan I CO Dua Mass Spectrometer system with Destek Pinnacle II column : Dithalic acid (dominant product), monobutul			
Details Results		nermo Quest Finnigan LCQ Duo Mass Spectrometer system with Rester Finnacie in columni, Finnanc acid (dominant product), monooutyr			
Parameter Value and Parameter Results		not applicable; /min, pseudo-first order rate for first phase			
Reference Compound, Reference		Not reported; 73-91%; Not reported			
Substance Results, Percent	Degradation Results				
and Standard Deviation Res	sults				
Results Remarks, Sample t	time Results, Results	Stage 1 photolysis followed pseudo-first-order kinetics, Stage 2 (after 20-30 minutes) showed rate reduction. Direct photolysis by UV is considered			
Details		4 uM test substance after 90 min observed.; 60 minutes; $C_t = C_0(e^{-kt})$			

			EVALUATION	N
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was definitively identified.
	Metric 2:	Test Substance Purity	High	Test substance source and purity reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Concurrent negative control not explicitly included but this most likely did not impact study results.
	Metric 4:	Test Substance Stability	High	Test substance preparation and storage conditions were reported and appropriate.

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#### PUBLIC RELEASE DRAFT May 2025 Photolysis in Water

		contin	ued from prev	vious page
Study Citation:	Lau, T. K., Chu, Chemosphere 60(	W., Graham, N. (2005). The degradation (8):1045-1053.	of endocrine of	lisruptor di-n-butyl phthalate by UV irradiation: a photolysis and product study.
<b>OECD Harmonized</b>	Photolysis in Wat	er		
Template:				
HERO ID:	807120			
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 3: Test Conditi	ons			
	Metric 5:	Test Method Suitability	High	The method was appropriate for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were monitored and reported and were appropriate.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across study groups.
	Metric 8:	System Type and Design	Medium	There were some omissions in system type and design; however, the omissions were not likely to have a substantial impact on study results.
Domain 4: Test Organis	sms			
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	ssessment			
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the outcomes of interest.
	Metric 12:	Test Substance Purity	High	Sample methods were appropriate and address the outcomes of interest.
Domain 6: Confounding	g/variable Control	Conformation - Maniphlan	II: -h	
	Metric 13:	Uselth Outs areas Userslated to	High	variability was accounted for in data evaluation.
	Metric 14:	Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Present	tation and Analysis			
	Metric 15:	Data Reporting	High	Target chemical and transformation products were reported, analytical methods were suitable for detection.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Kinetic calculations were described and appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	High	The results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quali</b>	ty Determin	ation	High	

Study Citation:	Lertsirisopon, R., S	Soda, S., Sei, K., Ike, M. (2009). Abiotic degradation of four phthalic acid esters in aqueous phase under natural sunlight irradiation.		
OECD Harmonized	Photolysis in Water	r		
Template: HERO ID:	680048			
		EXTRACTION		
Parameter		Data		
CASRN and Test Material		84-74-2; Not Reported		
Confidentiality, Type, Guide	eline	No; Experimental, pH dependent, half-life reported, reaction rate reported; Not Reported		
Solvent, Reactivity, Storage	, Stability	Artificial river water; NR; NR		
Radiolabel, Source, State, P	urity	NA; Kishida Chemical, Osaka, Japan; Liquid; Analytical grade		
Duration and Test Temperat	ure	140 days; 0.4 - 27.4 deg C; average = 10.8 deg C		
Light Source, Intensity, and	d additional light de-	Natural sunlight; 17.1 - 242.8 W/m <sup>2</sup> (reflecting moderate autumn and winter Japan temperate zone); Not Reported		
Source Wavelength Lower a	and Upper	NR; Not Reported		
Test Details and Control		30 mL solution at pH 5.0, 6.0, 7.0, 8.0, or 9.0, placed in 50 mL pyrex glass test tube and sealed with rubber stopper. Tubes kept on the roof of a building at Osaka University, Japan (34 N, 135 E) from September 2004 to March 2005.; Test tube prepared the same but wrapped in aluminum fail		
Initial Concentration and Re	eference Compound	0.52 mmol/L; NR		
Substance Wavelength Low	er and Upper	NR; NR		
Direct Quantum Yield Results, Direct Half Life		NR; Not Reported; 50 d (pH 5), 66 d (pH 6), 360 d (pH 7), 94 d (pH 8), 57 d (pH 9)		
Indirect Rate Constant Lower and Upper		Not Reported; Not Reported		
Method Details Results and Products		HPLC UV-Vis at 254 nm; NR		
Details Results Parameter Value and Parameter Results		Not Reported; Test substance disappearance		
Reference Compound, Refe	rence	NR; NR; NR		
Substance Results, Percent	Degradation Results			
Results Remarks, Sample t	ime Results, Results	NA; NA; Rate constant: 1.4E-2 /d (pH 5), 1.0E-2 /d (pH 6), 1.9E-3 /d (pH 7), 7.3E-3 /d (pH 8), 1.2E-2 /d (pH 9)Dark control half-life: 510 d (pH		
Details		5), 620 d (pH 6), 1300 d (pH 7), 530 d (pH 8), 430 d (pH 9)		

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Substar	ice			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	Medium	The test substance source was reported, the purity was reported qualitatively as analyti-
				cal grade.
Domain 2: Test Design				
-	Metric 3:	Study Controls	High	Dark controls were included and results were reported and within an appropriate range.
	Metric 4:	Test Substance Stability	Medium	Test substance storage was not reported; preparation and stirring by ultrasonication was reported and appropriate.
			Continued on next p	age

		contin	ued from pre	vious page					
Study Citation:	Lertsirisopon, R.,	, Soda, S., Sei, K., Ike, M. (2009). Abiot	tic degradation	n of four phthalic acid esters in aqueous phase under natural sunlight irradiation.					
FCD Harmonized	Journal of Environmental Sciences 21(3):285-290. Photolysis in Water								
SECD Hai monizeu Femplate:									
HERO ID:	680048	680048							
	000010			•					
EVALUATION									
Domain		Metric	Rating	Comments					
Domain 3: Test Conditi	ons								
	Metric 5:	Test Method Suitability	Low	The test substance was tested above its water solubility, but was treated with an ultrason- icator to ensure homogenization.					
	Metric 6:	Testing Conditions	High	Appropriate test conditions (pH, light intensity, temperature) were reported. Tempera- ture and light intensity fluctuations were wide but because the study took place outdoors, this possible effect to rates may better reflect environmental behavior.					
	Metric 7:	Testing Consistency	High	Testing conditions were consistent across study groups and replicates.					
	Metric 8:	System Type and Design	N/A	Not applicable.					
Domain 4: Test Organis	sms								
Domain in 1600 organic	Metric 9:	Outcome Assessment Methodology	N/A	Not applicable.					
	Metric 10:	Sampling Methods	N/A	Not applicable.					
				**					
Domain 5: Outcome As	ssessment								
	Metric 11:	Test Substance Identity	High	The outcome assessment was appropriate for determining photolytic loss.					
	Metric 12:	Test Substance Purity	High	Sampling frequency was reported graphically (approximately every 10 days) and was appropriate for rate determination.					
Domain 6: Confounding	g/Variable Control								
·	Metric 13:	Confounding Variables	Low	Variability was not accounted for, one replicate per condition was apparently used.					
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Not applicable.					
Domain 7: Data Present	tation and Analysis								
	Metric 15:	Data Reporting	Medium	The analytical method was appropriate; limit of detection and extraction efficiency were not reported. Raw data was reported graphically only.					
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Kinetic calculations (first order) were described and applied appropriately.					
Domain 8: Other									
	Metric 17:	Verification or Plausibility of Results	Medium	The results were reasonable based on the method but the results were lower than es- timated photolysis half-lives previously reported (880 - 4450 days); however, the test substance was tested above its water solubility.					
	Metric 18:	QSAR Models	N/A	Not applicable.					
	4 D-4	- 4 •	т						
Overall Quali	ty Determin	ation	LOW						

Study Citation:	Peterson, D. R., St 3Q:85-124.	aples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC		
OECD Harmonized	Photolysis in Wate	ſ		
Template:	52 (0222			
HERO ID:	5348332			
		EXTRACTION		
Parameter		Data		
CASRN and Test Material		84-74-2· DBP		
Confidentiality Type, Guid	eline	no: experimental: EPA OTS 796 3700 (Direct Photolysis Rate in Water by Sunlight): not reported		
Solvent, Reactivity, Storage	e. Stability	NR: NR: NR		
Radiolabel, Source, State, I	Purity	NR: NR: NR		
Duration and Test Tempera	iture	not reported not reported		
Light Source, Intensity, an	d additional light de-	artificial & natural sunlight; 72,000 (artificial); 83,000 (natural); Not Reported		
Source Wavelength Lower	and Upper	Not Reported; Not Reported		
Test Details and Control		optimum pH 6.0; simulated by the presence of TiO2 and H2O2; not reported		
Initial Concentration and R	eference Compound	not reported; Not Reported		
Substance Wavelength Low	ver and Upper	Not Reported; Not Reported		
Direct Quantum Yield Res by Loss Lower and Upper	ults, Direct Half Life	Not Reported; Not Reported; Not Reported		
Indirect Rate Constant Low	ver and Upper	Not Reported; 0.23/h		
Method Details Results and Products		Not Reported; Not Reported		
Details Results Parameter Value and Param	neter Results	Not Reported: not reported		
Reference Compound. Reference		Not Reported: Not Reported: Not Reported: Not Reported		
Substance Results, Percent	t Degradation Results			
and Standard Deviation Results Results Remarks, Sample time Results, Results		half-life = 3 hours; not reported; photodegradation rates were higher in natural water than in simulated systems.		

EVALUATION					
Metric	Rating	Comments			
Test Substance Identity	High	The test substance was identified by name and CASRN.			
Test Substance Purity	Medium	The source and purity of the test substance were not reported but may be available in the cited reference.			
Study Controls	Low	Controls were not reported but may be available in the cited reference.			
Test Substance Stability	Low	The substance stability was not reported but may be available in the cited reference.			
Test Method Suitability	Medium	The test method was not reported but may be available in the cited reference.			
Continued on next page					
	Metric Test Substance Identity Test Substance Purity Study Controls Test Substance Stability Test Method Suitability	Metric Rating   Test Substance Identity High   Test Substance Purity Medium   Study Controls Low   Test Substance Stability Low   Test Method Suitability Medium			

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		contin	ued from pre	vious page		
Study Citation:	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC 30:85-124					
<b>OECD Harmonized</b>	Photolysis in Water					
Template:						
HERO ID:	5348332					
EVALUATION						
Domain		Metric	Rating	Comments		
	Metric 6:	Testing Conditions	Medium	There were omissions in the testing conditions but more information may be available in the cited reference.		
	Metric 7:	Testing Consistency	Low	There was no information on the test consistency but may be available in the cited reference.		
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.		
Domain 4: Test Organis	sms					
C C	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.		
Domain 5: Outcome As	sessment					
Domain 5. Outcome 743	Metric 11:	Test Substance Identity	Medium	There was incomplete reporting of outcome assessment methods; however, information may be available in the cited reference.		
	Metric 12:	Test Substance Purity	Low	Details regarding sampling methods of the outcome(s) were not fully reported but the information may be available in the cited reference.		
Domain & Confoundin	a Wariahla Control					
Domain 0. Comounding	Metric 13.	Confounding Variables	N/A	No confounding variables were noted		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.		
Domain 7: Data Presen	tation and Analysis					
2011111 // 2011 110501	Metric 15:	Data Reporting	Medium	Details regarding the results were not reported but may be available in the cited reference.		
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Kinetic calculations were not clearly described but may be available in the cited reference.		
Domain 8: Other						
Domain 6. Outer	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.		
<b>Overall Quality Determination</b>		Low				

\* Related References: cites: HERO ID: 5348008 Jin Z, Huang G, Chai Y, Zhong Y, Wang D, Li H (1999) Huanjing Huaxue 18:109 (Chinese)
Study Citation:	ATSDR, (1999). To	oxicological profile for di-n-butyl phthalate (update): Draft for public comment.			
OECD Harmonized	Biodegradation in Water				
Template:					
HERO ID:	5676112				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, Typ	pe,	none; biodegradability; experimental; other: river die-away test			
Guideline	Stability	Nat Dapartadi Nat Dapartadi Nat Dapartad			
Badialabal Sauraa Stata Du	stability	Not Reported, Not Reported, Not Reported, Not Reported			
Radiolabel, Source, State, Pul	nty	10% removed in starile controls. Not Reported			
Orward and Inconfum		Not Demorted. Not Demorted, water from three rivers in Netherlands.			
Duration Decompton System	and	Not Reported; Not Reported: Water from infee rivers in Netherlands			
Sampling Frequency	anu	Not kepotted; Not kepotted: Not kepotted; Not kepotted			
pH Adjusted and pH		Not Reported; Not Reported			
Concentration		$= 50 \ \mu g/L$			
Composition and Test Temper	rature	Not Reported; Not Reported			
CEC, Water Aeration Dilution	n, Continuous Dark-	Not Reported; Not Reported; Not Reported; Not Reported			
ness, and Other Design					
Results Details Method, Resu	ilts per Degradation	Not Reported; % removal; Not Reported			
Direct Quantum Yield Result	\$				
Results Value, Results Stand	lard Deviation, Re-	90%; Not Reported; 3 days; Not Reported			
sults Sample Time, and Resu	ults Reference Sub-				
stance Compartments					
Results Remarks and Results	Details	Not Reported; Not Reported			
Results Mean Total Recovery	and Results per Re-	Not Reported; Not Reported			
COVELY					

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified.
	Metric 2:	Test Substance Purity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 4:	Test Substance Stability	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.

#### ... continued from previous page **Study Citation:** ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment. **OECD Harmonized** Biodegradation in Water **Template: HERO ID:** 5676112 **EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability Medium Limited detail reported in this secondary source; additional detail may be in source cited. Metric 6: **Testing Conditions** Medium Limited detail reported in this secondary source; additional detail may be in source cited. Metric 7: Testing Consistency Medium Limited detail reported in this secondary source; additional detail may be in source cited. Metric 8: System Type and Design Medium Limited detail reported in this secondary source; additional detail may be in source cited Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology Medium Limited detail reported in this secondary source; additional detail may be in source cited. Metric 10: Sampling Methods N/A The metric is not applicable to the study. Domain 5: Outcome Assessment Metric 11: Test Substance Identity Medium Limited detail reported in this secondary source; additional detail may be in source cited. Metric 12: Test Substance Purity Medium Limited detail reported in this secondary source; additional detail may be in source cited. Domain 6: Confounding/Variable Control Metric 13: **Confounding Variables** Medium Limited detail reported in this secondary source; additional detail may be in source cited. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to the study. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium Limited detail reported in this secondary source; additional detail may be in source cited. Metric 16: Statistical Methods and Medium Limited detail reported in this secondary source; additional detail may be in source Kinetic Calculations cited. Domain 8: Other Metric 17: Verification or Plausibility of Medium Limited detail reported in this secondary source; additional detail may be in source cited. Results **OSAR** Models N/A Metric 18: The metric is not applicable to the study. **Overall Quality Determination** Medium

\* Related References: Source cited: Schouten et al 1979 HERO ID 1333150 (not in distiller at time of extraction)

Study Citation: OECD Harmonized	ATSDR, (1999). T Biodegradation in	oxicological profile for di-n-butyl phthalate (update): Draft for public comment. Water		
HERO ID:	5676112			
		EXTRACTION		
Parameter		Data		
CASRN and Test Material		84-74-2; Di-n-butyl phthalate		
Confidentiality, EndPoint, T	Гуре,	none; screening test; experimental; other: screening test		
Guideline Solvent Reactivity Storage	Stability	Not Reported: Not Reported: Not Reported: Not Reported		
Radiolabel Source State P	nrity	Not Reported: Not Reported: Not Reported: Not Reported		
Blank and Control	unty	Not Reported, Not Reported, Not Reported		
Oxygen and Inoculum		Not Reported; Not Reported		
Duration, Parameter, Syster	n, and	3 days; Not Reported: Not Reported; Not Reported		
Sampling Frequency				
pH Adjusted and pH		Not Reported; Not Reported		
Concentration		0.1 - = 1.0  mg/L		
Composition and Test Temp	perature	Not Reported; Not Reported		
CEC, Water Aeration Dilution	on, Continuous Dark-	Not Reported; Not Reported; Not Reported; Not Reported		
Results Details Method, Re	sults per Degradation	Not Reported: % degradation: Not Reported		
Parameter, and	I 0			
Direct Quantum Yield Resu	ılts			
Results Value, Results Standard Deviation, Re-		97-99.5%; Not Reported; 3 days; Not Reported		
sults Sample Time, and Results Reference Sub-				
Results Remarks and Results Details		Not Reported; Not Reported		
Results Mean Total Recover	ry and Results per Re-	Not Reported; Not Reported		
covery				
		EVALUATION		

Domain		Metric	Rating	Comments	
Domain 1: Test Substan	nce				
	Metric 1:	Test Substance Identity	High	The test substance was identified.	
	Metric 2:	Test Substance Purity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.	
Domain 2: Test Design					
	Metric 3:	Study Controls	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.	
	Metric 4:	Test Substance Stability	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.	
Domain 3: Test Conditions					
Continued on next page					

		continu	ued from previous	page
Study Citation: OECD Harmonized Template:	ATSDR, (1999). T Biodegradation in	oxicological profile for di-n-butyl phthala Water	ate (update): Draft	for public comment.
HERO ID:	5676112			
		I	EVALUATION	
Domain		Metric	Rating	Comments
	Metric 5:	Test Method Suitability	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 6:	Testing Conditions	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 7:	Testing Consistency	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 8:	System Type and Design	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
Domain 4: Test Organisr	ns			
	Metric 9:	Outcome Assessment Methodology	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study.
Domain 5: Outcome Ass	essment			
	Metric 11:	Test Substance Identity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 12:	Test Substance Purity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
Domain 6: Confounding	/Variable Control			
	Metric 13:	Confounding Variables	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study.
Domain 7: Data Presenta	ation and Analysis			
	Metric 15:	Data Reporting	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study.

\* Related References: Source cited: Kodama and Takai 1974 HERO ID 1936485 (not in distiller at time of extraction)

Study Citation: OECD Harmonized	ATSDR, (1999). To Biodegradation in	oxicological profile for di-n-butyl phthalate (update): Draft for public comment. Water			
Template:					
HERO ID:	5676112				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, Typ	pe,	none; biodegradability; experimental; other: not specified			
Guideline Solvent Reactivity Storage S	Stability	Not Paportad: Not Paportad: Not Paportad			
Radiolabel Source State Pur	rity	Not Reported, Not Reported, Not Reported, Not Reported			
Blank and Control	illy	Not Reported, Not Reported			
Oxygen and Inoculum		anaerobic; activated sludge (adaptation not specified)			
Duration, Parameter, System,	and	Not Reported; Not Reported: Not Reported; Not Reported			
Sampling Frequency					
pH Adjusted and pH		Not Reported; Not Reported			
Concentration		Not Reported			
Composition and Test Temper	rature	Not Reported; Not Reported			
CEC, Water Aeration Dilution	ı, Continuous Dark-	Not Reported; Not Reported; Not Reported; Not Reported			
Results Details Method, Result	lts per Degradation	Not Reported: % degradation: Not Reported			
Parameter, and	1 0				
Direct Quantum Yield Results	s				
Results Value, Results Stand	lard Deviation, Re-	complete degradation to carbon dioxide and methane (100%); Not Reported; 20 days; Not Reported			
suits Sample Time, and Results Reference Sub-					
Results Remarks and Results	Details	Not Reported; Not Reported			
Results Mean Total Recovery	and Results per Re-	Not Reported; Not Reported			
covery					
		EVALUATION			

Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ice					
	Metric 1:	Test Substance Identity	High	The test substance was identified.		
	Metric 2:	Test Substance Purity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.		
Domain 2: Test Design						
	Metric 3:	Study Controls	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.		
	Metric 4:	Test Substance Stability	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.		
Domain 3: Test Conditions						
	Continued on next page					

		continu	ued from previous	page
Study Citation: OECD Harmonized Template:	ATSDR, (1999). T Biodegradation in	oxicological profile for di-n-butyl phthala Water	ate (update): Draft	for public comment.
HERO ID:	5676112			
		I	EVALUATION	
Domain		Metric	Rating	Comments
	Metric 5:	Test Method Suitability	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 6:	Testing Conditions	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 7:	Testing Consistency	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 8:	System Type and Design	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
Domain 4: Test Organisr	ns			
	Metric 9:	Outcome Assessment Methodology	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study.
Domain 5: Outcome Ass	essment			
	Metric 11:	Test Substance Identity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 12:	Test Substance Purity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
Domain 6: Confounding	/Variable Control			
	Metric 13:	Confounding Variables	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study.
Domain 7: Data Presenta	ation and Analysis			
	Metric 15:	Data Reporting	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study.

\* Related References: Source cited: Hannah et al 1986 (HERO ID not found; not in distiller at time of extraction)

Study Citation: AISDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.				comment.		
OECD Harmonized	Biodegradation in Water					
Template:						
HERO ID:	5676112					
			EXTRACTION			
Parameter		Data				
CASRN and Test Material		84-74-2; Di-n-butyl phthalate				
Confidentiality, EndPoint, Ty	pe,	none; biodegradability; experimer	ntal; other: not specified			
Guideline	a. 1 111					
Solvent, Reactivity, Storage,	Stability	Not Reported; Not Reported; Not	Reported; Not Reported			
Radiolabel, Source, State, Pu	rity	Not Reported; Not Reported; Not	Reported; Not Reported			
Blank and Control		no degradation in sterile control; I	Not Reported			
Oxygen and Inoculum		Not Reported; Not Reported: fresh and estuarine waters from US sources				
Duration, Parameter, System, and		Not Reported; Not Reported: Not Reported; Not Reported				
Sampling Frequency		Net Descente de Net & Descente d				
Concentration		= 500 µg/L				
Composition and Test Tempe	rature	Not Reported; Not Reported				
ness, and Other Design	n, Continuous Dark-	Not Reported; Not Reported; Not Reported				
Results Details Method, Resu	Its per Degradation	Not Reported; Not Reported; Not Reported				
Parameter, and	1 0					
Direct Quantum Yield Result	s					
Results Value, Results Stand	lard Deviation, Re-	Not Reported; Not Reported; Not Reported; Not Reported				
sults Sample Time, and Resu	ilts Reference Sub-					
stance Compartments	Details 500 monorelis 17.12 down los gloss 0.7 down Net Departs d					
Results Remarks and Results	Results Remarks and Results Details		50% removal in 1.7-13 days; lag phase 0-7 days; Not Reported			
Results Mean Total Recovery	Mean Total Recovery and Results per Re- Not Reported; Not Reported					
covery						
			EVALUATION			
Domain		Metric	Rating	Comments		
Domain 1: Test Substance	;					

	Metric 1: Metric 2:	Test Substance Identity Test Substance Purity	High Medium	The test substance was identified. Limited detail reported in this secondary source; additional detail may be in source cited.		
Domain 2: Test Design	l					
	Metric 3:	Study Controls	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.		
	Metric 4:	Test Substance Stability	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.		
Domain 3: Test Conditions						
Continued on next page						

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		contin	ued from previous	page
Study Citation: OECD Harmonized Template:	ATSDR, (1999). T Biodegradation in	Toxicological profile for di-n-butyl phthal: Water	ate (update): Draft	for public comment.
HERO ID:	5676112			
		]	EVALUATION	
Domain		Metric	Rating	Comments
	Metric 5:	Test Method Suitability	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 6:	Testing Conditions	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 7:	Testing Consistency	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 8:	System Type and Design	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
Domain 4: Test Organis	sms			
	Metric 9:	Outcome Assessment Methodology	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study.
Domain 5: Outcome As	sessment			
	Metric 11:	Test Substance Identity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 12:	Test Substance Purity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
Domain 6: Confounding	g/Variable Control			
· · · · · ·	Metric 13:	Confounding Variables	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study.
Domain 7: Data Present	tation and Analysis			
	Metric 15:	Data Reporting	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study.

\* Related References: Source cited: EPA 1984 - EPA-600/s4-84-074. Has multiple HERO IDs 1333383, 5193807, 5353253 (not in distiller at time of extraction)

Study Citation: OECD Harmonized Template:	Battersby, N. S., Wilson, V. (1989). Survey of the anaerobic biodegradation potential of organic chemicals in digesting sludge. Applied and Environmental Microbiology 55(2):433-439. Biodegradation in Water				
HERO ID:	1598869				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Dibutyl phthalate			
Confidentiality, EndPoint, T	ype,	none; screening test; experimental; other			
Guideline Solvent, Reactivity, Storage	. Stability	NR: NR: NR			
Radiolabel, Source, State, P	urity	NR: Aldrich Chemical Co., Gillingham or BDH Ltd., Poole, UK, Chemicals.; NR: Highest purity available Notes; NR			
Blank and Control	5	Sterile controls containing autoclaved sludge and sterile test chemical; Not Reported			
Oxygen and Inoculum		anaerobic; digested sludge: Reading Sewage Works (Berkshire, England); mixture of domestic and industrial(brewing, food processing, electron- ics) wastewaters.			
Duration, Parameter, Systen Sampling Frequency	n, and	60 days; CH4 evolution: serum bottles under a headspace of 90% N2-10% CO2; weekly			
pH Adjusted and pH		NR; NR			
Concentration		NR NR - NR NR			
Composition and Test Temp	perature	NR; 35°C			
CEC, Water Aeration Dilution ness, and Other Design	on, Continuous Dark-	NR; NR; NR			
Results Details Method, Res Parameter, and Direct Quantum Yield Resu	sults per Degradation	gas chromatograph with thermal conductivity detector; % theoretical gas production; Not Reported			
Results Value, Results Star sults Sample Time, and Re stance Compartments	ndard Deviation, Re- sults Reference Sub-	24; $\pm$ 9.6; Not Reported; ethanol: results not reported; 4-cresol: 96% theoretical gas production after a lag period of 7 days			
Results Remarks and Result	ts Details	Completely degraded after 4 weeks of incubation.; lag period of 23 days			
Results Mean Total Recovery and Results per Re- covery		NR; NR			

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substand	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively by name.		
	Metric 2:	Test Substance Purity	High	The source of the test substance was reported.		
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Some concurrent control group details were not included; however, the lack of data was not likely to have a substantial impact on study results.		
Continued on next page						

## PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

HERO ID: 1598869 Table: 1 of 1

		contin	ued from pre	vious page			
Study Citation:	Battersby, N. S., V Microbiology 55(2	Vilson, V. (1989). Survey of the anaerobi 2):433-439.	c biodegradatio	on potential of organic chemicals in digesting sludge. Applied and Environmental			
OECD Harmonized	Biodegradation in	Biodegradation in Water					
Template: HERO ID:	1598869	1508860					
	1370007			AT			
Domain		Metric	EVALUATIO. Rating	Comments			
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.			
Domain 3: Test Condition	ons						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	Medium	There were omissions in testing conditions; however, sufficient data were reported to determine that the deviations and omissions were not likely to have a substantial impact on study results.			
	Metric 7:	Testing Consistency	Medium	Test conditions were consistent across samples.			
	Metric 8:	System Type and Design	Medium	The system type and design were capable of appropriately maintaining substance con- centrations.			
Domain 4: Test Organis	ms						
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and is routinely used for similar study types and appropriate.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Demain 5. Outerme A.							
Domain 5: Outcome As	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.			
Domain 6: Confounding	z/Variable Control						
- E	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements and statistical techniques were considered and accounted for in data evaluation.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	Medium	The target chemical and transformation product concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetic calculations were not clearly described; howeverthese differences were not likely to have a substantial impact on study results.			
Domain 8: Other							
		Contin	nued on next p	bage			

Study Citation:	Battersby, N. S. Microbiology 5	Battersby, N. S., Wilson, V. (1989). Survey of the anaerobic biodegradation potential of organic chemicals in digesting sludge. Applied and Environmental Microbiology 55(2):433-439.				
OECD Harmonized	Biodegradation	Biodegradation in Water				
Template:						
HERO ID:	1598869					
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range as defined by reference substance.		
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.		

Study Citation: OECD Harmonized	Call, D. J., Markee F., Reiley, M. C., A Environmental Tox Biodegradation in N	all, D. J., Markee, T. P., Geiger, D. L., Brooke, L. T., Vandeventer, F. A., Cox, D. A., Genisot, K. I., Robillard, K. A., Gorsuch, J. W., Parkerton, T., Reiley, M. C., Ankley, G. T., Mount, D. R. (2001). An assessment of the toxicity of phthalate esters to freshwater benthos. 1. Aqueous exposures. nvironmental Toxicology and Chemistry 20(8):1798-1804. iodegradation in Water					
Template:							
HERO ID:	679312						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-72-2; dibutyl phthalate					
Confidentiality, EndPoint, T	ype,	No; screening test; experimental; other: Detection of test substance in ten-day toxicity tests					
Guideline Solvent, Reactivity, Storage.	Stability	water: NR: NR					
Radiolabel, Source, State, P	urity	NA: Aldrich Chemical (Milwaukee, WI, USA); NR; 99+% Notes: NA					
Blank and Control		water control; KCl as a reference toxicant					
Oxygen and Inoculum		aerobic; water (not specified): Freshwater benthos containing H. azteca, C. tentans, and L. variegatus					
Duration, Parameter, System	n, and	10 days; test mat.: glass aquiria; 0, 4, 7 and 10 days					
Sampling Frequency		Not Paportady 7.62.7.04					
pH Adjusted and pH		Not Reported, $7.02-7.94$					
Concentration	arotura	0.17±0.10 - 5.36±0.30 mg/L Dechloringted municipal water from the city of Superior (Superior WILUSA) water was passed through a hed of charcoal and sodium sulfite and					
Composition and Test Temperature		cation exchange resin removed trace metals. Total organic carbon = $2.2 \text{ mg/L}$ , total hardness and alkalinityranged from 42.8 to 54.6 and 44.8 to 51.4 mg/L as CaCO3, respectively: $21.8-23.4$					
CEC, Water Aeration Dilutio	on, Continuous Dark-	NR; Dissolved oxygen = $6.1-7.8$ mg/L; NR; Not Reported					
ness, and Other Design							
Results Details Method, Res	sults per Degradation	high performance liquid chromatography using a column of either Lichrospher 100 RP-18 or 5 mm Lichrospher 100 CN, detector wavelengths of 274 and 224 nm; NR; NR					
Direct Quantum Yield Results		214 and 224 mil, MK, MK					
Results Value, Results Standard Deviation, Re-		NR; NR; 10 days; NR					
sults Sample Time, and Res	sults Reference Sub-						
stance Compartments Results Remarks and Result	s Details	Supporting information about the 10-day LC50 of test substance to freshwater benthos. Reported log Kow and water solubility values cited from					
Results Remarks and Result	5 Details	Staples et al. 1997.; Not Reported					
Results Mean Total Recovery	y and Results per Re-	expressed concentrations were not corrected for recoveries; Mean recovery ranged between 94.3 and 126.3%					

			EVALUATION		
Domain		Metric	Rating	Comments	
Domain 1: Test Subst	tance				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2:	Test Substance Purity	High	The source or purity of the test substance was reported.	

Domain 2: Test Design

PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

		c	ontinued from previous pag	e				
Study Citation: OECD Harmonized	Call, D. J., Marl F., Reiley, M. C. Environmental T Biodegradation i	Call, D. J., Markee, T. P., Geiger, D. L., Brooke, L. T., Vandeventer, F. A., Cox, D. A., Genisot, K. I., Robillard, K. A., Gorsuch, J. W., Parkerton, T. F., Reiley, M. C., Ankley, G. T., Mount, D. R. (2001). An assessment of the toxicity of phthalate esters to freshwater benthos. 1. Aqueous exposures. Environmental Toxicology and Chemistry 20(8):1798-1804. Biodegradation in Water						
Template: HERO ID:	679312							
			EVALUATION					
Domain		Metric	Rating	Comments				
	Metric 3:	Study Controls	Uninformative	The study did not include or report crucial control groups relevant to fate or transport endpoints that consequently made the study unusable.				
	Metric 4:	Test Substance Stability	High	The test substance stability, homogeneity, preparation, and storage conditions were reported and were appropriate for the study.				
Domain 3: Test Condition	ons							
	Metric 5:	Test Method Suitability	Medium	The test method was suitable for the test substance with minor deviations.				
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.				
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.				
	Metric 8:	System Type and Design	High	The system type and design were capable of appropriately maintaining substance con- centrations.				
Domain 4: Test Organis	sms							
	Metric 9:	Outcome Assessment Methodology	Medium	The test organism, species, or inoculum source were reported, but are not routinely used for similar study types; however, the deviation was not likely to have a substantial impact on study results.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	Metric 11:	Test Substance Identity	Uninformative	The outcome assessment methodology addressed or reported the intended outcome(s) of interest; however, toxicity (LD50) information is not a relevant environmental fate or temport and point				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	N/A	The metric is not applicable to this study type.				
	Metric 14:	Health Outcomes Unrelated to Exposure	High	There were multiple study groups, and there were no differences among the study groups in organism attrition or health outcomes (i.e., unexplained mortality) that influenced the outcome assessment.				
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	Low	concentrations of the target chemical or transformation product, extraction efficiency, percent recovery, or mass balance were not measured or reported, preventing meaningful interpretation of study results.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset(s).				
Continued on next page								

			PUBLIC RELEASE DRAFT			
harderel Diede allada			May 2025	LIEDO ID. (70212 T-11-, 1 -		
ibutyi Phinarate			Biodegradation in water	HERO ID: 679312 Table: 1 C		
		••	. continued from previous page	,		
Study Citation:	Call, D. J., Markee, T. P., Geiger, D. L., Brooke, L. T., Vandeventer, F. A., Cox, D. A., Genisot, K. I., Robillard, K. A., Gorsuch, J. W., Parkerton, T.					
	F., Reiley, M.	C., Ankley, G. T., Mount, D. R. (2001).	An assessment of the toxicity of	f phthalate esters to freshwater benthos. 1. Aqueous exposures.		
OECD Harmonized	Environmental Toxicology and Chemistry 20(8):1798-1804. Biodegradation in Water					
Template:	Diodegradation					
HERO ID:	679312					
			EVALUATION			
Domain		Metric	Rating	Comments		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range as defined by reference substance.		
	Matria 19.	Results OSAB Madala	NT/A			
	Methe 18.	QSAR Models	IN/A	A QSAR model was not reported.		
Overall Quali	tv Determi	ination	Uninformative			

Study Citation:	Chang, B. V., Liao Environmental Cor	ao, G. S., Yuan, S. Y. (2005). Anaerobic degradation of di-n-butyl phthalate and di-(2-ethylhexyl) phthalate in sludge. Bulletin of mtamination and Toxicology 75(4):775-782.			
Tomplete:	Biodegradation in	water			
HERO ID:	357771				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2: Dibutyl phthalate			
Confidentiality, EndPoint, Typ	pe,	None; other; Experimental; other: Closed bottle batch anaerobic biodegradation			
Solvent, Reactivity, Storage, S	Stability	NR; NR; NR			
Radiolabel, Source, State, Pur	rity	NR; Chem Service (West Chester, PA, USA); NR; 99.0%			
Blank and Control		Sterile control included; autoclaved at 121°C for 20 min; Not reported			
Oxygen and Inoculum		anaerobic; anaerobic sludge: Sewage and petrochemical sludge investigated			
Duration, Parameter, System, Sampling Frequency	and	28 days; test mat.: Bottles capped with rubber stoppers wrapped in aluminum and placed in an anaerobic glove box; Periodically			
pH Adjusted and pH		Not Reported; 5.0, 6.0, 7.0, 8.0, 9.0; assessed separately for each inoculum			
Concentration		1 - 5 μg/g			
Composition and Test Temper CEC, Water Aeration Dilution ness, and Other Design	rature , Continuous Dark-	NH4Cl, MgCl2(aq), CaCl2(aq), FeCl2(aq), K2HPO4, KH2PO4, resazurin; 20, 30, 40, 50°C; assessed separately for each inoculum Not reported; Not reported; yes; Not reported			
Results Details Method, Result Parameter, and	lts per Degradation	LOD=100 ug/L; % disappearance of test material; Not Reported			
Results Value, Results Standa sults Sample Time, and Resu	ard Deviation, Re- lts Reference Sub-	$100\%$ ; $\pm 1.2$ (petrochemical sludge) $\pm 2.9$ (sewage sludge); 7 days (petrochemical sludge) 14 days (sewage sludge); $< 5\%$ degradation after 28 days in petrochemical sludge; $< 6\%$ degradation after 28 days in sewage sludge; at 30°C and pH 7.0			
Results Remarks and Results	Details	100% degradation after 7 days in petrochemical sludge; 100% degradation after 14 days in sewage sludge; at 30°C and pH 7.0; details on variable conditions provided in source, t1/2 ranged from 0.8 to 8.8 days; First-order degradation rate constant 0.581/day; half-life=1.2 days			
Results Mean Total Recovery a covery	and Results per Re-	Not reported; Not reported			

	EVALUATION					
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	nce					
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.		
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	This metric met the criteria for high confidence as expected for this type of study.		
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.		
Domain 3: Test Condit	ions					

		contin	ued from pre-	vious page			
Study Citation:	Chang, B. V., Lia Environmental Co	Chang, B. V., Liao, G. S., Yuan, S. Y. (2005). Anaerobic degradation of di-n-butyl phthalate and di-(2-ethylhexyl) phthalate in sludge. Bulletin of Environmental Contamination and Toxicology 75(4):775-782.					
<b>OECD Harmonized</b>	Biodegradation in	Water					
Template:							
HERO ID:	357771						
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.			
	Metric 8:	System Type and Design	High	The system type and design were appropriate.			
Domain 4: Test Organis	ms						
	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	Medium	Limited detail on analytical method; however, this is not likely to hinder the results.			
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate.			
Domain 6: Confounding	z/Variable Control						
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.			
		Exposure					
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	High	The target chemical and transformation product(s) concentrations (if required), extrac- tion efficiency, percent recovery, or mass balance were reported.			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis reported and acceptable.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	Reported values were reasonable.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Qualit</b>	ty Determin	ation	High				

Study Citation:	Chi, J., Liu, H., L	hi, J., Liu, H., Li, B., Huang, G. L. (2006). Accumulation and biodegradation of dibutyl phthalate in Chlorella vulgaris. Bulletin of Environmental					
<b>OECD Harmonized</b>	Biodegradation in	lation in Water					
Template:	C C						
HERO ID:	1323214						
	EXTRACTION						
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, EndPoint, 7	Гуре,	None; other; Experimental; other: Algae	biodegradation study				
Guideline Solvent Reactivity Storage	Stability	NR · NR · NR · NR					
Radiolabel Source State F	nrity	NR: Sigma Company: NR: 99%					
Blank and Control	unty	Blank without algae; Yes; inhibition note	d at 4.85 mg/L DBP				
Oxygen and Inoculum		aerobic; natural water: 0.45 $\mu$ m filtered la	ake water, sterilized in culture mediu	m			
Duration, Parameter, Syster	n, and	150 hour; test mat.: Algae in culture med	ia; 6 days				
Sampling Frequency							
pH Adjusted and pH	Adjusted and pH Not Reported, Not reported						
Concentration	a anotinea	0.273 mg/L					
CEC Water Aeration Diluti	on Continuous Dark-	Not reported: Not reported: no: Not appli	cable				
ness, and Other Design	on, Commuous Dark-	Not reported, Not reported, no, Not appir					
Results Details Method, Re	sults per Degradation	GC-FID; test substance concentration; No	ot Reported				
Parameter, and	1.						
Direct Quantum Yield Resu Results Value Results Star	Ilts ndard Deviation Re-	4.01-4.34% biodegradation in 6 days (approximate): SD and average reported: 6 days: Not reported					
sults Sample Time, and Re	sults Reference Sub-	nor no no obcelladadon m o cajo (approximato), ob and arongo reported, o cajo, no reported					
stance Compartments							
Results Remarks and Resul	ts Details	Not applicable; k=0.6E-3 to 6.8E-3 h-1					
Results Mean Total Recover	ry and Results per Re-	spiked water 90.9 $\pm$ 3.7% and algal samples and 84.1 $\pm$ 7.2%; Not applicable					
covery	overy						
			EVALUATION				
Domain		Metric	Rating	Comments			
Domain 1: Test Substand	ce		8				
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.			
	Metric 2:	Test Substance Purity	High	The test substance source was reported.			
Domain 2: Test Design			TT: 1				
	Metric 3:	Study Controls	High	Controls were performed without algae.			
_	Metric 4:	Test Substance Stability	Meaium	to have hindered the interpretation of the results.			

Domain 3: Test Conditions

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HERO ID: 1323214 Table: 1 of 1

Study Citation:	Chi, J., Liu, H.,	Li B Huang G L (2006) Accumulation					
		En, D., Huang, G. E. (2000). Hoeumana	on and biodegradation of dib	outyl phthalate in Chlorella vulgaris. Bulletin of Environmental			
OFCD Harmonized	Contamination and Toxicology 77(1):21-29. Biodegradation in Water						
Template:	Diodegradation	i water					
HERO ID:	1323214						
			EVALUATION				
Domain		Metric	Rating	Comments			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	Medium	Not reported in detail, but not likely to have influenced the study results.			
	Metric 7:	Testing Consistency	High	This metric met the criteria for high confidence as expected for this type of study.			
	Metric 8:	System Type and Design	Medium	Details regarding this metric were omitted; however, this was not likely to have hindered the interpretation of the results.			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	N/A	The test species was reported but not routinely used for similar; species characteristics were not provided.			
	Metric 10:	Sampling Methods	Medium	The metric is not applicable to this study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.			
	Metric 12:	Test Substance Purity	Medium	Details regarding this metric were omitted; however, this was not likely to have hindered the interpretation of the results.			
Domain 6: Confounding	Wariahla Control						
Domain 0. Comountaing	Metric 13:	Confounding Variables	Uninformative	Distribution budralucia and valatilization could not be ruled out			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type			
	Meule 14.	Exposure	IN/A				
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	Medium	Details regarding this metric were omitted; however, this was not likely to have hindered the interpretation of the results.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Details regarding this metric were omitted; however, this was not likely to have hindered the interpretation of the results.			
Domain 8: Other	M + 1 17		TT' 1				
	Metric 17:	verification or Plausibility of Results	High	Study results were reasonable and compared to other studies.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Quali</b>	ty Determin	ation	Uninformative				

Study Citation:	Cripe, C. R., Walk the aquatic environ	Cripe, C. R., Walker, W. W., Pritchard, P. H., Bourquin, A. W. (1987). A shake-flask test for estimation of biodegradability of toxic organic substances in the aquatic environment. Ecotoxicology and Environmental Safety 14(3):239-251.				
Template:	biodegradation in					
HERO ID:	790146					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, EndPoint,	Туре,	None; other; Experimental; other: Chemical abatement test based on the river die-away test				
Solvent, Reactivity, Storag	e, Stability	Hexane; NR; NR; NR				
Radiolabel, Source, State, Purity		NA; NR; NR				
Blank and Control		Water only; sediment and water only; sterile water and sediment with 37% formaldehyde; Not reported				
Oxygen and Inoculum		aerobic; natural water / sediment: freshwater: Not applicable				
Duration, Parameter, System, and		6 days; test mat.: shake-flask system: 2L Erlenmeyer flask plugged with polyurethane foam plugs, shaken at 140 rpm; NR; at least 6 samples				
Sampling Frequency		collected				
pH Adjusted and pH		Not Reported; neid pH (NK) $\pm 0.2$				
Concentration		200 µg/L				
Composition and Test Tem	iperature	Soo mg/L sediment-water sturry; 25°C				
ness and Other Design	non, Continuous Dark-	Not reported; Not reported; yes; Not reported				
Results Details Method, R	esults per Degradation	electron capture gas-liquid chromatography; analyzed in duplicate; samples extracted via mechanical rotator (60 rpm); limits of detection not				
Parameter, and	1 0	reported; Test substance measurement; Not Reported				
Direct Quantum Yield Results						
Results Value, Results Standard Deviation, Re-		100%; Not reported; 2 days; 100% approx. 4 days;				
suits Sample Time, and Results Reference Sub-						
Results Remarks and Results Details		The test solution was respiked after initial disappearance, which resulted in rapid disappearance of the test substance. Water control showed a				
		similar lag phase to test system and rapid disappearance.; Half-life could not be calculated with study sample frequency.				
Results Mean Total Recove	ery and Results per Re-	Not reported; Not reported				
covery						

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substar	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity was not reported, however this was not likely to impact study results.	
Domain 2: Test Design					
	Metric 3:	Study Controls	High	Water only and sterilized sediment controls were included.	
Metric 4: Test Substance Stability High The test substance preparation was reported and appropriate for the study.					
Continued on next page					

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Study Citation:	Cripe, C. R., Wal			
	Cripe, C. R., Walker, W. W., Pritchard, P. H., Bourquin, A. W. (1987). A shake-flask test for estimation of biodegradability of toxic organic substances in the aquatic environment. Ecotoxicology and Environmental Safety 14(3):239-251.			
OECD Harmonized	Biodegradation ir	Biodegradation in Water		
Template:	500146			
HERO ID:	790146			
		F	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 3: Test Conditi	ons			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Conditions were monitored, reported, and appropriate for the study.
	Metric /:	Testing Consistency	High	Test conditions were consistent across study groups.
	Metric 8:	System Type and Design	N/A	Not applicable
Domain 4: Test Organis	sms			
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and is routinely used for similar study types.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
		1 0		
Domain 5: Outcome As	ssessment			
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed and reported the intended outcome of interest.
	Metric 12:	Test Substance Purity	Medium	Sampling intervals were such that half-life could not be calculated, but this did not have substantial impact on results.
Domain & Confoundin	Wariahla Control			
Domain 0. Comounding	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty were accounted for in data evaluation and were
		C	U	not likely to influence study results.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Drasan	tation and Analysis			
Domanii 7. Data FIESEll	Metric 15:	Data Reporting	Medium	The extraction efficiency and mass balance were not reported however this was not likely to influence study results.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were appropriate.
Domain 8: Other	Metric 17.	Verification or Plausibility of	High	The study results were reasonable
	metric 17.	Results	man	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quali</b>	ty Determin	ation	High	

Study Citation:	Desai, S., Govind,	Desai, S., Govind, R., Tabak, H. (1990). Determination of monod kinetics of toxic compounds by respirometry for structure biodegradability relationships.				
OECD Harmonized	ACS Symposium S Biodegradation in	ACS Symposium Series 422:142-156. Biodegradation in Water				
Template:						
HERO ID:	2816600					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, EndPoint, T	Гуре,	None; inherent biodegradability; Experimental; other: Biodegradation experteiments using an electrolytic respiromer				
Guideline Solvent, Reactivity, Storage	Stability	NR· NR· NR				
Radiolabel, Source, State, F	Purity	NR: Aldrich Chemical Company (Milwaukee, WI): NR: >99%				
Blank and Control		Not reported; Yes				
Oxygen and Inoculum		aerobic; activated sludge, domestic, non-adapted: mixed cultures obtained from a The Little Miami wastewater treatment plant in Cincinnati, Ohio				
		(predominantly domestic sewage)				
Sampling Frequency		20-40 days; 1 noD: Flasks; Not reported				
pH Adjusted and pH		Not Reported; Not reported				
Concentration		100 mg/L				
Composition and Test Temp	perature	OECD nutrient solution; 25°C				
CEC, Water Aeration Diluti	on, Continuous Dark-	Not reported; Not reported; Not Reported; Not reported				
ness, and Other Design Results Details Method Re	sults per Degradation	Not reported: Mineralization to carbon dioxide and water: Not Reported				
Parameter, and		The reported, Mineralization to carbon dioxide and water, Not reported				
Direct Quantum Yield Results						
Results Value, Results Standard Deviation, Re-		≥80% after 40 days; Not reported; Not reported; Valid; at least 60% within 28 days				
suits Sample Time, and Re	suits Reference Sub-					
Results Remarks and Result	ts Details	Not reported; Kinetic parameters include maximum specific growth rate $\mu$ m=6.95/day, half saturation constant Ks=51.38 mg/L and yield coefficient				
		Y=0.58; kinetic parameters were estimated directly from the experimental oxygen uptake curves. Estimated Monod parameter=12.0/day.				
Results Mean Total Recovery and Results per Re- covery		Not reported; Not reported				

EVALUATION				
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Controls were reported and valid.
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.

#### ... continued from previous page

Study Citation:	Desai, S., Govind, R., Tabak, H. (1990). Determination of monod kinetics of toxic compounds by respirometry for structure biodegradability relationships.
	ACS Symposium Series 422:142-156.
<b>OECD Harmonized</b>	Biodegradation in Water
Template:	
HERO ID:	2816600

			EVALUATIO.	IN
Domain		Metric	Rating	Comments
Domain 3: Test Condi	tions			
	Metric 5:	Test Method Suitability	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 6:	Testing Conditions	Low	There were omissions in testing conditions; however, sufficient data were reported to determine that the omissions were not likely to have had a substantial impact on the study results.
	Metric 7:	Testing Consistency	Medium	Limited details were reported in testing consistency; however, sufficient data were re- ported to determine that the omissions were not likely to have had a substantial impact on the study results.
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 4: Tast Organ	iama			
Domain 4. Test Organ	Metric 9:	Outcome Assessment Methodology	High	The inoculum sources were reported and is routinely used for similar study types and appropriate for the study method.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome A	Assessment			
	Metric 11:	Test Substance Identity	Medium	There were omissions in details; however, the omissions were not likely to have had a substantial impact on the study results.
	Metric 12:	Test Substance Purity	Medium	Details were omitted; however, the lack of data is not likely to hinder the interpretation of the results.
Domain 6: Confoundi	ng/Variable Control			
	Metric 13:	Confounding Variables	Medium	Sources of uncertainty were not reported but their omission likely did not impact the study results.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this review article.
Domain 7: Data Prasa	ntation and Analysis			
Domanii 7. Data Prese	Metric 15:	Data Reporting	Medium	Details were omitted; however, the lack of data is not likely to hinder the interpretation of the results.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	There were omissions in statistical methods and calculation details; however, sufficient data were reported to determine that the omissions were not likely to have a substantial impact on study results.
Domain 8: Other				
Domain 6. Ould	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.
		`		

		continued from previous page	
Study Citation:	Desai, S., Govind, R., Tabak, H. (1990). Deter ACS Symposium Series 422:142-156.	mination of monod kinetics of toxic comp	ounds by respirometry for structure biodegradability relationships.
<b>OECD Harmonized</b>	Biodegradation in Water		
Template:			
HERO ID:	2816600		
		EVALUATION	
Domain	Metric	Rating	Comments
<b>Overall Quali</b>	ty Determination	High	

Study Citation:	Fujita, M., Ike, M.	Fujita, M., Ike, M., Ishigaki, T., Sei, K., Jeong, J. S., Makihira, N., Lertsirisopon, R. (2005). Biodegradation of Three Phthalic Acid Esters by Microorgan-			
OECD Harmonized	isms from Aquatic Biodegradation in	Environment. Nihon Mizushori Seibutsu Gakkaishi 41(4):193-201. Water			
Template:					
HERO ID:	5490395				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Dibutyl phthalate			
Confidentiality, EndPoint, T	ype,	None; other; Experimental; other: Primary biodegradation in sludge, river water, and pond water			
Solvent, Reactivity, Storage	. Stability	Ethanol: NR: NR			
Radiolabel, Source, State, P	urity	NR; Kishida Reagent Co., Osaka; NR; Analytical grade			
Blank and Control		Blanks without the test substance were analyzed.; Controls were included.			
Oxygen and Inoculum		aerobic; other .: Tests run in activated sludge, river water, and pond water. Activated sludge was collected from domestic sewage treatment plants			
		and water samples were collected from two rivers and three ponds and were not acclimatized.			
Duration, Parameter, System, and		14 days (2 weeks); test mat.: Plugged flasks; Days 0, 1, 4, 7, 10, and 14			
Sampling Frequency		Not Reported: 7.2			
Concentration		> 10 - < 40  mg/L			
Composition and Test Temr	perature	artificial river water: K2HPO4: 21 8mo; KH2PO4: 8 5mo; Na2HPO4-12H20: 44 6mo; NH4Cl: 17mo; MoSO4-7H20: 22 5 mo; CaCl2: 27 5mo;			
composition and root romp	oradaro	FeCl3-6H20: 0.25mg; MnSO4-5H20: 0.71mg; ZnSO4-7H20: 0.01mg; CuSO4-5H20: 5mg; CoCl2 6H20: 5mg; 1L water.; 28°C			
CEC, Water Aeration Dilution	on, Continuous Dark-	Not reported; The flask was closed and not aerated after the start of the sampling period. The flasks were shaken (120 rpm) over 2 weeks.; yes;			
ness, and Other Design		Mixed liquor suspended solids for activated sludge: 100 mg/L; 25 mg/L for river and water samples.			
Results Details Method, Res	sults per Degradation	HPLC (UV-8010 spectrophotometric detector). Samples mixed with ethanol (0.5 mL). PAE's were detected at wavelength of 254 nm. Metabolites			
Direct Quantum Yield Resu	lts	crobes Pond Water Microbes: Not Reported			
Results Value, Results Standard Deviation, Re-		100%, 100%, 100%; Not reported; 2 weeks; No significant change was observed			
sults Sample Time, and Results Reference Sub-					
stance Compartments					
Results Remarks and Result	ts Details	All samples underwent primary biodegradation. Blank tests showed no significant dibutyl phthalate contamination and controls without inoculum showed no significant dogradation. Usef lives for minory dogradation was loss than 5 down (results shown in controls without inoculum			
		showed to significant degradation.; nan-nyes for primary degradation were less than 5 days (results shown in scatter piots). Activated studge samples degraded to below detection limits within 10 d. Similar capacity of PAE biodegradation rates were observed in river and pond water			
		samples degraded to below detection minus whim to d. Sminu equacity of 1742 biodegradation faces were observed in fiver and point water samples.			
Results Mean Total Recover covery	ry and Results per Re-	Not reported; Not reported			

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substance	Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.	
	Metric 2:	Test Substance Purity	High	The test substance purity was reported and appropriate.	
Domain 2: Test Design					
	Metric 3:	Study Controls	High	Appropriate blanks and controls were used.	
Continued on next page					

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HERO ID: 5490395 Table: 1 of 2

		continu	ed from prev	vious page	
Study Citation:	Fujita, M., Ike, M isms from Aquation	Fujita, M., Ike, M., Ishigaki, T., Sei, K., Jeong, J. S., Makihira, N., Lertsirisopon, R. (2005). Biodegradation of Three Phthalic Acid Esters by Microorgan- isms from Aquatic Environment. Nihon Mizushori Seibutsu Gakkaishi 41(4):193-201.			
OECD Harmonized	Biodegradation in Water				
Template:	5400205				
	5490595				
		F	EVALUATIO	N	
Domain	Matria 4	Metric Test Substance Stability	Rating	Comments	
	Metric 4:	Test Substance Stability	Figh	The test substance preparation and storage conditions were reported and appropriate.	
Domain 3. Test Condition	ons				
Domain 5. Test Condition	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.	
	Metric 7:	Testing Consistency	High	The test conditions were consistent across the study groups.	
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.	
Domain 4: Test Organis	ms				
	Metric 9:	Outcome Assessment Methodology	High	The inoculum types were described and were appropriate for the test.	
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.	
Domain 5: Outcome As	sassmant				
Domain 5. Outcome As	Metric 11.	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest	
	Metric 12:	Test Substance Purity	High	The sampling methods and frequency were reported and appropriate	
	100010 12.		ingn	The sampling methods and nequency were reported and appropriate.	
Domain 6: Confounding	g/Variable Control				
	Metric 13:	Confounding Variables	Medium	No confounding variables were noted. Uncertainty was not reported in the measure-	
				ments but the omission is unlikely to have a substantial impact on the study results.	
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.	
		Exposure			
Domain 7. Data Present	ation and Analysis				
Domain 7. Data Present	Metric 15:	Data Reporting	High	The data reporting was sufficient and evidence was provided to show the test substance disappearance was not due to another process.	
	Metric 16:	Statistical Methods and Kinetic Calculations	High	A first order kinetic model was used to describe the biodegradation rates.	
Domain 8: Other					
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable as compared to other reported values.	
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.	
<b>Overall Ouality Determination</b>			High		
	-		U		

Study Citation:	Fujita, M., Ike, M.,	Fujita, M., Ike, M., Ishigaki, T., Sei, K., Jeong, J. S., Makihira, N., Lertsirisopon, R. (2005). Biodegradation of Three Phthalic Acid Esters by Microorgan- icms from Aquatic Environment. Nihon Mizuchori Scibutsu Gakaishi 41(4):193-201			
OECD Harmonized	Biodegradation in Water				
HERO ID:	5490395				
		EXTRACTION			
Parameter		Data			
CASPN and Test Material		84 74 2. Dibutul akthalata			
Confidentiality, EndPoint, T	ſype,	None; inherent biodegradability; Experimental; other: Ultimate biodegradation in sludge, river water, and pond water			
Guideline Solvent, Reactivity, Storage	. Stability	Ethanol: NR: NR			
Radiolabel, Source, State, P	Purity	NR; Kishida Reagent Co., Osaka; NR; Analytical grade			
Blank and Control		Blanks without the test substance were analyzed.; Controls were included.			
Oxygen and Inoculum		aerobic; other:: Tests were done using microbes from activated sludge, river water, and pond water as inoculum. Activated sludge was collected from domestic sewage treatment plants and water samples were collected from two rivers and three ponds and were not acclimatized.			
Duration, Parameter, System, and		14 days (2 weeks); ThOD: Plugged flasks; Days 0, 1, 4, 7, 10, and 14			
pH Adjusted and pH		Not Reported; 7.2			
Concentration		$\geq 10 - \leq 40 \text{ mg/L}$			
Composition and Test Temp	perature	artificial river water: K2HPO4: 21.8mg; KH2PO4: 8.5mg; Na2HPO4 12H20: 44.6mg; NH4Cl: 17mg; MgSO4 78H20: 22.5 mg; CaCl2: 27.5mg; FeCl 6H20: 0.25mg; 1L water.; 28°C			
CEC, Water Aeration Dilutioness, and Other Design	on, Continuous Dark-	Not reported; The flask was closed and not aerated after the start of the sampling period. The flasks were mixed with magnetic mixers (900 rpm).; yes; Biochemical oxygen demand was measured. The DBP concentration was 40mg/L in activated sludge test and 10mg/L in the river and pond			
Results Details Method, Results per Degradation Parameter, and		water test. BOD analyzer (DDK, Tokyo) was used to determine ultimate biodegradation. HPLC (UV-8010 spectrophotometric detector). Samples mixed with ethanol (0.5 mL). PAE's were detected at wavelength of 254 nm. Metabolites were detected with LC-MS (QP8000a).; Ultimate Biodegradation as % of O2 consumption relative to ThBOD: Activated Sludge, Piver Water Microbes, Pond Water Microbes; Not Reported			
Birect Quantum Yield Results Results Value, Results Standard Deviation, Re- sults Sample Time, and Results Reference Sub- stance Compartments		Ranges estimated from figure: 50-70%, 40-60%, 20-50%; Not reported; 2 weeks; Results adjusted for the results of the control test.			
Results Remarks and Result	ts Details	Ultimate biodegradation was not achieved in any of the samples within the 14 day test period.; Ultimate biodegradation half-life (days) in activated sludge microhes: $10-15$ , river water microhes: $10-20$ ; and pond water microhes: $15-35$ (all estimated from figure)			
Results Mean Total Recovery and Results per Re- covery		Not reported; Not reported			

	EVALUATION						
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.			
	Metric 2:	Test Substance Purity	High	The test substance purity was reported and appropriate.			
Domain 2: Test Design							
	Metric 3:	Study Controls	High	Appropriate blanks and controls were used.			
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported and appropriate.			
Domain 3: Test Conditio	ons						

		continu	ued from pre	vious page				
Study Citation:	Fujita, M., Ike, M isms from Aquati	Fujita, M., Ike, M., Ishigaki, T., Sei, K., Jeong, J. S., Makihira, N., Lertsirisopon, R. (2005). Biodegradation of Three Phthalic Acid Esters by Microorgan- isms from Aquatic Environment. Nihon Mizushori Seibutsu Gakkaishi 41(4):193-201.						
OECD Harmonized	Biodegradation in	n Water						
Template:								
HERO ID:	5490395							
		I	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.				
	Metric 7:	Testing Consistency	High	The test conditions were consistent across the study groups.				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.				
Domain 4: Test Organis	sms							
0	Metric 9:	Outcome Assessment Methodology	High	The inoculum types were described and were appropriate for the test.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.				
		1 8		51				
Domain 5: Outcome As	ssessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.				
	Metric 12:	Test Substance Purity	N/A	The sampling methods and frequency were reported and appropriate.				
Domain 6: Confoundin	g/variable Control							
	Metric 13:	Confounding Variables	Medium	No confounding variables were noted. Uncertainty was not reported in the measure- ments but the omission is unlikely to have a substantial impact on the study results.				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.				
		Exposure						
Domain 7: Data Presen	tation and Analysis							
	Metric 15:	Data Reporting	N/A	The data reporting was sufficient and evidence was provided to show the test substance disappearance was not due to another process.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	A first order kinetic model was used to describe the biodegradation rates.				
		Rifette Calculations						
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable as compared to other reported values.				
		Results						
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.				
Overall Quali	ty Determin	ation	High					

Study Citation:	Hashizume, K., Na the phthalates by m	Hashizume, K., Nanya, J., Toda, C., Yasui, T., Nagano, H., Kojima, N. (2002). Phthalate esters detected in various water samples and biodegradation of the phthalates by microbes isolated from river water. Biological and Pharmaceutical Bulletin 25(2):209-214.				
OECD Harmonized	ed Biodegradation in Water					
Template: HERO ID:	679647					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		Not Reported; dibutyl phthalate				
Confidentiality, EndPoint, T	ype,	no; other; experimental; other: biodegradation in river water				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	urity	NR; Wako Pure Chemical Industries Co., Ltd. (Osaka, Japan); NR; 99.5%				
Blank and Control		blank; not reported				
Oxygen and Inoculum		not specified; natural water: Tempaku River water collected in November 1999				
Duration, Parameter, System	n, and	7 days; not specified: tested as previously reported with a minor modification of the Handai Method.; not reported				
Sampling Frequency		not reported, not reported				
Concentration		20 ng/mI				
Composition and Test Temp	verature	20 ug/nL nutrient broth medium : 25°C				
CEC Water Aeration Dilutio	on Continuous Dark-	not reported: not reported: Not Reported: details may be outlined in cited method.				
ness, and Other Design	on, commuous 2 um					
Results Details Method, Res	sults per Degradation	GC/FID; HPLC; % degradation; Not Reported				
Parameter, and	1.					
Direct Quantum Yield Results Results Value, Results Standard Deviation, Re-		98.8%: not reported: 7 days: not reported				
sults Sample Time, and Results Reference Sub-						
stance Compartments						
Results Remarks and Result	ts Details	Water samples from 2 sites (Otokiki and Chidori Bridge) gave the same results. Metabolites were detected in test from Otokiki Bridge water.; Not				
Doculto Moon Total Deserver	wand Deculta per De	Reported 07%: Not Perperted				
coverv	y and Kesuns per Re-	9170, INOI Reporteu				
5						

			EVALUATION		
Domain		Metric	Rating	Comments	
Domain 1: Test Substar	nce				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively by name.	
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.	
Domain 2: Test Design	Metric 3:	Study Controls	Low	Concurrent control group details were not included; however, this data may be available in the cited materials.	
Continued on next page					

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HERO ID: 679647 Table: 1 of 1

		continu	ed from previou	s page			
Study Citation:	Hashizume, K.,	Nanya, J., Toda, C., Yasui, T., Nagano, H., J. v microbes isolated from river water Biologi	Kojima, N. (2002	2). Phthalate esters detected in various water samples and biodegradation of eutical Bulletin 25(2):209-214			
<b>OECD Harmonized</b>	Biodegradation in Water						
Template: HERO ID:	679647						
		Е	VALUATION				
Domain		Metric	Rating	Comments			
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.			
Domain 3 <sup>.</sup> Test Conditio	ons						
Domain 5. Test Condition	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	Medium	There were reported deviations or omissions in testing conditions; however, sufficient data were reported to determine that the deviations and omissions were not likely to have a substantial impact on study results.			
	Metric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported, but these dis- crepancies were not likely to have a substantial impact on study results.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.			
Domain 1: Test Organis	me						
Domain 4. Test Organisi	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and is routinely used for similar study types and appropriate for the study method or route.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome Ass	Sessment	Test Substance Identity	Uiah	The outcome assessment methodology addressed or reported the interded outcome (a) of			
	Meule II.	Test Substance identity	Ingn	interest.			
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed.			
Domain 6: Confounding	Wariahla Control						
Domain 0. Comounding	Metric 13:	Confounding Variables	Medium	Sources of variability and uncertainty were not directly discussed.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Domain 7. Data Dracante	ation and Analysis	-					
Domain 7: Data Presenta	Metric 15:	s Data Reporting	Medium	The target chemical and transformation product(s) concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetic calculations were not clearly described.			
Domain & Other							
Domain 6: Other	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.			
		Continu	ied on next page				

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			continued from previous	page				
Study Citation:	Hashizume, K. the phthalates b	Hashizume, K., Nanya, J., Toda, C., Yasui, T., Nagano, H., Kojima, N. (2002). Phthalate esters detected in various water samples and biodegradation of the phthalates by microbes isolated from river water. Biological and Pharmaceutical Bulletin 25(2):209-214						
<b>OECD Harmonized</b>	Biodegradation	Biodegradation in Water						
Template:								
HERO ID:	679647							
			EVALUATION					
Domain		Metric	Rating	Comments				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Quali	ty Determi	nation	Medium					

Study Citation:	Hoffmann, J., Rez	Hoffmann, J., Reznicekova, I., Vanokova, S., Kupec, J. (1997). Manometric determination of biological degradability of substances poorly soluble in aqueous environments. International Biodetariantian & Biodetariantian 30(4):327,332				
OECD Harmonized	Biodegradation in Water					
HERO ID:	1333416					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material	_	84-74-2; Dibutyl phthalate				
Confidentiality, EndPoint, T Guideline	ype,	None; screening test; Experimental; other: The study investigates different dosage methods of DBP and their impact on its bioavailability in biodegradation tests.				
Solvent, Reactivity, Storage	, Stability	1,1,2-trichlorotrifluoroethane used as solvent in one test group.; NR; Stock solution: 1g DBP in 10mL solvent; NR				
Radiolabel, Source, State, P	urity	NR; NR; NR Notes: Emulsifiers used: Triton X100, tween 85, lauryl sulfate, sodium dodecyl benzoate				
Blank and Control		Not reported; Not reported				
Oxygen and Inoculum		aerobic; activated sludge, adapted: Activated sludge from a wastewater treatment plant in Zlin and filtered sludge water from the same plant were both used as including hyperbolic structure of solvery forming units are $m_{\rm c} = 1004, 1006$				
Duration Parameter System	n and	Methods W-US-10 and -30° ca. 120 hours: Method W: ca. 260 hours: Method W-EM-US and EM-US: NR : COD: 50mL liquid phase. 100mL				
Sampling Frequency		gaseous phase in a flask.; Only reported graphically; gap between samples varied, ranging approximately from 3-10 hours.				
pH Adjusted and pH		Not Reported; 7.2				
Concentration		ca. 100 mg/L				
Composition and Test Temp	berature	Not Reported; 25°C				
CEC, Water Aeration Dilution ness, and Other Design	on, Continuous Dark-	Synthetic mineral medium prepared according to CEC L-33-T-82; Not reported; Not Reported; DBP dispersion methods: W: DBP added via pipette to stir bars and covered with 25mL medium; W-US(10 and 30): W method with 10 or 30 min sonification (US); W-EM-US: emulsifier added between DPP and 10min US; EM US: DPP added in form of stored amultion + US				
Results Details Method, Res	sults per Degradation	Biochemical oxygen demand using Biochemical analyzer BIAL BOD 10 (DAK Slusovice, Czech Republic); BOD/ThOD; Not Reported				
Parameter, and	-					
Direct Quantum Yield Resu	lts					
Results Value, Results Standard Deviation, Re-		W: 40./; W-US(10): 50.3; W-US(30): 51.5; W-EM-US: 51.5; EM-US: 49.0; W: 8.2; W-US(10): 4.8; W-US(30): 3.3; W-EM-US: 7.3; EM-US: 15.1: Not reported: Sodium herzoate BOD/ThOD was <0.60				
stance Compartments		15.1, Not reported, Soundin benzoate BOD/ 110D was <0.00.				
Results Remarks and Result	ts Details	Sonification decreased the lag time and increased the rate of biodegradation when compared to simple addition of the substrate to the flask. Tests using emulsifiers provided no increase in the biodegradation limit or kinetics and were less reproducible.; First-order rate constant (h^-1): W method: 0.013-0.029. W-US(10): 0.066-0.072; W-US(30): 0.050-0.079				
Results Mean Total Recover covery	y and Results per Re-	Not reported; Not reported				

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substa	nce					
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.		
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported but the omission is unlikely to have a substan- tial impact on the study results.		
Domain 2: Test Design	l					

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HERO ID: 1333416 Table: 1 of 1

		continu	ued from pre	vious page			
Study Citation:	Hoffmann, J., Reznicekova, I., Vanokova, S., Kupec, J. (1997). Manometric determination of biological degradability of substances poorly soluble in aqueous environments. International Biodeterioration & Biodegradation 39(4):327-332						
OECD Harmonized	Biodegradation in Water						
Template:	1333416						
HERO ID:							
		I	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 3:	Study Controls	High	A blank group was reported and included in the results.			
	Metric 4:	Test Substance Stability	High	The test substance preparation and homogeneity were reported.			
Domain 3: Test Condition	ons Matria 5	Track Mathe & Craiter Lilitar	TT: -1-				
	Metric 5:	lest Method Suitability	High	The test method intentionally tested the target chemical at concentrations above its water solubility to compare dosing methods			
	Metric 6.	Testing Conditions	High	The test conditions were reported and appropriate			
	Metric 7:	Testing Consistency	High	Testing conditions were consistent within the study groups			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.			
			1.011				
Domain 4: Test Organis	ms						
c	Metric 9:	Outcome Assessment Methodology	Low	The inoculum source was reported and appropriate for the study type, although there			
				were some details regarding the use of the inoculum in the samples that were not in-			
				cluded and may impact the study results.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.			
Domain 5: Outcome As	sassmant						
Domain 5. Outcome As	Metric 11.	Test Substance Identity	High	The outcome assessment methodology addressed the outcome of interest			
	Metric 12:	Test Substance Purity	Medium	Some of the sampling details are not clearly reported but the omissions are unlikely to			
	Wette 12.	Test Substance Funty	Wiedium	have a substantial impact on the study results.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	High	Uncertainty in the data was reported and the variability is not likely to impact the study			
	Metric 14.	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type			
		Exposure	1.011	The means is not appread to the study spect			
		•					
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	High	There were some limitations in the data reporting, such as direct target chemical and			
				transformation product concentrations, but none of the omissions had a substantial im-			
	Matria 16		TT: 1	pact on the study results.			
	Metric 16:	Statistical Methods and	High	The statistical methods were appropriate.			
		KINETIC CAICULATIONS					
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	The test results are plausible based on the reference substance results.			
	N	Results	3.7/ 4				
	Metric 18.	USAR Models	N/A	The metric is not applicable to the study type.			

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		continued from previous page	
Study Citation:	Hoffmann, J., Reznicekova, I., Vanokova, S., aqueous environments. International Biodeter	, Kupec, J. (1997). Manometric determinioration & Biodegradation 39(4):327-332	nation of biological degradability of substances poorly soluble in
<b>OECD Harmonized</b>	Biodegradation in Water	e v	
Template:			
HERO ID:	1333416		
		EVALUATION	
Domain	Metric	Rating	Comments
<b>Overall Quali</b>	ty Determination	High	

Study Citation: OECD Harmonized	Jianlong, W. (2004). Effect of di-n-butyl phthalate (DBP) on activated sludge. Process Biochemistry 39(12):1831-1836. Biodegradation in Water					
Template:						
HERO ID:	5631489					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		Not Reported; Di-n-butyl phthalate				
Confidentiality, EndPoint, T	ype,	none; other; experimental; other: non-guideline: effect of DBP on activated sludge				
Guideline Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	urity	NR: Beijing Chemical Plant: NR: commercial grade Notes: NR				
Blank and Control		not reported; See results				
Oxygen and Inoculum		aerobic; activated sludge, non-adapted: Sludge from Gaobeidian sewage treatment plant was used; acclimation via fill-and-draw operation for 150				
		days using DBP concentrations of 25-300 mg/L was also evaluated.				
Someling Frequency	n, and	100 nours; 02 consumption; COD removal: 2.0L reactor; periodically				
pH Adjusted and pH		Phosphate salts were added as a buffer: not reported				
Concentration		NA NA - = $100 \text{ mg/L}$				
Composition and Test Temr	berature	Basic mineral medium with 0.025-0.5 g/L DBP; synthetic wastewater; 25°C				
CEC, Water Aeration Dilution	on, Continuous Dark-	not reported; not reported; not reported; not reported				
ness, and Other Design						
Results Details Method, Res	sults per Degradation	GC-FID; loss of test material (DBP concentration); not applicable				
Parameter, and	160					
Results Value, Results Stat	ndard Deviation, Re-	<1% (unacclimated: concentration remained almost unchanged); 78-80% (acclimated); not reported: 100 hours; not reported				
sults Sample Time, and Re	sults Reference Sub-					
stance Compartments						
Results Remarks and Result	ts Details	COD removal efficiency in unacclimated sludge ranged from ca. 90% to 20% with concentrations of DBP increasing from 0 to 200 mg/L; COD removal efficiency was more consistent in acclimated sludge ranged from at ca. 78% to 80% with concentrations of DBP increasing from 0 to 500 mg/L. Oxygen uptake rates of unacclimated with DBP concentrations of 0, 25, and 100 mg/L were ca. 0.22, 0.16, and 0 mg O2/g MLSS h, respectively, and acclimated activated sludge with DBP concentrations of 0, 25, 50, 100, 150, and 200 mg/L were ca. 0.12, 0.14, 0.13, 0.15, 0.16, and 0.17 mg O2/g MLSS h, respectively. DBP may be degraded by activated sludge after acclimation.; Unacclimated sludge maximum specific growth rate (hours-1) at 0, 25, 50, 100, 150 mg/L DBP = 0.38, 0.32, 0.27, 0.14, and 0 respectively (based on figure); acclimated sludge maximum specific growth rate (hours-1) at 0, 25, 50, 100, 150, and 200 mg/L DBP = 0.19, 0.2, 0.23, 0.24, 0.21, and 0.20 (based on figure)				
Results Mean Total Recover covery	y and Results per Re-	not reported; not reported				

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substance	e					
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.		
	Metric 2:	Test Substance Purity	High	The source and purity grade of the test substance were reported.		

Domain 2: Test Design

continued from previous page									
Study Citation: OECD Harmonized	Jianlong, W. (2004). Effect of di-n-butyl phthalate (DBP) on activated sludge. Process Biochemistry 39(12):1831-1836. Biodegradation in Water								
HERO ID:	5631489								
EVALUATION									
Domain		Metric	Rating	Comments					
	Metric 3:	Study Controls	Medium	Concurrent control groups were not included; however, the lack of data was not likely to have a substantial impact on study results.					
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.					
Domain 3: Test Conditi	ons								
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance					
	Metric 6:	Testing Conditions	Medium	There were omissions in testing conditions; however, the omissions were not likely to have a substantial impact on study results.					
	Metric 7:	Testing Consistency	High	Reported test conditions were consistent.					
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.					
Domain 4. Test Organis	ms								
Domain in Test organis	Metric 9:	Outcome Assessment Methodology	High	Inoculum source was reported.					
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.					
Domain 5: Outcome As	sessment Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of					
				interest.					
	Metric 12:	Test Substance Purity	Medium	Details regarding sampling methods were not fully reported; however, the omissions were not likely to have a substantial impact on study results.					
Domain 6: Confounding	v/Variable Control								
Domain of Comoundary	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups (if applicable) were considered and accounted for in data evaluation, and all reported variability or uncertainty was not likely to influence the outcome assessment					
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.					
Domain 7: Data Present	tation and Analysis								
	Metric 15:	Data Reporting	Medium	The target chemical and transformation product(s) concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results					
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Kinetic calculations were described.					
Domain 8: Other									
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.					
Continued on next page									

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continued from previous page									
Study Citation: OECD Harmonized	Jianlong, W. (2004). Effect of di-n-butyl phthalate (DBP) on activated sludge. Process Biochemistry 39(12):1831-1836. Biodegradation in Water								
Template:									
HERO ID:	5631489								
EVALUATION									
Domain		Metric	Rating	Comments					
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.					
<b>Overall Quality Determination</b>			High						
Study Citation: OECD Harmonized	Jianlong, W., Ping, L., Yi, Q. (1995). Microbial degradation of di-n butyl phthalate. Chemosphere 31(9):4051-4056. Biodegradation in Water								
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Template: HERO ID:	1332880								
		EXTRACTION							
Parameter		Data							
CASRN and Test Material		Not Reported; dibutyl phthalate							
Confidentiality, EndPoint, T	ype,	no; other; experimental; other: pure culture biodegradation							
Guideline Solvent, Reactivity, Storage,	Stability	NR; NR; NR							
Radiolabel, Source, State, Pu	urity	No; NR; NR Notes: DBP							
Blank and Control		uninoculated control included.; not applicable							
Oxygen and Inoculum		aerobic; other:: five strains (labeled A-E) of DBP-degrading microorganisms were isolated from coke-plant wastewater treatment plant sludge.							
Duration, Parameter, System	n, and	240 hours (from figure); test material: shaking flask containing inoculated strain and sterile medium.; not reported							
pH Adjusted and pH		Not Reported: not reported							
Concentration		100 mg/L							
Composition and Test Temp	erature	KH2PO4; KNO3; MgSO4.7H2O; CaCl2; FeCl3; NaCl; 25°C							
CEC, Water Aeration Dilutio	on, Continuous Dark-	not reported; not reported; Not Reported; cell density of inoculum for strain A-D was controlled to be equal.							
ness, and Other Design									
Results Details Method, Res	sults per Degradation	GC/FID; % degradation; Not Reported							
Parameter, and Direct Quantum Vield Resul	Ite								
Results Value, Results Standard Deviation, Re-		100%; not reported; <240 hours; not reported							
sults Sample Time, and Results Reference Sub-									
stance Compartments	<b>D</b> . 11								
Results Remarks and Result	s Details	100% degradation at hour: A 40; B 120; C 118; D 160; E 220.; Not Reported							
covery	y and Results per Re-	noi reportea; ivoi keportea							

	EVALUATION						
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity were not reported; however, the omissions or iden- tified impurities were not likely to have a substantial impact on the study results.			
Domain 2: Test Design							
	Metric 3:	Study Controls	High	Concurrent controls were included.			
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.			

		contin	ued from pre	vious page				
Study Citation: OECD Harmonized	Jianlong, W., Ping Biodegradation in	Jianlong, W., Ping, L., Yi, Q. (1995). Microbial degradation of di-n butyl phthalate. Chemosphere 31(9):4051-4056. Biodegradation in Water						
Template: HERO ID:	1332880							
			EVALUATIO	 N				
Domain		Metric	Rating	Comments				
Domain 3: Test Condition	ons							
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	Medium	There were omissions in testing conditions; however, sufficient data were reported to de- termine that the omissions were not likely to have a substantial impact on study results.				
	Metric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported, but these dis- crepancies were not likely to have a substantial impact on study results.				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.				
Domain 4: Test Organis	sms							
C C	Metric 9:	Outcome Assessment Methodology	Low	A pure culture inoculum was used for a biodegradation rate study.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.				
Domain 5: Outcome As	sessment		TT: 1					
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	Medium	This metric met the criteria for medium confidence as expected for this type of study.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.				
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	Medium	The target chemical and transformation product(s) concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.				
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetic calculations were not clearly described.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.				
<b>Overall Quality Determination</b>			Low					

Study Citation: OECD Harmonized	Jianlong, W., Ping, L., Yi, Q. (1995). Microbial degradation of di-n butyl phthalate. Chemosphere 31(9):4051-4056. Biodegradation in Water				
HERO ID:	1332880				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		Not Reported; dibutyl phthalate			
Confidentiality, EndPoint, Ty	ype,	no; other; experimental; other: pure culture biodegradation			
Guideline Solvent Reactivity Storage	Stability				
Radiolabel Source State Pu	rity	NG, NR, NR, NR Notes: DBP			
Blank and Control	inty	uninoculated control included : not applicable			
Oxygen and Inoculum		aerobic: other:: one strain of DBP-degrading microorganisms was isolated from coke-plant wastewater treatment plant sludge.			
Duration, Parameter, System	, and	240 hours (from figure); test material: shaking flask containing inoculated strain and sterile medium.; not reported			
Sampling Frequency	, ,				
pH Adjusted and pH		Not Reported; not reported			
Concentration		100 - 400 mg/L			
Composition and Test Tempe	erature	KH2PO4; KNO3; MgSO4.7H2O; CaCl2; FeCl3; NaCl; 25°C			
CEC, Water Aeration Dilutio	n, Continuous Dark-	not reported; not reported; Not Reported; Not Reported			
Results Details Method Res	ults per Degradation	GC/FID: % degradation: Not Reported			
Parameter, and	uns per Degradation	Serie, % defindution, not reported			
Direct Quantum Yield Results					
Results Value, Results Standard Deviation, Re-		100%; not reported; <140 hours (from figure); not reported			
sults Sample Time, and Results Reference Sub-					
Results Remarks and Results	s Details	100% degradation: 40 hours for 100 mg/L: 48 hours for 200 mg/L: 68 hours for 300 mg/L: 100 hours for 400 mg/L. A lag time of $\sim$ 40 hours was			
results remarks and result.		found at a DBP concentration of 400 mg/L; Not Reported			
Results Mean Total Recovery	and Results per Re-	not reported; Not Reported			
covery					

	EVALUATION						
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ice						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity were not reported; however, the omissions or iden- tified impurities were not likely to have a substantial impact on the study results.			
Domain 2: Test Design	Metric 3:	Study Controls	High	Concurrent controls were included.			
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.			
Domain 3: Test Conditi	ons						

		contin	ued from pre	vious page				
Study Citation: OECD Harmonized	Jianlong, W., Ping Biodegradation in	Jianlong, W., Ping, L., Yi, Q. (1995). Microbial degradation of di-n butyl phthalate. Chemosphere 31(9):4051-4056. Biodegradation in Water						
HERO ID:	1332880							
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	Medium	There were omissions in testing conditions; however, sufficient data were reported to de- termine that the omissions were not likely to have a substantial impact on study results.				
	Metric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported, but these dis- crepancies were not likely to have a substantial impact on study results.				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.				
Domain 4: Test Organis	1772.6							
Domain 4. Test Organis	Metric 9.	Outcome Assessment Methodology	Low	A pure culture inoculum was used for a biodegradation rate study				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.				
Domain 5: Outcome As	sessment		<b>TT</b> , 1					
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed.				
Domain 6: Confounding	v/Variable Control							
Domain 0. Comounding	Metric 13:	Confounding Variables	Medium	This metric met the criteria for medium confidence as expected for this type of study				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.				
Domain 7: Data Present	tation and Analysis							
Domain 7. Data Fresch	Metric 15:	Data Reporting	Medium	The target chemical and transformation product(s) concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.				
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetic calculations were not clearly described.				
Domain 8: Other								
Domain 0. Outer	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.				
<b>Overall Quality Determination</b>			Low					

Study Citation: OECD Harmonized Template:	Jianlong, W., Ping, L., Yi, Q. (1997). Biodegradation of phthalic acid esters by immobilized microbial cells. Environment International 23(6):775-782. Biodegradation in Water					
HERO ID:	791101					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		Not Reported; DBP				
Confidentiality, EndPoint, T	Гуре,	none; other: enrichment culture; experimental; other: non-guideline				
Guideline Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	Purity	NR; NR; Not Reported; Not Reported				
Blank and Control		not reported; not reported				
Oxygen and Inoculum		aerobic; other:: Two systems: (1) 1.0 mL of free cell inoculum and (2) 5 g of immobilized cells; cells: enriched and acclimated culture isolated				
		from a coke-plant wastewater treatment plant sludge (Pseudomonas sp.).				
Duration, Parameter, System	n, and	up to 120 hours; test mat.: Erlenmeyer flasks; not reported				
pH Adjusted and pH		effects of pH evaluated for immobilized cells: 6.0, 7.0 (free cells), and 8.0				
Concentration		100 - 500  mg/L				
Composition and Test Temp	perature	50 mL basic medium (sterilized); 20, 25 (free cells), and 30°C (effects of temp evaluated for immobilized cells)				
CEC, Water Aeration Diluti	on, Continuous Dark-	not reported; not reported; not reported; not reported				
ness, and Other Design						
Results Details Method, Re	sults per Degradation	GM-MS with FID; biomass and liquid phase separated via centrifugation; supernatant extracted with dichloromethane for test material analysis;				
Parameter, and	1.	% degradation; not reported				
Direct Quantum Yield Resu Results Value Results Stat	Ilts ndard Deviation Re-	100%; not reported; 40 hours; not reported				
sults Sample Time, and Re	sults Reference Sub-					
stance Compartments						
Results Remarks and Result	ts Details	DBP was degraded faster by immobilized cells. Free cells: complete mineralization of 100, 200, 300, and 400 mg/L DBP was observed after ca. 40, 45, 65, and 100 hours, respectively. Immobilized cells: complete mineralization of 100, 200, 300, 400 and 500 mg/L DBP was observed after ca. 24, 30, 41, 80 and 105 hours, respectively. Effect of pH (immobilized cells): complete mineralization of test material was observed after 32, 24, and 25 hours at pH 6.0, 7.0, and 8.0, respectively. Effect of temperature (immobilized cells): complete mineralization of test material was observed after 34, 24, and 26 hours at 20, 25, and 30°C, respectively. Proposed transformation products: monobutyl phthalate, phthalic acid, protocatechuic acid.: not specified				
Results Mean Total Recover covery	ry and Results per Re-	not reported; not reported				

EVALUATION							
Domain		Metric	Rating	Comments			
Domain 1: Test Substance							
	Metric 1:	Test Substance Identity	High	The test substance was identified.			
	Metric 2:	Test Substance Purity	Medium	The source and purity of the test substance were not reported; mass spec of isolated DBP included.			

Domain 2: Test Design

continued from previous page								
Study Citation: OECD Harmonized	Jianlong, W., Ping Biodegradation in	Jianlong, W., Ping, L., Yi, Q. (1997). Biodegradation of phthalic acid esters by immobilized microbial cells. Environment International 23(6):775-782. Biodegradation in Water						
HERO ID:	791101							
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 3:	Study Controls	Low	Controls were not included.				
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.				
Domain 3: Test Condition	ons							
	Metric 5:	Test Method Suitability	Low	Applied target chemical concentrations were greater than the aqueous solubility.				
	Metric 6:	Testing Conditions	High	Testing conditions were reported.				
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.				
	Metric 8:	System Type and Design	High	The system type and design were appropriate for the study.				
Domain 4: Test Organis	ms							
	Metric 9:	Outcome Assessment Methodology	Low	Enriched and acclimated inoculum.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.				
	Metric 12:	Test Substance Purity	Medium	Sampling frequency was intermittent and not specified.				
Domain 6: Confounding	v/Variable Control							
	Metric 13:	Confounding Variables	Medium	Sources of variability and uncertainty in the measurements were not considered.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study.				
Domain 7: Data Present	ation and Analysis							
	Metric 15:	Data Reporting	Low	Analytical detail was omitted.				
	Metric 16:	Statistical Methods and	N/A	The metric is not applicable to the study.				
		Kinetic Calculations						
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	Low	No controls were reported.				
	Metric 18:	Results QSAR Models	N/A	A QSAR model was not reported.				
Overall Quality Determination			Low					

Study Citation: OECD Harmonized	Jonsson, S., Ejlertsson, J., Svensson, B. H. (2003). Transformation of phthalates in young landfill cells. Waste Management 23(7):641-651. Biodegradation in Water						
HERO ID:	789568						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		not reported; Dibutyl phthalate					
Confidentiality, EndPoint, T	ype,	none; other; experimental: field study; other: Non-guideline: degradation in a landfill simulation					
Guideline Solvent, Reactivity, Storage	, Stability	NR; NR; NR					
Radiolabel, Source, State, P	urity	NR; Merck Eurolab (Stockholm, Sweden); Present in solid waste material; NR Notes: Initial composition of solid waste in cells unknown.					
Blank and Control		not reported; not reported					
Oxygen and Inoculum		cell 1995: methanogenic, cell 1996: cell had passed both early and intense acidogenic phase and was entering early methanogenic phase, cell					
Duration, Parameter, System, and Sampling Frequency		not specified; test material: Landfill cells were constructed over a period of 8 to 10 weeks in July and August of 1995, 1996, and 1997, and loaded with 9, 11, and 12 thousand metric tons of waste.; 12 leachate samples were collected on 5 occasions; four from cell 1997, five from cell 1996 and					
nH Adjusted and nH		three from cell 1995; well samples 95/96 collected from where leachate discharged no: cell 1995 - acidic to neutral: cell 1996 nearly neutral: cell 1997 acidic $nH'$ well 95/96 $nH > 7$					
Concentration		Not Reported					
Composition and Test Temp	perature	Cell 1995 was saturated with water; to cell 1996 ca. 4000 m3 water added; water was not added to cell 1997.; ambient					
CEC, Water Aeration Dilutio	on, Continuous Dark-	not reported; not reported; darkness assumed; Solid waste in cells covered with 1 meter of clay					
ness, and Other Design	,						
Results Details Method, Res	sults per Degradation	Solid-phase extraction followed by GC-MS; LOQ ca. 1 µg/L; not reported; not reported					
Parameter, and	140						
Results Value. Results Star	ndard Deviation. Re-	not reported: std dev 20%: not reported: not reported					
sults Sample Time, and Results Reference Sub-							
stance Compartments							
Results Remarks and Result	ts Details	Cell 1995: DBP concentration decreased from 5 $\mu$ g/L to $\leq$ LOQ; monoester monobutyl phthalate decreased from 29 $\mu$ g/L to $\leq$ LOQ; phthalic acid concentration decreased from 18 $\mu$ g/L to 1 $\mu$ g/L. Cell 1996: DBP concentration fluctuated from 2 $\mu$ g/L to 29 $\mu$ g/L; monoester monobutyl phthalate increased from 40 to 180 $\mu$ g/L; phthalic acid concentration fluctuated from 5 mg/L to 50 $\mu$ g/L. Cell 1997: DBP concentration was consistently detected around 2 $\mu$ g/L; monoesters and phthalic acid concentrations were below the LOQ during the initial sampling campaign; however, all were present after 5 months.; not reported					
Results Mean Total Recover covery	y and Results per Re-	not reported; not reported					

		EVALUATION	
Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified.
Metric 2:	Test Substance Purity	Low	The source of the test substance was a solid waste material with unknown composition; test material source is not routinely used.

Domain 2: Test Design

		continu	ued from previous	page			
Study Citation:	Jonsson, S., Ejlertsson, J., Svensson, B. H. (2003). Transformation of phthalates in young landfill cells. Waste Management 23(7):641-651.						
OECD Harmonized	Biodegradation in	Water					
Template:							
HERO ID:	789568						
		I	EVALUATION				
Domain		Metric	Rating	Comments			
	Metric 3:	Study Controls	N/A	Landfill simulation study; no control groups reported.			
	Metric 4:	Test Substance Stability	N/A	Not applicable to this study type.			
Domain 2: Tast Conditi	<b>on</b> (						
Domain 5. Test Condition	Metric 5:	Test Method Suitability	High	Initial target shamical concentrations were reported			
	Metric 5:	Testing Conditions	Low	Limited detail recording conditions			
	Metric 7:	Testing Consistency	Medium	Tast conditions scross study groups were not reported			
	Metric 8:	System Type and Design	High	The system type and design were accepteble for this study			
	Wieute 8.	System Type and Design	Ingn	The system type and design were acceptable for this study.			
Domain 4: Test Organis	ms						
-	Metric 9:	Outcome Assessment Methodology	Low	Inoculum source is not routinely used.			
	Metric 10:	Sampling Methods	N/A	Not applicable to this study.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	Medium	There were minor differences between the assessment methodology and the intended outcome assessment.			
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest.			
Domain 6: Confounding	Wariable Control						
Domain 0. Comountum	Metric 13:	Confounding Variables	Medium	Sources of variability and uncertainty in the massurements were considered			
	Metric 14:	Health Outcomes Unrelated to	N/A	Not applicable to this study.			
	Meure 14.	Exposure	IN/A	Not applicable to this study.			
		Exposure					
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	High	Data reporting was acceptable.			
	Metric 16:	Statistical Methods and	N/A	Not applicable to this study.			
		Kinetic Calculations					
Domain 8: Other							
Domain 0. Outer	Metric 17.	Verification or Plausibility of	Low	Due to limited information on test material source, evaluation of the reasonableness of			
	methe 17.	Results	LOW	the study results was not possible. In addition, other phthalates were present			
	Metric 18:	QSAR Models	N/A	Not applicable to this study.			
		~		μ. V			
<b>Overall Ouali</b>	tv Determin	ation	Medium				
	J						

Study Citation:	Kondo, M., Nishihara, T., Shimamoto, T., Koshikawa, T., Itio, T., Sawamura, R., Tanaka, K. (1988). [Biodegradation test of chemicals by cultivation					
OECD Harmonized	Biodegradation in Water					
Template:	-					
HERO ID:	1333626					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		not reported; Not Reported				
Confidentiality, EndPoint, T	Гуре,	No; screening test; experimental; other: cultivation method in river and seawater				
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR				
Radiolabel, Source, State, I	Purity	NR; NR; NR Notes: NR				
Blank and Control	-	NR; NR				
Oxygen and Inoculum		not specified (likely aerobic); natural water: River water from Mino River; sea water from Akashi Beach				
Duration, Parameter, Syster	m, and	3 days; Not Reported: Not Reported; Not Reported				
Sampling Frequency						
pH Adjusted and pH		Not Reported; Not Reported				
Concentration		2 - ppm				
Composition and Test Tem	perature	Not Reported				
CEC, Water Aeration Diluti	on, Continuous Dark-	Not Reported; Not Reported; Not Reported; Not Reported				
Results Details Method, Re	sults per Degradation	Not Reported; not specified; Not Reported				
Parameter, and	1 0					
Direct Quantum Yield Results						
Results Value, Results Standard Deviation, Re-		75% (river water) 80% (sea water); not reported; 3 days; not specified; however, 170 chemicals evaluated including aniline				
stance Compartments	esuits Reference Sub-					
Results Remarks and Resul	ts Details	judgement of degradability: easy; Not Reported				
Results Mean Total Recover	ry and Results per Re-	Not Reported; Not Reported				
covery		• •				

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ice			
	Metric 1:	Test Substance Identity	High	The test substance was identified.
	Metric 2:	Test Substance Purity	Medium	Unclear due to foreign language.
Domain 2. Test Design				
Domain 2. Test Design	Metric 3.	Study Controls	Medium	Unclear due to foreign language
	Metric 4:	Test Substance Stability	Medium	Unclear due to foreign language.
Domain 3: Test Conditi	ons			

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Study Citation:	Kondo, M., Nish methods]. Eisei K	Kondo, M., Nishihara, T., Shimamoto, T., Koshikawa, T., Itio, T., Sawamura, R., Tanaka, K. (1988). [Biodegradation test of chemicals by cultivation methods]. Eisei Kagaku / Journal of Hygienic Chemistry 34(2):188-195.						
<b>OECD Harmonized</b>	Biodegradation in	Biodegradation in Water						
Template:								
HERO ID:	1333626							
		F	VALUATION					
Domain		Metric	Rating	Comments				
	Metric 5:	Test Method Suitability	High	Target chemical concentration appropriate.				
	Metric 6:	Testing Conditions	Medium	Unclear due to foreign language.				
	Metric 7:	Testing Consistency	Medium	Unclear due to foreign language.				
	Metric 8:	System Type and Design	Medium	Unclear due to foreign language.				
Domain 4. Test Organis	ms							
Domain 1. Test organis	Metric 9:	Outcome Assessment Methodology	Medium	Unclear due to foreign language				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study.				
Domain 5: Outcome As	sessment Metric 11: Metric 12:	Test Substance Identity Test Substance Purity	Medium Medium	Unclear due to foreign language. Unclear due to foreign language.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	Medium	Unclear due to foreign language.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study.				
Domain 7: Data Present	ation and Analysis							
	Metric 15:	Data Reporting	Medium	Unclear due to foreign language.				
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Unclear due to foreign language.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study.				
Overall Quali	ty Determin	ation	Medium					

Study Citation: OECD Harmonized	Kotowska, U., Karpinska, J., Kapelewska, J., Kowejsza, E. M., Piotrowska-Niczyporuk, A., Piekutin, J., Kotowski, A. (2018). Removal of phthalates and other contaminants from municipal wastewater during cultivation of Wolffia arrhiza. Process Safety and Environmental Protection 120:268. Biodegradation in Water				
Template: HERO ID:	5508730				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-69-5: dibutyl phthalate			
Confidentiality, EndPoint, 7 Guideline	Туре,	None; other; experimental; other: removal via cultivation of plants			
Solvent, Reactivity, Storage	e, Stability	methanol; NR; -20°C for not longer than two weeks; NR			
Radiolabel, Source, State, I	Purity	None; Sigma-Aldrich, Germany; NR; NR Notes: DnBP			
Blank and Control		not reported; not reported			
Oxygen and Inoculum		aerobic; other:: Wolffia arrhiza obtained from Toxicology Division of Biological-Chemical Department of University of Bialystok, Poland.			
Duration, Parameter, Syster	m, and	14 days; test mat: Not Reported; 7 and 14 days			
Sampling Frequency					
pH Adjusted and pH		Not Reported; 7.0			
Concentration		49.02 - 53.18 ug/L			
Composition and Test Tem	perature	Wastewater: collected from the local WWTP in Lomza, Poland; 25±0.5°C			
CEC, Water Aeration Diluti	ion, Continuous Dark-	not reported; not reported; no; day/night cycle 16/8 hours			
ness, and Other Design Results Details Method Re	sults par Degradation	GC/MS: linearity range 0.1 100 uc/L + B2 0.000; limit of detection 0.02 uc/L + BSD 8 1%; % removal; Not Benerted			
Parameter, and	esuns per Degradation	OC/MS, finearity range 0.1–100 ug/L, K2 0.999, finite of detection 0.02 ug/L, KSD 8.1%, % femoval, Not Reported			
Direct Ouantum Yield Resu	ults				
Results Value, Results Standard Deviation, Re-		87.2%; not reported; 7 days; not reported			
sults Sample Time, and Results Reference Sub-					
stance Compartments					
Results Remarks and Resul	Its Details	conventional WWIP reduction was 75.4%; removal of nutrients $(75-78\%)$ and reduction of oxygen demand $(93-97\%)$			
Results Mean Total Recove covery	ry and Results per Re-	not reported; not reported			

			EVALUATIO	Ň
Domain		Metric	Rating	Comments
Domain 1: Test Substand	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.
	Metric 2:	Test Substance Purity	High	The source or purity of the test substance was reported or the test substance identity and purity were verified by analytical means.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Some concurrent control group details were not included; however, the lack of data was not likely to have a substantial impact on study results.
	Metric 4:	Test Substance Stability	High	The test substance preparation, and storage conditions were reported.

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HERO ID: 5508730 Table: 1 of 1

#### ... continued from previous page Kotowska, U., Karpinska, J., Kapelewska, J., Kowejsza, E. M., Piotrowska-Niczyporuk, A., Piekutin, J., Kotowski, A. (2018). Removal of phthalates and **Study Citation:** other contaminants from municipal wastewater during cultivation of Wolffia arrhiza. Process Safety and Environmental Protection 120:268. **OECD Harmonized** Biodegradation in Water **Template: HERO ID:** 5508730 **EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability High The test method was suitable for the test substance. Metric 6: **Testing Conditions** Medium There were omissions in testing conditions; however, sufficient data were reported to determine that the omissions were not likely to have a substantial impact on study results. Testing Consistency Metric 7: Medium some test conditions across samples or study groups were not reported, but these discrepancies were not likely to have a substantial impact on study results. Metric 8: System Type and Design N/A The metric is not applicable to this study type. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology Medium The test organism, species, or inoculum source were reported, but are not routinely used for similar study types; however, the deviation was not likely to have a substantial impact on study results. Metric 10: N/A The metric is not applicable to this study type. Sampling Methods Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology addressed or reported the intended outcome(s) of interest. Metric 12: Test Substance Purity High The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables Medium Sources of uncertainty were not reported but their omission likely did not impact the study results. Health Outcomes Unrelated to Metric 14: N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium The target chemical and transformation product(s) concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results. Metric 16: Statistical Methods and High Statistical methods or kinetic calculations were clearly described and address the **Kinetic Calculations** dataset(s). Domain 8: Other Metric 17: Verification or Plausibility of Medium The study results were reasonable Results Metric 18: QSAR Models N/A The metric is not applicable to this study type.

Continued on next page ...

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		continued from previous page				
Study Citation:	Kotowska, U., Karpinska, J., Kapelewska, J., Kowejsza, E. M., Piotrowska-Niczyporuk, A., Piekutin, J., Kotowski, A. (2018). Removal of phthalates and other contaminants from municipal wastewater during cultivation of Wolffia arrhiza. Process Safety and Environmental Protection 120:268.					
OECD Harmonized	Biodegradation in Water					
Template:						
HERO ID:	5508730					
		EVALUATION				
Domain	Metric	Rating	Comments			
<b>Overall Quali</b>	ty Determination	High				

ODEC Hammonical   Diddegradation in watch     Template:     HERO ID:   698291     EXTRACTION     Parameter   Data     CASRN and Test Material     CASRN and Test Material     CASRN and Test Material     Confidentiality, EndPoint, Type,     Once other, Experimental: other: Biodegradation in natural water     Guideline     Solvent, Reactivity, Storage, Stability     Methanol (analytical grade, Tianjin Third Reagent Manufactory); NR; NR; NR     Radiolabel, Source, State, Purity     NR; Sigma Comporation, USA; NR; 99.9%     Blank and Control   Sterlic controls were performed by adding formaldehyde (1.3% final concentration); Not reported     Oxygen and Inoculum   aerobic; natural water: Exp I, II, III, IV: Total nitrogen (mg/L): 12.8, 12.8, 4.6, 4.6, Total phosphorus (mg/L): 1.05, 1.05, 0.02,	Study Citation:	Li, B., Chi, J., Wu, W., Wang, Z. (2007). Effect of nutrients and light on biodegradation of dibutyl phthalate and di-2-ethylexyl phthalate in Haihe Estuary. Bulletin of Environmental Contamination and Toxicology 79(1):80-83. Biodegradation in Water					
EXTRACTION       Parameter     Data       CASRN and Test Material     84-74-2; Dibutyl phthalate       Confidentiality, EndPoint, Type,     None; other; Experimental; other: Biodegradation in natural water       Guideline     Solvent, Reactivity, Storage, Stability     Methanol (analytical grade, Tianjin Third Reagent Manufactory); NR; NR; NR       Radiolabel, Source, State, Purity     NR; Sigma Corporation, USA; NR; 99.9%     Sterile controls were performed by adding formaldehyde (1.3% final concentration); Not reported       Oxygen and Inoculum     aerobic; natural water: Exp I, II, III, IV: Total nitrogen (mg/L): 12.8, 12.8, 4.6, 4.6. Total phosphorus (mg/L): 1.05, 1.05, 0.02, 0.02.       Duration, Parameter, System, and     4 days; test mat: Flask; Samples taken at 0, 8, 24, 36, 48, and 96 hours       Sampling Frequency     HAI of the flasks (Experiments I and II) had additional nitrogen and phosphorus added; 25°C       CCEC, Water Aeration Dilution, Continuous Dark     Not Reported; Not reported       Concentration     ≥ 208 - ≤ 230 µL     Sa	Template: HERO ID:	698291					
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Charlow and test wateringGet PC 2, Douly primateConfidentially, EndPoint, Type, GuidelineNone; other; Experimental; other: Biodegradation in natural waterGuidelineSolvent, Reactivity, Storage, StabilityMethanol (analytical grade, Tianjin Third Reagent Manufactory); NR; NR; NRRadiolabel, Source, State, PurityNR; Sigma Corporation, USA; NR; 99.9%Blank and ControlSterile controls were performed by adding formaldehyde (1.3% final concentration); Not reportedDuration, Parameter, System, andaerobic; natural water: Exp I, II, III, IV: Total nitrogen (mg/L): 12.8, 12.8, 4.6, 4.6. Total phosphorus (mg/L): 1.05, 1.05, 0.02, 0.02.Duration, Parameter, System, and4 days; test mat.: Flask; Samples taken at 0, 8, 24, 36, 48, and 96 hoursSampling FrequencyPH Adjusted and pHNot Reported; Exp. I, II, III, IV: 8.7, 8.5, 8.2, 8.1, respectively.Concentration≥ 208 - ≤ 230 µg/LConncentration≥ 208 - ≤ 230 µg/LComposition and Test TemperatureHalf of the flasks (Experiments I and II) had additional nitrogen and phosphorus added.; 25°CCEC, Water Aeration Dilution, Continuous Dark- ness, and Other DesignNot reported; Not Reported; Exp. I: light (4000 lux); N:P=12; SPM=81 mg/L; Exp II same as I Exp I, in darkness; Exp III: light; N:P=230; SPM=76 mg/L; Exp IV: Same as Exp III, no light.Guider Lagund Yield ResultsKesults Reference Sub- siodegradation data with a correlation coefficient >0.9566; Not reported; Not reported.First order kinetic equation fit the subs Sample Time, and Results Reference Sub- sidare CompartmentsK. (I/day) for Exp I, II, III, and IV, respectively: 0.32, 0.41, 0.17, 0.20; No standard deviation repor	CASEN and Test Material		84 74 2: Dibutul phthalata				
GuidelineHermitianSolvent, Reactivity, Storage, StabilityMethanol (analytical grade, Tianjin Third Reagent Manufactory); NR; NR; NRRadiolabel, Source, State, PurityNR; Sigma Corporation, USA; NR; 99.9%Blank and ControlSterile controls were performed by adding formaldehyde (1.3% final concentration); Not reportedOxygen and Inoculumaerobic; natural water: Exp I, II, III, IV: Total nitrogen (mg/L): 12.8, 12.8, 4.6, 4.6. Total phosphorus (mg/L): 1.05, 1.05, 0.02, 0.02.Duration, Parameter, System, and4 days; test mat.: Flask; Samples taken at 0, 8, 24, 36, 48, and 96 hoursSampling FrequencyNot Reported; Exp. I, II, III, IV: 8.7, 8.5, 8.2, 8.1, respectively.Concentration $\geq 208 - \leq 230  \mu g/L$ Concentration $\geq 208 - \leq 230  \mu g/L$ Conconstion and Test TemperatureHalf of the flasks (Experiments I and III) had additional nitrogen and phosphorus added.; 25°CCEC, Water Aeration Dilution, Continuous DarkNot reported; Not reported; Exp. I: light (4000 lux); N:P=12; SPM=81 mg/L; Exp II same as I Exp 1, in darkness; Exp III: light; N=2-30; SPM=76 mg/L; Exp IV: Same as Exp III, no light.Results Details Method, Results per DegradationGas chromatograph with flame ionization detector (GC-FID); DBP concentration; Not Reported.Parameter, andK (1/day) for Exp I, II, III, and IV, respectively: 0.32, 0.41, 0.17, 0.20; No standard deviation reported.Sults Sample Time, and Results Reference Sub sitance CompartmentsControl tests showed only 1.1-5.6% loss of DBP was from non-biotic processes. Increased N and P stimulated biodegradation.; Not reportedResults Mean Total Recovery and Results Perterd92.1%; Not reportedResults	Confidentiality, EndPoint,	Туре,	None; other; Experimental; other: Biodegradation in natural water				
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Definition, Fundation, Fundation, Optimized and pHFully State in the Fully State in the State in	Duration Parameter Syste	em and	4 days: test mat. EAp 1, 11, 11, 17, 10th introgen (ing/L), 12.0, 12.0, 4.0, 4.0, 10th phosphorus (ing/L), 1.05, 1.05, 0.02, 0.02.				
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Results Details Method, Results per Degradation   Gas chromatograph with flame ionization detector (GC-FID); DBP concentration; Not Reported     Parameter, and   Direct Quantum Yield Results     Direct Quantum Yield Results   K (1/day) for Exp I, II, III, and IV, respectively: 0.32, 0.41, 0.17, 0.20; No standard deviation reported. First order kinetic equation fit the biodegradation data with a correlation coefficient >0.9566.; Not reported     stance Compartments   Control tests showed only 1.1-5.6% loss of DBP was from non-biotic processes. Increased N and P stimulated biodegradation.; Not reported     Results Mean Total Recovery and Results per Re-covery   92.1%; Not reported	ness, and Other Design		N:P=230; SPM=76 mg/L; Exp IV: Same as Exp III, no light.				
Parameter, and     Direct Quantum Yield Results     Results Value, Results Standard Deviation, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments     Results Mean Total Recovery and Results per Recovery        Control tests showed only 1.1-5.6% loss of DBP was from non-biotic processes. Increased N and P stimulated biodegradation.; Not reported	Results Details Method, Re	esults per Degradation	Gas chromatograph with flame ionization detector (GC-FID); DBP concentration; Not Reported				
Results Value, Results Standard Deviation, Re- sults Sample Time, and Results Reference Sub- stance Compartments Results Remarks and Results Details Results Mean Total Recovery and Results per Re- covery	Direct Quantum Vield Res	ulte					
sults Sample Time, and Results Reference Sub- stance Compartments   biodegradation data with a correlation coefficient >0.9566.; Not reported; Not reported     Results Remarks and Results Details   Control tests showed only 1.1-5.6% loss of DBP was from non-biotic processes. Increased N and P stimulated biodegradation.; Not reported     Results Mean Total Recovery and Results per Re- covery   92.1%; Not reported	Results Value, Results Standard Deviation, Re-		K (1/day) for Exp I, II, III, and IV, respectively: 0.32, 0.41, 0.17, 0.20; No standard deviation reported. First order kinetic equation fit the				
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Results Mean Total Recovery and Results per Re- 92.1%; Not reported	Results Remarks and Resu	lts Details	Control tests showed only 1.1-5.6% loss of DBP was from non-biotic processes. Increased N and P stimulated biodegradation.; Not reported				
	Results Mean Total Recove covery	ery and Results per Re-	92.1%; Not reported				

	EVALUATION					
Domain		Metric	Rating	Comments		
Domain 1: Test Substanc	e					
	Metric 1:	Test Substance Identity	High	The test substance was identified by common name.		
	Metric 2:	Test Substance Purity	High	The test substance was 99.9% pure.		
Domain 2: Test Design	Metric 3: Metric 4:	Study Controls Test Substance Stability	High High	Sterile controls were used. The test substance preparation and storage was reported.		
			6			

Domain 3: Test Conditions

		contin	ued from pre	vious page			
Study Citation:	Li, B., Chi, J., Wu Bulletin of Enviro	Li, B., Chi, J., Wu, W., Wang, Z. (2007). Effect of nutrients and light on biodegradation of dibutyl phthalate and di-2-ethylexyl phthalate in Haihe Estuary. Bulletin of Environmental Contamination and Toxicology 79(1):80-83.					
OECD Harmonized	Biodegradation in	Water					
Template:							
HERO ID:	698291						
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate for the study type.			
	Metric 7:	Testing Consistency	High	Testing conditions were monitored and consistent; any variations were reported.			
	Metric 8:	System Type and Design	Medium	There were some omissions in system type and design; however, the omissions were not likely to have a substantial impact on study results.			
Domain 4: Test Organis	ms						
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and the inoculum was sufficiently characterized.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	Sampling frequency was reported and appropriate for the study.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	Medium	Sources of uncertainty were not reported but their omission likely did not impact the study results.			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.			
		Exposure					
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	Medium	The percent recovery and extraction efficiency were not reported but their omission is not likely to impact the study results.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	The kinetic calculation was not reported and statistical analysis was minimal; however, the omissions are not likely to impact the study results.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Quali</b>	ty Determin	ation	High				

Study Citation:	Michigan State Un	iversity, (1981). Development of test for determining anaerobic biodegradation potential.				
OECD Harmonized	Biodegradation in Water					
Template:						
HERO ID:	6320824					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Di-n-butylphthalate				
Confidentiality, EndPoint, T	ype,	None; Not Reported; Experimental; other: Biodegradation survey with proposed ASTM method described as a starting point				
Guideline Solvent, Reactivity, Storage	. Stability	NR: NR: NR				
Radiolabel, Source, State, P	urity	NR; NR; NR				
Blank and Control		Blanks (no test material); Not reported				
Oxygen and Inoculum		anaerobic; anaerobic sludge: 10% sewage sludge (1.99% organic matter Jackson waste treatment plant) prepared in mineral salts medium				
Duration, Parameter, System	n, and	4 weeks; Not reported: glass bottles; methane production monitored weekly				
Sampling Frequency						
pH Adjusted and pH		Not Reported; Not reported				
Concentration						
Composition and Test Temp	berature	mineral salts medium: 272 mg KH2PO4, 348 mg K2HPO4, 535 mg NH4Cl, 73.5 mg CaCl2.2H2O, 101.5 mg MgCl2.6H2O, 20 mg FeCl2.4H2O, trace metals solution, 1.2 mg NaHCO3, 120 mg Na2S.9H2O (autoclaved); 35°C				
CEC, Water Aeration Dilution	on, Continuous Dark-	Not reported; Not reported; Not Reported; Not reported				
Results Details Method. Res	sults per Degradation	GC-FID: limit of detection ca. 0.5 ppm; results: Theoretical methane production; Not Reported				
Parameter, and	F					
Direct Quantum Yield Resu	lts					
Results Value, Results Standard Deviation, Re-		85%; Not reported; Not reported; CH4 production in Jackson-90 sludge 87% and 90% after 2 weeks; 198% after 4 weeks (glucose); CH4				
sults Sample Time, and Re	sults Reference Sub-	production in Jackson-25 sludge 80% and 99% after 2 weeks; 203% after 4 weeks (glucose)				
Results Remarks and Result	ts Details	Degradation could not be certain due to limitations in the accuracy and precision of extraction; Lag time: 3 weeks. Test duration up to 14 weeks in				
	1.5. 1	total.				
Results Mean Total Recover covery	y and Results per Re-	97% extraction efficiency in whole sludge; Not reported				

	EVALUATION						
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.			
	Metric 2:	Test Substance Purity	Low	The source and purity of the test substance were not reported or verified by analytical			
				means.			
Domain 2: Test Design							
	Metric 3:	Study Controls	Medium	Toxicity controls were not reported.			
Continued on next page							

HERO ID: 6320824 Table: 1 of 2

		contin	ued from prev	vious page			
Study Citation:	Michigan State U	niversity, (1981). Development of test for	determining a	naerobic biodegradation potential.			
OECD Harmonized	Biodegradation in Water						
Template:	(22.00.00)						
HERO ID:	6320824						
		J	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 4:	Test Substance Stability	Low	The test substance stability, homogeneity, preparation, and storage conditions were not reported and these factors likely influenced the test substance or are likely to have a substantial impact on the study results.			
Domain 3: Test Condition	ons						
	Metric 5:	Test Method Suitability	Medium	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	Low	Limited details on testing conditions (pH and darkness not reported).			
	Metric 7:	Testing Consistency	High	Reported test conditions were consistent.			
	Metric 8:	System Type and Design	Medium	Limited detail.			
Domain 4: Test Organisi	me						
Domain 1. Test organis	Metric 9:	Outcome Assessment Methodology	Medium	Microbial viability not validated			
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.			
		1 0					
Domain 5: Outcome Ass	sessment	Track Sechastran - Identitat	Madissus				
	Metric 11: Matria 12:	Test Substance Identity	Medium	I here was incomplete reporting of outcome assessment methods.			
	Metric 12:	Test Substance Purity	Medium	Limited details reported, sampling times generally reported (weekly, routinely).			
Domain 6: Confounding	/Variable Control						
c	Metric 13:	Confounding Variables	High	Uncertainties in analytical methods were generally noted.			
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to this type of study.			
		Exposure					
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	Low	Analytical detail minimal, percent recovery, or mass balance were not reported.			
	Metric 16:	Statistical Methods and	N/A	This metric is not applicable to this type of study.			
		Kinetic Calculations					
Domain 8: Other							
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible.			
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.			
<b>Overall Qualit</b>	y Determin	ation	Low				

Study Citation: OECD Harmonized	Michigan State Un Biodegradation in	iversity, (1981). Development of test for determining anaerobic biodegradation potential. Water	
HERO ID:	6320824		
		EXTRACTION	
Parameter		Data	
CASRN and Test Material		84-74-2; Di-n-butylphthalate	
Confidentiality, EndPoint, Ty	ype,	None; Not Reported; Experimental; other: Biodegradation survey with proposed ASTM method described as a starting point	
Guideline Solvent, Reactivity, Storage,	Stability	NR; NR; NR	
Radiolabel, Source, State, Pu	irity	NR; NR; NR	
Blank and Control		Blanks (no test material); Not reported	
Oxygen and Inoculum		anaerobic; anaerobic sludge: 10% sewage sludge (1.53% organic matter Adrian waste treatment plant) prepared in mineral salts medium	
Duration, Parameter, System, and		4 weeks; Not reported: glass bottles; methane production monitored weekly	
Sampling Frequency		Nat Danartady Nat ranortad	
pH Adjusted and pH		Not Reported	
Concentration		20 ppm	
Composition and Test Tempe	erature	mineral salts medium: 272 mg KH2PO4, 348 mg K2HPO4, 535 mg NH4Cl, 73.5 mg CaCl2.2H2O, 101.5 mg MgCl2.6H2O, 20 mg FeCl2.4H2O, trace metals solution, 1.2 mg NaHCO3, 120 mg Na2S.9H2O (autoclaved); 35°C	
CEC, Water Aeration Dilutio	n, Continuous Dark-	Not reported; Not reported; Not Reported; Not reported	
Results Details Method, Res	ults per Degradation	GC-FID; limit of detection ca. 0.5 ppm; results; Theoretical methane production; Not Reported	
Parameter, and			
Direct Quantum Yield Result	ts dand Daviation Da	2201 Nation and that reported CIIA production in cluder 0201 and 0601 ofter 2 weeks 2101 and 2401 ofter 4 weeks	
sults Sample Time and Pesults Deference Sub		52%; Not reported; Not reported; CH4 production in studge 92% and 90% after 2 weeks; 81% and 84% after 4 weeks	
stance Compartments			
Results Remarks and Results	s Details	Degradation could not be certain due to limitations in the accuracy and precision of extraction; Lag time: 2 weeks. Test duration up to 14 weeks in	
Results Mean Total Recovery and Results per Re- covery		102% extraction efficiency in whole sludge; Not reported	
		EVALUATION	

Domain Domain 1: Test Substance		Metric	Rating	Comments
Domain 1: Test Substance				
Me	etric 1:	Test Substance Identity	High	The test substance was identified definitively.
Me	letric 2:	Test Substance Purity	Low	The source and purity of the test substance were not reported or verified by analytical means.
Domain 2: Test Design	atria 2.	Study Controls	Madium	Toxisity controls were not concerted
IVIE	leuric 5:	Study Controls	Medium	Toxicity controls were not reported.
Me	letric 4:	Test Substance Stability	Low	The test substance stability, homogeneity, preparation, and storage conditions were not reported and these factors likely influenced the test substance or are likely to have a substantial impact on the study results.

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		continu	ed from prev	vious page		
Study Citation: OECD Harmonized	Michigan State U: Biodegradation in	Michigan State University, (1981). Development of test for determining anaerobic biodegradation potential. Biodegradation in Water				
Template:	c					
HERO ID:	6320824					
		F	VALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	Medium	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	Low	Limited details on testing conditions (pH and darkness not reported).		
	Metric 7:	Testing Consistency	High	Reported test conditions were consistent.		
	Metric 8:	System Type and Design	Medium	Limited detail.		
Domain 4: Test Organis	ms M ( <sup>1</sup> O					
	Metric 9:	Outcome Assessment Methodology	Medium	Microbial viability not validated.		
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.		
Domain 5: Outcome As	sessment					
	Metric 11:	Test Substance Identity	Medium	There was incomplete reporting of outcome assessment methods.		
	Metric 12:	Test Substance Purity	Medium	Limited details reported, sampling times generally reported (weekly, routinely).		
Domain 6: Confounding	g/Variable Control					
	Metric 13:	Confounding Variables	High	Uncertainties in analytical methods were generally noted.		
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to this type of study.		
		Exposure				
Domain 7: Data Present	ation and Analysis					
	Metric 15:	Data Reporting	Low	Analytical detail minimal, percent recovery, or mass balance were not reported.		
	Metric 16:	Statistical Methods and	N/A	This metric is not applicable to this type of study.		
		Kinetic Calculations				
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	Low	Due to limited information, evaluation of the reasonableness of the study results was not		
		Results	20	possible.		
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.		
Overall Qualit	ty Determin	ation	Low			
	v					

Study Citation:	Monsanto, (1983).	Biodegradability of plasticizers and related chemicals.				
OECD Harmonized	Biodegradation in	Biodegradation in Water				
Template:						
HERO ID:	1316178					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, EndPoint, T	ype,	None; inherent biodegradability; Experimental; other: Semi-continuous activated sludge (SCAS) procedure				
Guideline Solvent, Reactivity, Storage	Stability	NR·NR·NR				
Radiolabel, Source, State, P	urity	NR: NR: NR				
Blank and Control		Not reported; Not reported				
Oxygen and Inoculum		aerobic; sewage, domestic (adaptation not specified): activated sludge and supernatant from a local domestic sewage treatment plant				
Duration, Parameter, System	n, and	Not Reported; test mat .: Cyclic addition of test material, media and/or sewage under aeration; 1 time per week				
Sampling Frequency		Not Domostod, Not sonostod				
pH Adjusted and pH		A nom				
Concentration	anotinea.	5 ppill 200 ma alwassa 200 ma autoiant heath and 120 ma K2UDO4. Not reported				
Composition and test temp	erature	Soo ng giucose, 200 ng nutrent ofotn and 150 ng K2HPO4; Not reported				
ness, and Other Design	on, Continuous Dark-	Not reported, minited details reported, Not reported				
Results Details Method, Res	sults per Degradation	Analytical Chemistry Method 71-32 with GC; % Primary Biodegradation; Not Reported				
Parameter, and	_					
Direct Quantum Yield Results		0901 . 10501 CL. Not Deposited. Not reported				
sults Sample Time, and Results Reference Sub-		98%, +95% CL, Not Reported, Not reported				
stance Compartments						
Results Remarks and Result	ts Details	Inherently biodegradable; Not reported				
Results Mean Total Recover	y and Results per Re-	92.8±66 at 1, 5 and 10 ppm (66 is likely a typo and should be 6.6); Not applicable				
covery						

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2:	Test Substance Purity	Low	The source and purity of the test substance were not reported nor verified by analytical means in this report.	
Domain 2: Test Design	Metric 3:	Study Controls	Low	Details regarding concurrent control group details were not included; however, a guide-	
				line method was referenced. The lack of control data may impact interpretation of the study results.	
Continued on next page					

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		continu	ued from previou	s page	
Study Citation: OECD Harmonized	<ul><li>Monsanto, (1983). Biodegradability of plasticizers and related chemicals.</li><li>Biodegradation in Water</li></ul>				
HERO ID:	1316178				
	1010170	Т			
Domain		Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.	
Domain 3. Test Conditi	ons				
Domain 5. Test Conditi	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	Medium	There were reported omissions in testing conditions; however, sufficient data were re- ported to determine that the omissions were not likely to have a substantial impact on study results.	
	Metric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported.	
	Metric 8:	System Type and Design	Medium	There were omissions in the system design details; however, sufficient data were re- ported to determine that the omissions were not likely to have a substantial impact on study results.	
Domain 4: Test Organis	sme				
Domani 4. Test Organis	Metric 9:	Outcome Assessment Methodology	Medium	There were omissions in the test organism source; however, sufficient data were reported to determine that the omissions were not likely to have a substantial impact on study results.	
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.	
Domain 5: Outcome As	ssessment				
	Metric 11:	Test Substance Identity	High	This metric met the criteria for high confidence as expected for this type of study.	
	Metric 12:	Test Substance Purity	Medium	There were omissions in the sampling methods; however, sufficient data were reported to determine that the omissions were not likely to have a substantial impact on study results.	
Domain 6: Confoundin	a Wariahla Control				
Domain 0. Comountum	Metric 13.	Confounding Variables	High	This metric met the criteria for high confidence as expected for this type of study	
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.	
Domain 7. Data Presen	tation and Analysis				
Domain 7. Data i resen	Metric 15:	Data Reporting	Medium	There were omissions in the data reporting; however, sufficient data were reported to de- termine that the omissions were not likely to have a substantial impact on study results.	
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	There were omissions in the calculation details; however, sufficient data were reported to determine that the omissions were not likely to have a substantial impact on study results.	
Domain 8: Other					
	Metric 17:	Verification or Plausibility of Results	High	The study results were reasonable.	
		Contin	ued on next page	····	

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			continued from previous	page		
Study Citation: OECD Harmonized	Monsanto, (198 Biodegradation	Monsanto, (1983). Biodegradability of plasticizers and related chemicals. Biodegradation in Water				
Template:	0					
HERO ID:	1316178					
			EVALUATION			
Domain		Metric	Rating	Comments		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.		
Overall Quality Determination			Medium			

Study Citation: OECD Harmonized	Monsanto, (1983). Biodegradation in	Biodegradability of plasticizers and related chemicals. Water	
HERO ID:	1316178		
		EXTRACTION	
Parameter		Data	
CASRN and Test Material		84-74-2; Dibutyl phthalate	
Confidentiality, EndPoint, T	ype,	None; Not Reported; Experimental; other: Shake Flask method	
Guideline Solvent Reactivity Storage	Stability		
Padiolabel Source State D	, Stability	ND. ND. ND	
Blank and Control	unty	Not reported. Not reported	
Oxygen and Inoculum		aerobic: not specified: acclimate bacterial seed	
Duration, Parameter, System	1. and	35 days; test mat.: Similar to procedure described in Gledhill [Appl. Microbiol. 30, 922 (1975)]; 3, 7, 14, 21, 28 and 35 days	
Sampling Frequency			
pH Adjusted and pH		Not Reported; Not reported	
Concentration		25.6 - 27.9 ррт	
Composition and Test Temp	erature	minimal salts media; Not reported	
CEC, Water Aeration Dilutio	on, Continuous Dark-	Not reported; limited details reported; Not reported; Not reported	
Results Details Method, Res	sults per Degradation	Analytical Chemistry Method 71-32 with GC; % Theoretical CO2 evolution; Not Reported	
Parameter, and			
Direct Quantum Yield Results			
Results Value, Results Standard Deviation, Re-		73% average; 67-79%; Not Reported; 35 days; Not reported	
stance Compartments			
Results Remarks and Results Details		Ultimate biodegradable; Not reported	
Results Mean Total Recovery	y and Results per Re-	Not Reported; Not applicable	
covery			

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
	Metric 2:	Test Substance Purity	Low	The source and purity of the test substance were not reported nor verified by analytical means in this report.
Domain 2: Test Design				
	Metric 3:	Study Controls	Low	Details regarding concurrent control group details were not included; however, a guide- line method was referenced. The lack of control data may impact interpretation of the study results.
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.

		cont	inued from previou	s page
Study Citation: OECD Harmonized Template:	Monsanto, (1983) Biodegradation in			
HERO ID:	1316178			
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 3: Test Conditi	ons			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	lesting Conditions	Medium	There were reported omissions in testing conditions; however, sufficient data were re- ported to determine that the omissions were not likely to have a substantial impact on study results.
	Metric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported.
	Metric 8:	System Type and Design	Medium	There were omissions in the system design details; however, sufficient data were re- ported to determine that the omissions were not likely to have a substantial impact on study results.
Domain 4. Test Organis	ms			
Domain 1. Tost Organis	Metric 9:	Outcome Assessment Methodology	Medium	There were omissions in the test organism source; however, sufficient data were reported to determine that the omissions were not likely to have a substantial impact on study results.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	Metric 11:	Test Substance Identity	Uich	This matrix mat the criteria for high confidence as expected for this type of study
	Metric 12:	Test Substance Purity	Medium	There were omissions in the sampling methods; however, sufficient data were reported to determine that the omissions were not likely to have a substantial impact on study results.
Domain 6: Confounding	Wariable Control			
Domain 0. Comounding	Metric 13:	Confounding Variables	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Present	tation and Analysis			
Domain 7. Data i resell	Metric 15:	Data Reporting	Medium	There were omissions in the data reporting; however, sufficient data were reported to de-
				termine that the omissions were not likely to have a substantial impact on study results.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	There were omissions in the calculation details; however, sufficient data were reported to determine that the omissions were not likely to have a substantial impact on study results.
Domain 8: Other				
2 shum of Outer	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.
	Metric 18:	Results OSAR Models	N/A	The metric is not applicable to this study type
			1 1/1 1	
		Cont	tinued on next page	

		continued from previous page				
Study Citation:	Monsanto, (1983). Biodegradability of plasticiz	Monsanto, (1983). Biodegradability of plasticizers and related chemicals.				
OECD Harmonized	Biodegradation in Water					
Template:						
HERO ID:	1316178					
		EVALUATION				
Domain	Metric	Rating	Comments			
<b>Overall Quali</b>	ty Determination	Medium				

Study Citation: OECD Harmonized	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015. Biodegradation in Water			
HERO ID:	5492430			
		EXTRACTION		
Parameter		Data		
CASRN and Test Material	-	84-74-2; Dibutyi phthalate		
Confidentiality, EndPoint, T	lype,	None; other; Experimental; other: Anaerobic biotransformation in digester sludge		
Solvent, Reactivity, Storage	, Stability	NR; NR; NR		
Radiolabel, Source, State, P	urity	NR; Chem Services (West Chester, PA); NR; 98-99%		
Blank and Control	2	Anaerobic biotransformation in digester sludge; Sterile inoculated control: 11% degraded after 63 d		
Oxygen and Inoculum		anaerobic; digested sludge: Anaerobic digester sludge was collected from the South River sewage treatment plant in Fulton County, GA.		
Duration, Parameter, System	n, and	63 days; test mat.: 20mL sterile medium was added to an anaerobic chamber with inoculum (10% w/v or v/v). 5mL aliquots were added to		
Sampling Frequency		centrifuge tubes and aliquots of PAE solution were added.; at day: 0, 8, 29, 63		
pH Adjusted and pH		Not Reported; 7.0		
Concentration		200 µmol/L		
Composition and Test Temp	perature	10% (w/v or v/v) test material in an inoculum mineral medium. Final gas atmosphere was N2 or N2-CO2.; 30°C		
CEC, Water Aeration Dilution	on, Continuous Dark-	Not reported; Not reported; Not Reported; No shaking. Glassware was cleaned with hexane to reduce contamination. Nitrate, carboxy methylcel-		
ness, and Other Design Results Details Method Re	sults per Degradation	IUIOSE, adsorption, and reamendment studies were also run to explore influences on biotransformation rates PAE's were spiked and 3x extracted with HPLC grade beyong (performed in triplicate). Partitioning to sediments were examined by centrifugation		
Parameter, and	suits per Degradation	and separate hexane extraction Extracts examined by GC (Hewlett Packard 5890A) with flame ionization detector · % remaining test material		
Direct Quantum Yield Results		(DBP) after /n days (n total 365); Not Reported		
Results Value, Results Standard Deviation, Re-		19% (81% bioconversion); Not reported; 63 days; 89% remaining after 63d. Sterile control		
sults Sample Time, and Results Reference Sub-				
stance Compartments	ta Dataila	DDD descended more elevely then in furthy and calt more readiments. Additional examinants indicated that adoption of DAE's to addiment		
Results Remarks and Result	is Details	DBP degraded more slowly than in reshwater and san marsh sediments. Additional experiments indicated that adsorption of PAE's to sediment was rapid: >50% in initial samples and 77% of DEHP was associated with the sediment phase $\cdot$ 80% of DBP disappeared after 29 days and 100%		
		after 34 days		
Results Mean Total Recover covery	ry and Results per Re-	Extraction efficiency for DEHP was not determined; Not Reported		

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substar	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.
	Metric 2:	Test Substance Purity	High	The test substance purity was reported and appropriate.
Domain 2: Test Design				
	Metric 3:	Study Controls	Low	The study used appropriate controls.
	Metric 4:	Test Substance Stability	Medium	The test substance storage conditions and preparation were reported and appropriate.
Domain 3: Test Conditi	ons			

		continu	ued from previous	page		
Study Citation: OECD Harmonized	Painter, S. E., Jon Biodegradation in	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015. Biodegradation in Water				
Template:	5/102/130					
	5492450					
Ъ.		I	EVALUATION			
Domain	M ( 1 5		Rating	Comments		
	Metric 5: Matria 6:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 0: Metric 7:	Testing Conditions	Medium	The testing conditions were reported and appropriate.		
	Metric 8:	System Type and Design	High	The metric is not applicable to the study type.		
	Wieure 8.	System Type and Design	Ingn	The meute is not applicable to the study type.		
Domain 4: Test Organis	sms					
Domain in Tost organis	Metric 9:	Outcome Assessment Methodology	High	The inoculum source and type were reported.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.		
		1 0				
Domain 5: Outcome As	sessment					
	Metric 11:	Test Substance Identity	Low	The outcome assessment methodology addressed the intended outcome of interest.		
	Metric 12:	Test Substance Purity	Medium	The sampling methods were reported and appropriate.		
Domain 6: Confounding	g/Variable Control					
	Metric 13:	Confounding Variables	Low	Uncertainty was not reported for all of the concentration measurements but was for the extraction efficiencies.		
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.		
		Exposure				
Domain 7: Data Present	tation and Analysis					
	Metric 15:	Data Reporting	Low	The data reporting was appropriate.		
	Metric 16:	Statistical Methods and	Medium	Statistical analysis was not reported but the data is available for an independent analysis.		
		Kinetic Calculations				
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.		
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.		
<b>Overall</b> Quali	ty Determin	ation	Medium			
<b>、</b>	v					

\* Related References: Cited in HSDB

Study Citation: OECD Harmonized	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015. Biodegradation in Water				
HERO ID:	5492430				
		EXTRACTION			
Parameter		Data			
CASEN and Test Material		84 74 2. Dibutyl obthalate			
Confidentiality, EndPoint, T	vne	None: other: Experimental: other: Anaerobic biotransformation in leachate			
Guideline	<i>ype</i> ,				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR			
Radiolabel, Source, State, P	urity	NR; Chem Services (West Chester, PA); NR; 98-99%			
Blank and Control		Sterile inoculated control: 4% degraded after 365 d; Toxicity experiments using pure culture P. aeruginosa, B. subtilis, and E. coli suggests PAEs			
Oxygen and Inoculum		did not significantly affect growth or activity at concentrations used in this study.			
oxygen and moedium		organic pollutants.			
Duration, Parameter, System	n, and	1 year; test mat.: 200 mL sterile medium was added to an anaerobic chamber with inoculum (10% w/v or v/v). 5mL aliquots were added to			
Sampling Frequency		centrifuge tubes and aliquots of PAE solution were added.; at day: 0, 61, 365			
pH Adjusted and pH		Not Reported; 7.0			
Concentration		200 µmol/L			
Composition and Test Temp	erature	10% (w/v or v/v) test material in an inoculum mineral medium. Final gas atmosphere was N2 or N2-CO2.; 30°C			
CEC, Water Aeration Dilutio	on, Continuous Dark-	Not reported; Not reported; Not Reported; No shaking. Glassware was cleaned with hexane to reduce contamination. Nitrate, carboxy methylcel-			
ness, and Other Design Results Details Method Res	ulte per Degradation	Iulose, adsorption, and reamendment studies were also run to explore influences on biotransformation rates PAE's were spiked and 3x extracted with HPLC grade beyong (performed in triplicate). Partitioning to sediments were examined by centrifugation			
Parameter, and	suits per Degradation	and separate hexane extraction Extracts examined by GC (Hewlett Packard 5890A) with flame ionization detector: % remaining test material			
Direct Quantum Yield Results		(DBP) after /n days (n total 63); Not Reported			
Results Value, Results Standard Deviation, Re-		35% (65% bioconversion); Not reported; 365 days; 96% remaining after 365d. Sterile control			
sults Sample Time, and Results Reference Sub-					
stance Compartments					
Results Remarks and Results Details		DBP did not degrade after 61 days. After 1 year of incubation, DBP-amended inoculum degraded DBP by 65%. Additional experiments indicated that adcorntion of PAE's to sadiment was rapid: >50% in initial samples and 63% of DEHD was associated with the sadiment phase : 0% of DBP			
		disappeared after 61 days: 65% after 365 d in amended leachate.			
Results Mean Total Recover	y and Results per Re-	Not reported; Not Reported			
covery					

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.
	Metric 2:	Test Substance Purity	High	The test substance purity was reported and appropriate.
Domain 2: Test Design	Metric 3:	Study Controls	Low	The study used appropriate controls.
	Metric 4:	Test Substance Stability	Medium	The test substance storage conditions and preparation were reported and appropriate.
Domain 3: Test Condition	ons			
		(	Continued on next page	•••

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		continu	ed from previous	page			
Study Citation: OECD Harmonized	Painter, S. E., Jon Biodegradation in	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015. Biodegradation in Water					
HEBO ID.	5492430						
	5492450						
Demain		Mataia	Detine	Commente			
Domain	M-4	Metric Track Mathe d Spritch iliter	Kaung				
	Metric 5: Matria 6:	Testing Conditions	High	The test method was suitable for the test substance.			
	Metric 6: Motrio 7:	Testing Conditions	Medium	The testing conditions were reported and appropriate.			
	Metric 8:	System Type and Design	High	The metric is not applicable to the study type.			
	Metric 8.	System Type and Design	Ingn	The meute is not applicable to the study type.			
Domain 4: Test Organis	sms						
Domain in Tost organis	Metric 9:	Outcome Assessment Methodology	High	The inoculum source and type were reported.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.			
		I C					
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	Low	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	Medium	The sampling methods were reported and appropriate.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	Medium	Uncertainty was not reported for all of the concentration measurements but was for the extraction efficiencies.			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.			
		Exposure					
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	Low	The data reporting was appropriate.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical analysis was not reported but the data is available for an independent analysis.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.			
Overall Quali	ty Determin	ation	Medium				

Study Citation:	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC 3Q:85-124.				
	Biodegradation in	water			
HERO ID:	5348332				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; DBP			
Confidentiality, EndPoint, T	ype,	no; primary biodegradation; experimental; other: river die-away			
Guideline Solvent, Reactivity, Storage,	. Stability	NR: NR: NR			
Radiolabel, Source, State, P	urity	NR· NR· NR			
Blank and Control	5	not reported; not reported			
Oxygen and Inoculum		aerobic; natural water: freshwater: Rhine River water			
Duration, Parameter, System	n, and	Not Reported; Not Reported: shake flasks; Not Reported			
Sampling Frequency					
pH Adjusted and pH		Not Reported; Not Reported			
Concentration		ca 1 ug/L			
Composition and Test Temp	erature	Not Reported; 25°C			
CEC, Water Aeration Dilutio	on, Continuous Dark-	Not Reported; Not Reported; Not Reported; Not Reported			
Results Details Method Res	sults per Degradation	Not Reported: first-order rate constant: Not Reported			
Parameter, and					
Direct Quantum Yield Results					
Results Value, Results Standard Deviation, Re-		0.8/day; Not Reported; Not Reported; Not Reported			
sults Sample Time, and Results Reference Sub-					
stance Compartments Results Remarks and Results Details		half-life 0.87 days: Not Reported			
Results Mean Total Recover	y and Results per Re-	Not Reported; Not Reported			
covery	,r.				

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ice			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.
	Metric 2:	Test Substance Purity	Medium	The source and purity of the test substance were not reported but may be available in the cited reference.
Domain 2: Test Design				
	Metric 3:	Study Controls	Low	Controls were not reported but may be available in the cited reference.
	Metric 4:	Test Substance Stability	Low	The substance stability was not reported but may be available in the cited reference.
Domain 3: Test Conditi	ons			

### PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

### HERO ID: 5348332 Table: 1 of 4

		contin	ued from pre	vious page			
Study Citation:	Peterson, D. R., S	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC					
OFCD Hormonized	3Q:85-124.	3Q:85-124. Diadagradation in Water					
Tompleter	Biodegradation in water						
	5248222						
HERO ID:	3346332						
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 5:	Test Method Suitability	Medium	The test method was not reported but may be available in the cited reference.			
	Metric 6:	Testing Conditions	Medium	There were omissions in the testing conditions but more information may be available in the cited reference.			
	Metric 7:	Testing Consistency	Low	Test consistency was not reported but may be available in the cited reference.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	Medium	The inoculum source was not reported but may be available in the cited reference.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.			
Domain 5: Outcome As	sessment						
Domain 5. Outcome As	Metric 11.	Test Substance Identity	Medium	There was incomplete reporting of outcome assessment methods: however, details may			
	Medie 11.	Test Substance Rentity	Wiedium	be available in the cited reference.			
	Metric 12:	Test Substance Purity	Low	Details regarding sampling methods of the outcome(s) were not fully reported but may be available in the cited reference.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	Low	Confounding variables were not reported but may be available in the cited reference.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.			
Domain 7: Data Present	tation and Analysis						
Domain 7. Data Present	Metric 15:	Data Peparting	Madium	Datails regarding the regults were not reported but may be available in the sited refer			
	Wieuric 15.	Data Reporting	Medium	ence			
	Metric 16:	Statistical Methods and	Medium	Kinetic calculations were not clearly described but may be available in the cited refer-			
		Kinetic Calculations		ence.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.			
		Results		······································			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.			
Overall Qualit	tv Determin	ation	Low				

\* Related References: Cites HEROID: 10748712: Furtmann K (1993) Phthalate in der aquatischen Umwelt. PhD Thesis, Universität Gesamthochschule Duisenberg. English Translation prepared for European Council for Plasticizers and Intermediates, Brussels, 1996. (not in distiller)

Study Citation:	Peterson, D. R., St 3Q:85-124.	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC 3Q:85-124.					
OECD Harmonized	Biodegradation in	iodegradation in Water					
Template:							
HERO ID:	5348332						
	FXTRACTION						
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, EndPoint, 7 Guideline	Type,	no; primary biodegradation; experimental; o	other: similar to MITI				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR; NR					
Radiolabel, Source, State, F	urity	NR; NR; NR; NR					
Blank and Control	-	not reported; not reported					
Oxygen and Inoculum		aerobic; other:: soil and sewage supernatan	t				
Duration, Parameter, Syster Sampling Frequency	n, and	Not Reported; Not Reported: Not Reported	; Not Reported				
pH Adjusted and pH		Not Reported; Not Reported					
Concentration		Not Reported					
Composition and Test Temp	perature	Not Reported; Not Reported					
CEC, Water Aeration Diluti	on, Continuous Dark-	Not Reported; Not Reported; Not Reported					
Results Details Method, Re	sults per Degradation	Not Reported; first-order rate constant; Not Reported					
Parameter, and							
Direct Quantum Yield Resu	llts	2 15/Jan Net Danard d. Net Danard d. Net Danard d					
Results Value, Results Star sults Sample Time, and Re	sults Reference Sub-	3.15/day; Not Reported; Not Reported; Not Reported					
stance Compartments							
Results Remarks and Resul	ts Details	half-life 0.22 days; Not Reported					
Results Mean Total Recover	ry and Results per Re-	Not Reported; Not Reported					
covery							
Domain		Metric	E VALUATION Rating	Comments			
Domain 1: Test Substand	<u>ге</u>	Wette	Kating	connients			
Domain 1. Test Substant	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN			
	Metric 2:	Test Substance Purity	Medium	The source and purity of the test substance were not reported but may be available in the			
				cited reference.			
Domain 2. Test Design							
_ main 2. Test Design	Metric 3:	Study Controls	Low	Controls were not reported but may be available in the cited reference.			
Metric 4:		Test Substance Stability	Low	The substance stability was not reported but may be available in the cited reference.			

Metric 4:	Test Substance Stability	Low	The substance stability was not reported but may be available in the cited refe
Domain 3: Test Conditions			
Metric 5:	Test Method Suitability	Medium	The test method was not reported but may be available in the cited reference.

PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

Dibutyl Phthalate

#### ... continued from previous page **Study Citation:** Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC 30:85-124. **OECD Harmonized** Biodegradation in Water **Template: HERO ID:** 5348332 **EVALUATION** Domain Metric Rating Comments Metric 6: Testing Conditions Medium There were omissions in the testing conditions but more information may be available in the cited reference. Metric 7: Testing Consistency Low Test consistency was not reported but may be available in the cited reference. Metric 8: System Type and Design N/A The metric is not applicable to the study type. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology Medium The inoculum source was not reported but may be available in the cited reference. N/A Metric 10: Sampling Methods The metric is not applicable to the study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity Medium There was incomplete reporting of outcome assessment methods; however, details may be available in the cited reference. Metric 12: Test Substance Purity Details regarding sampling methods of the outcome(s) were not fully reported but may Low be available in the cited reference. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables Low Confounding variables were not reported but may be available in the cited reference. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to the study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Uninformative The results presented in the table did not coincide with what was in the text. Metric 16: Statistical Methods and Medium Kinetic calculations were not clearly described but may be available in the cited refer-Kinetic Calculations ence. Domain 8: Other Metric 17: Verification or Plausibility of Medium The study results were reasonable. Results OSAR Models N/A Metric 18: The metric is not applicable to the study type. **Overall Quality Determination** Uninformative

\* Related References: Cites: Ye C, Tian K (1990) Water Treat 5 :474. (not in HERO or distiller)

Study Citation:	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC						
OECD Harmonized	3Q:85-124. Biodegradation in	3Q:85-124. Biodegradation in Water					
Template:							
HERO ID:	5348332						
			EXTRACTIO	N			
Parameter		Data					
CASRN and Test Material	<b>P</b>	84-74-2; DBP	. 1 . 1 . 1				
Guideline	Type,	no; primary biodegradation; experime	ntal; other: river die-a	way			
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR; NR					
Radiolabel, Source, State, H	Purity	NR; NR; NR; NR					
Blank and Control		not reported; not reported					
Oxygen and Inoculum		aerobic; natural water / sediment: free	shwater: Mississippi I	River water with and without sediment. Cell count in water alone 3.1¥10–11 L/cell/h;			
Duration, Parameter, Syster	m. and	Not Reported: Not Reported: Not Reported:	orted: Not Reported				
Sampling Frequency	,		· · · · , · · · · · · · ·				
pH Adjusted and pH		Not Reported; Not Reported					
Concentration		1 - 2 mg/L					
Composition and Test Temp	perature	Not Reported; Not Reported					
CEC, Water Aeration Diluti	ion, Continuous Dark-	Not Reported; Not Reported; Not Reported; Not Reported					
ness, and Other Design	aulta non Dogeodation	Nat Danastady first avdar rate constants, Nat Danastad					
Parameter and	suns per Degradation	Not Reported, inst-order rate constants, Not Reported					
Direct Quantum Yield Resu	ılts						
Results Value, Results Sta	ndard Deviation, Re-	0.12/day (water); 0.14/day (water and low-sediment); 0.07/day (water and high sediment); Not Reported; Not Reported; Not Reported					
sults Sample Time, and Re	esults Reference Sub-						
stance Compartments			( , 11 P				
Results Remarks and Resul	its Details	graph.					
Results Mean Total Recover	ry and Results per Re-	Not Reported; Not Reported					
covery							
			EVALUATIO				
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ce		0				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.			
	Metric 2:	Test Substance Purity	Medium	The source and purity of the test substance were not reported but may be available in the cited reference.			
Domain 2: Test Design							
Domain 2. Test Design	Metric 3.	Study Controls	Low	Controls were not reported but may be available in the cited reference			
	Metric 4	Test Substance Stability	Low	The substance stability was not reported but may be available in the cited reference			
	moure r.	Test Substance Stability	Low	The substance studenty was not reported but may be available in the ender reference.			
Domain 3: Test Condition	ons						

### PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

HERO ID: 5348332 Table: 3 of 4

#### ... continued from previous page **Study Citation:** Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC 30:85-124. **OECD Harmonized** Biodegradation in Water **Template: HERO ID:** 5348332 **EVALUATION** Domain Metric Rating Comments Metric 5: Test Method Suitability Medium Details of the test method were not reported but may be available in the cited reference. Metric 6: **Testing Conditions** Medium There were omissions in the testing conditions but more information may be available in the cited reference. Metric 7: Testing Consistency Low Test consistency was not reported but may be available in the cited reference. Metric 8: System Type and Design N/A The metric is not applicable to the study type. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology Medium Details of the inoculum were not reported but may be available in the cited reference. Metric 10: Sampling Methods N/A The metric is not applicable to the study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity Medium There was incomplete reporting of outcome assessment methods; however, details may be available in the cited reference. Metric 12: Test Substance Purity Low Details regarding sampling methods of the outcome(s) were not fully reported but may be available in the cited reference. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables Low Confounding variables were not reported but may be available in the cited reference. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to the study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium Details regarding the results were not reported but may be available in the cited reference. Metric 16: Statistical Methods and Medium Kinetic calculations were not clearly described but may be available in the cited refer-Kinetic Calculations ence. Domain 8: Other Metric 17: Verification or Plausibility of Medium The study results were reasonable. Results Metric 18: OSAR Models N/A The metric is not applicable to the study type.

# **Overall Quality Determination**

Low

\* Related References: Cites: HERO ID: 1333229 Steen WC, Paris DF, Baughman GL (1980) Effects of sediment sorption on microbial degradation of toxic substances. In: Baker RA (ed) Contaminants in sediments, vol 1 : Fate and transport, case studies, modeling toxicology. Ann Arbor Science, Ann Arbor MI, p 477(not in distiller)

Study Citation:	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC					
OFCD Harmonized	3Q:85-124. Biodegradation in	Water				
Template:		Water				
HERO ID:	5348332					
			EXTRACTION			
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, EndPoint,	Туре,	no; biodegradation; experimental; other: a	naerobic degradation in sewage	sludge		
Solvent, Reactivity, Storag	ge, Stability	NR; NR; NR; NR				
Radiolabel, Source, State,	Purity	NR; NR; NR; NR				
Blank and Control		not reported; not reported				
Oxygen and Inoculum		aerobic; anaerobic microorganisms: anaer	obic sewage sludge			
Duration, Parameter, Syste	em, and	32 days; Not Reported: Not Reported; Not	t Reported			
pH Adjusted and pH		Not Reported: Not Reported				
Concentration		5 - 10 mg/L				
Composition and Test Terr	nperature	Not Reported: Not Reported				
CEC, Water Aeration Dilut	tion, Continuous Dark-	Not Reported; Not Reported; Not Reported				
ness, and Other Design						
Results Details Method, R	esults per Degradation	Not Reported; first-order rate constant; Not Reported				
Parameter, and Direct Quantum Vield Res	ulte					
Results Value, Results Sta	andard Deviation, Re-	0.25/day; Not Reported; Not Reported; Not Reported				
sults Sample Time, and R	esults Reference Sub-					
stance Compartments	1. 5. 1	half life 2.7 days. Mean of determinations at three concentrations 0.5.1 and 10 mc/				
Results Remarks and Resu	ilts Details	half-life 2. / days; Mean of determinations at three concentrations, 0.5, 1, and 10 mg/L.				
Results Mean Total Recove coverv	ery and Results per Re-	Not Reported; Not Reported				
			EVALUATION			
Domain		Metric	Rating	Comments		
Domain 1: Test Substar	nce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.		
Metric 2:		Test Substance Purity	Medium	The source and purity of the test substance were not reported but may be available in the cited reference.		
Domain 2: Test Design						
_ chiani 2. Tost Dosigli	Metric 3:	Study Controls	Low	Controls were not reported but may be available in the cited reference.		
	Metric 4:	Test Substance Stability	Low	The substance stability was not reported but may be available in the cited reference.		
Domain 3: Test Conditi	ions					
	Metric 5:	Test Method Suitability	Medium	The test method was not reported but may be available in the cited reference.		
PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

Dibutyl Phthalate

#### ... continued from previous page **Study Citation:** Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC 30:85-124. **OECD Harmonized** Biodegradation in Water **Template: HERO ID:** 5348332 **EVALUATION** Domain Metric Rating Comments Metric 6: Testing Conditions Medium There were omissions in the testing conditions but more information may be available in the cited reference. Metric 7: Testing Consistency Low Test consistency was not reported but may be available in the cited reference. Metric 8: System Type and Design N/A The metric is not applicable to the study type. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology Medium The inoculum source was not reported but may be available in the cited reference. N/A Metric 10: Sampling Methods The metric is not applicable to the study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity Medium There was incomplete reporting of outcome assessment methods; however, details may be available in the cited reference. Metric 12: Test Substance Purity Details regarding sampling methods of the outcome(s) were not fully reported but may Low be available in the cited reference. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables Low Confounding variables were not reported but may be available in the cited reference. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to the study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Uninformative The results presented in the table did not coincide with what was in the text. Metric 16: Statistical Methods and Medium Kinetic calculations were not clearly described but may be available in the cited refer-Kinetic Calculations ence. Domain 8: Other Metric 17: Verification or Plausibility of Medium The study results were reasonable. Results OSAR Models N/A Metric 18: The metric is not applicable to the study type. **Overall Quality Determination** Uninformative

\* Related References: Cites HEROID: 6813682: Ziogou K, Kirk PWW, Lester JN (1989) Water Res 23 :743. (not in distiller)

Study Citation:	Ritsema, R., Cofino, W. P., Frintrop, P. C., Brinkman, U. A. (1989). Trace-level analysis of phthalate esters in surface water and suspended particulate matter by means of capillary gas chromatography with electron-capture and mass-selective detection. Chemosphere 18(11-12):2161-2176						
<b>OECD Harmonized</b>	Biodegradation in Water						
Template:							
HERO ID:	1316257						
	EXTRACTION						
Parameter	Data						

CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type,	None; screening test; Experimental; other: non-guideline biodegradation study
Guideline Solvent, Reactivity, Storage, Stability	NR; NR; NR
Radiolabel, Source, State, Purity	NR; Polyscience, Niles, IL, USA; NR; ≥98%
Blank and Control	Blank controls; Not reported
Oxygen and Inoculum	aerobic; natural water: freshwater: Rhine river
Duration, Parameter, System, and	10 days; test mat.: flask; 0, 1, 3, 7 and 10 days
Sampling Frequency	
pH Adjusted and pH	Not Reported; Not reported
Concentration	4 µg/L
Composition and Test Temperature	Not applicable; 4 and 20°C
CEC, Water Aeration Dilution, Continuous Dark-	Not reported; river water; yes; Not applicable
Results Details Method, Results per Degradation	GC-ECD; % degradation of test substance; Not Reported
Parameter, and	
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Re-	$\geq$ 96% after 10 days at 20°C and minimal degradation at 4°C; Not reported; 10 days; Not reported
stance Compartments	
Results Remarks and Results Details	Not applicable; Graph of data presented
Results Mean Total Recovery and Results per Re-	Not applicable: 93% for suspended particulate matter and 97% from water
covery	II , III III IIII IIII IIIIIIIIIIIIIII

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substar	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Sterile controls were not reported.
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 3: Test Conditi	ons			

# PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

# ... continued from previous page

	<b>i i</b> 0
Study Citation:	Ritsema, R., Cofino, W. P., Frintrop, P. C., Brinkman, U. A. (1989). Trace-level analysis of phthalate esters in surface water and suspended particulate
	matter by means of capillary gas chromatography with electron-capture and mass-selective detection. Chemosphere 18(11-12):2161-2176.
<b>OECD Harmonized</b>	Biodegradation in Water
Template:	
HERO ID:	1316257
	EVALUATION

Domain		Metric	Rating	Comments
	Metric 5:	Test Method Suitability	Medium	There were omissions in test method detail; however, sufficient data were reported to determine that the omissions were not likely to have had a substantial impact on the study results.
	Metric 6:	Testing Conditions	Low	There were omissions in testing conditions; however, sufficient data were reported to determine that the omissions were not likely to have had a substantial impact on the study results.
	Metric 7:	Testing Consistency	Medium	Limited details were reported in testing consistency; however, sufficient data were re- ported to determine that the omissions were not likely to have had a substantial impact on the study results.
	Metric 8:	System Type and Design	Medium	Limited details regarding test system type and design; however, sufficient data were re- ported to determine were not likely to have had a substantial impact on the study results.
Domain 4: Test Organ	isms			
Domain 4. Test Organ	Metric 9:	Outcome Assessment Methodology	High	The inoculum sources were reported and is routinely used for similar study types and appropriate for the study method.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome A	Assessment Matric 11:	Test Substance Identity	Madium	There were emissions in details, however, the emissions were not likely to have had a
	Methe 11.	Test Substance identity	Wiedrum	substantial impact on the study results.
	Metric 12:	Test Substance Purity	Medium	Details were omitted; however, the lack of data is not likely to hinder the interpretation of the results.
Domain 6: Confoundi	ng Wariahla Control			
Domain of Comound	Metric 13:	Confounding Variables	Medium	Sources of uncertainty were not reported but their omission likely did not impact the
				study results.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this review article.
Domain 7: Data Prese	ntation and Analysis			
Domain 7. Data Prese	Metric 15:	Data Reporting	Medium	Details were omitted; however, the lack of data is not likely to hinder the interpretation of the results.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	There were omissions in the calculation details; however, sufficient data were reported to determine that the omissions were not likely to have a substantial impact on study results.
Domain 8: Other	Matric 17.	Verification or Plausibility of	High	The study results were reasonable
	Methe 17:	Results	rign	The study results were reasonable.
		Continu	ued on next page	· · · ·

			continued from previous	page			
Study Citation:	Ritsema, R., C matter by mear	Ritsema, R., Cofino, W. P., Frintrop, P. C., Brinkman, U. A. (1989). Trace-level analysis of phthalate esters in surface water and suspended particulate matter by means of capillary gas chromatography with electron-capture and mass-selective detection. Chemosphere 18(11-12):2161-2176.					
<b>OECD Harmonized</b>	Biodegradation	Biodegradation in Water					
Template:							
HERO ID:	1316257						
			EVALUATION				
Domain		Metric	Rating	Comments			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Quali</b>	ty Determi	ination	Medium				

\* Related References: Cited in HSDB and ECHA

Study Citation:	Scholz, N., Diefen phthalate plasticize	Scholz, N., Diefenbach, R., Rademacher, I., Linnemann, D. (1997). Biodegradation of DEHP, DBP, and DINP: poorly water soluble and widely used phthalate plasticizers. Bulletin of Environmental Contamination and Toxicology 58(4):527-534.				
OECD Harmonized	Biodegradation in Water					
HERO ID:	680132					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, EndPoint, T	ype,	None; ready biodegradability; Experimental; OECD Guideline 301 B (Ready Biodegradability: CO2 Evolution Test)				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	urity	NR; NR; NR				
Blank and Control		Not reported; Not reported				
Oxygen and Inoculum		aerobic; activated sludge, domestic (adaptation not specified): mixed with mineral medium				
Duration, Parameter, System	n, and	28 days; CO2 evolution: Sturm test vessels; Regular intervals, starting after 30 minutes				
Sampling Frequency		Not Reported: Not reported				
Concentration		15 - mg organic carbon				
Composition and Test Temr	erature	Not reported: Not reported				
CEC, Water Aeration Dilution	on, Continuous Dark-	Not reported; Not reported; Not Reported				
ness, and Other Design						
Results Details Method, Res	sults per Degradation	Carbon analyzer TOC 500; CO2 evolution; Not Reported				
Parameter, and Direct Quantum Vield Results						
Results Value, Results Standard Deviation, Re-		81%; 4; 28 days; 88%/28d, met 10-d window.				
sults Sample Time, and Results Reference Sub-						
stance Compartments						
Results Remarks and Result	ts Details	Only mean results reported. Readily biodegradable; Reported to meet the 10-d window based on degradation plot. Reference substance = sodium benzoate.; Average: $0\%/0.5h$ , $0\%/1d$ , $42\pm6\%/4d$ , $56\pm3\%/8d$ , $69\pm2\%/13d$ , $73\pm3\%/18d$ , $76\pm3\%/22d$ , $81\pm4\%/28d.81\pm4\%/29d$				
Results Mean Total Recover covery	y and Results per Re-	Not reported; Not reported				

			EVALUATION	Ň
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
	Metric 2:	Test Substance Purity	Medium	The test substance source was not reported but unlikely to have substantial impact on the study results.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Concurrent positive control was included and the results were valid.
Continued on next page				

PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

HERO ID: 680132 Table: 1 of 1

		contin	ued from prev	vious page		
Study Citation:	Scholz, N., Diefenbach, R., Rademacher, I., Linnemann, D. (1997). Biodegradation of DEHP, DBP, and DINP: poorly water soluble and widely used phthalate plasticizers. Bulletin of Environmental Contamination and Toxicology 58(4):527-534.					
DECD Harmonized	ized Biodegradation in Water					
l'emplate:						
IERO ID:	680132					
		1	EVALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	Medium	There were omissions in testing conditions reported but sufficient data were reported to determine that these omissions were not likely to have a substantial impact on study results.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups (i.e., same exposure method and timing, comparable particle size characteristics). The conditions of the exposure were documented.		
	Metric 8:	System Type and Design	Medium	There were some omissions in system type and design; however, the omissions were not likely to have a substantial impact on study results.		
Domain 4: Test Organis	ma					
Joinani 4. Test Organis	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported and the test organism, species, or inoculum are routinely used for similar study types and appropriate (e.g., aerobic microorganisms used for anaerobic biodegradation study) for the study method or route		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.		
Domain 5: Outcome As	sessment					
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest		
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.		
Jomain 6: Confounding	y/Variable Control Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups (if applicable) were considered and accounted for in data evaluation and all reported variability or uncertainty was not likely to influence the		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.		
Domain 7: Data Present	ation and Analysis					

# Page 114 of 720

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HERO ID: 680132 Table: 1 of 1

		con	tinued from pre-	vious page		
Study Citation: OECD Harmonized	Scholz, N., Diefenbach, R., Rademacher, I., Linnemann, D. (1997). Biodegradation of DEHP, DBP, and DINP: poorly water soluble and widely used phthalate plasticizers. Bulletin of Environmental Contamination and Toxicology 58(4):527-534. Biodegradation in Water					
Template: HERO ID:	680132					
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 15:	Data Reporting	High	Analytical methods used were suitable for detection and quantification of the target chemical and sufficient evidence was presented to confirm that parent compound disappearance was not likely due to some other process.		
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset(s).		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.		
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.		

\* Related References: Cited in HSDB

Page 115 of 720

Study Citation: S	Shelton, Boyd, S. A	A., Tledje, J. M. (1984). Anaerobic biodegradation of phthalic acid esters in sludge. Environmental Science & Technology 18(2):93-97.			
OECD Harmonized B	Biodegradation in V	Water			
Template:					
HERO ID: 5	5490812				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, Type	e,	None; other; Experimental; other: Anaerobic biodegradation in diluted sludge			
Guideline Solvent, Reactivity, Storage, St	tability	Acetone; NR; NR			
Radiolabel, Source, State, Puri	ity	NR; Aldrich Chemical Co. (Milwaukee, MI); NR; NR			
Blank and Control		Sterilized and unamended controls; Not reported			
Oxygen and Inoculum		anaerobic; activated sludge, domestic, non-adapted: 10% solution in primary anaerobic sludge from Jackson sewage treatment plant, Jackson, MI.			
Duration, Parameter, System, a	and	70 days; test mat.: HPLC; Samples were taken on days 0, 7, 14, 21, 28, 42, and 70			
Sampling Frequency					
pH Adjusted and pH		Not Reported; Not reported			
Concentration		20 mg/L			
Composition and Test Tempera	ature	A mineral salts medium was added to the solution. Dilute sludge tests were done at 10% sludge v/v and undiluted tests were done with 6 L sludge.; 35°C			
CEC, Water Aeration Dilution, ness, and Other Design	, Continuous Dark-	Not reported; Oxygen purged with 10% CO2/90% N2 mixture; Not Reported; Not Reported			
Results Details Method, Results per Degradation		Samples extracted with hexane; after phase separation samples were analyzed in GC-FID (Varian 3700) with a fused silica capillary column.			
Parameter, and		Methane gas in the headspace was quantified in GC-FID (Perkin-Elmer 900). Net methane production was calculated based on controls. LOD for			
Direct Quantum Yield Results		the PAE's was ca. 0.5 ppm.; DBP removal %; Not Reported			
Results Value, Results Standa sults Sample Time, and Results stance Compartments	ard Deviation, Re- lts Reference Sub-	>90 within 1 week in undiluted sludge; 100% removal after 70 d; Not Reported; 70 days; No significant loss PAE's in autoclaved controls			
Results Remarks and Results D	Details	80% theoretical CH4 recovered.; Not Reported			
Results Mean Total Recovery a	and Results per Re-	Recoveries were consistently >100%, authors not this is likely due to excess initial additions.; 100%			
covery	-				

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substar	ice				
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.	
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported but the omission is unlikely to have a substan-	
				tial impact on the study results.	
Domain 2: Test Design	Metric 3: Metric 4:	Study Controls Test Substance Stability	High Medium	Sterilized controls were used. Some of the details regarding the test substance storage and preparation were not re- ported but the omissions are unlikely to have a substantial impact on the study results.	

		continu	ued from prev	vious page					
Study Citation:	Shelton, Boyd, S.	Shelton, Boyd, S. A., Tledje, J. M. (1984). Anaerobic biodegradation of phthalic acid esters in sludge. Environmental Science & Technology 18(2):93-97.							
OECD Harmonized	Biodegradation in	Biodegradation in Water							
Template:									
HERO ID:	5490812								
		I	EVALUATIO	N					
Domain		Metric	Rating	Comments					
Domain 3: Test Condition	ons								
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.					
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate for the study type.					
	Metric 7:	Testing Consistency	High	Testing conditions were consistent across the sample groups.					
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.					
Domain 4: Test Organis	sms								
Domain in Test organis	Metric 9:	Outcome Assessment Methodology	High	The inoculum was described and appropriate for the study type.					
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.					
		1 0		11 5 71					
Domain 5: Outcome As	sessment								
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.					
	Metric 12:	Test Substance Purity	High	The sampling methods and frequency were described and were appropriate.					
Domain 6: Confounding	g/Variable Control								
	Metric 13:	Confounding Variables	Medium	Uncertainty in the measurements was not reported but the omission is unlikely to have a substantial impact on the study results.					
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.					
		Exposure							
Domain 7. Data Present	tation and Analysis								
Domain 7. Data Proson	Metric 15:	Data Reporting	High	The data reporting was appropriate.					
	Metric 16:	Statistical Methods and	Medium	No statistical analysis was presented but the omission is unlikely to have a substantial					
		Kinetic Calculations		impact on the study results.					
Domain & Other									
Domain 8: Other	Metric 17:	Verification or Plausibility of	High	The study results are plausible as compared to other reported values.					
	Metric 18:	Results OSAR Models	N/A	The metric is not applicable to the study type					
	methe 10.	Zov in models	11/1	The metric is not appreable to the study type.					
<b>Overall Quali</b>	ty Determina	ation	High						
	v		0						

\* Related References: Cited in ECHA and HSDB

Study Citation:	Shelton, D. R., Ti	Shelton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology					
OECD Harmonized	47(4):850-857. Biodegradation in	Water					
Template:	U						
HERO ID:	2215626						
			EXTRACTIO	N			
Parameter		Data					
CASPN and Test Material		84 74 2. Dibutyl phthalate					
Confidentiality, EndPoint, 7	Гуре,	None; screening test; Experimental;	other: Anaerobic degra	dation in digester sludge			
Guideline Solvent, Reactivity, Storage	e, Stability	NR; NR; NR; NR					
Radiolabel, Source, State, F	Purity	NR; NR; NR; NR					
Blank and Control		Unamended bottles.; Not reported					
Oxygen and Inoculum		anaerobic; anaerobic sludge: Jackso	n, MI; inflow of 6.8X10	0+7 L/day; 1.99% organic matter			
Duration, Parameter, Syster	m, and	8 weeks; CH4 and CO2 evolution: d	igested sewage sludge d	liluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL			
Sampling Frequency		of test chemical.; weekly					
pH Adjusted and pH		Not Reported; 7					
Concentration		noi reporteu					
CEC Water Apartice Diluti	perature	Nevised anactoric innerial medium (KAMM); ASTM medium; Supplemental medium; SS C					
ness, and Other Design	on, Continuous Dark-	The reported, The reported, yes, 10 % CO2/20 % The readspace					
Results Details Method, Re	sults per Degradation	UniMeasure pressure transducer; %	of theoretical gas produ	action using RAMM; ASTM; Supplemental medium; Not Reported			
Parameter, and	1 0						
Direct Quantum Yield Resu	ilts						
Results Value, Results Star sults Sample Time, and Re	ndard Deviation, Re- esults Reference Sub-	$101\%$ , $126\%$ , $85\%$ , $\pm 5.1\%$ , $\pm 3.5\%$ ; $\pm 14.8\%$ ; Not reported; Not Reported					
Results Remarks and Resul	ts Details	ASTM medium overpressures were a result of abiological fluxes of CO2 into the headspace from the buffer (30% CO2-HCO3- system).: Degra-					
Results Remarks and Resul	tis Details	dation is expressed as percentage of theoretical gas production based on the stoichiometry of mineralization to CH4 + CO2 and correcting for gas					
		solubilities.	6 1	,			
Results Mean Total Recover	ry and Results per Re-	Not reported; Not reported					
covery							
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Test Substand	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively by name.			
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity were not reported.			
Domain 2: Test Design			*** 1				
	Metric 3:	Study Controls	Hıgh	A concurrent control was included.			
Continued on next page							

		contin	ued from prev	vious page				
Study Citation:	Shelton, D. R., T 47(4):850-857.	Shelton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology 47(4):850-857.						
OECD Harmonized	Biodegradation in	Biodegradation in Water						
Template:	2215(2)							
HERO ID:	2215626							
		1	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 4:	lest Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.				
Domain 3: Test Conditi	ons							
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.				
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.				
Domain 4: Test Organis	sms							
C	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.				
Domain 6: Confounding	v/Variable Control							
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7: Data Present	tation and Analysis							
Domain 7. Data Meselli	Metric 15.	Data Reporting	Medium	The target chemical and transformation product concentrations, extraction efficiency				
	Wette 13.	Duu Reporting	Weddum	percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				

# ...continued from previous page Study Citation: Shelton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology 47(4):850-857. OECD Harmonized Template: Biodegradation in Water D215626 EVALUATION

		LVALUATION		
Domain	Metric	Rating	Comments	
<b>Overall Quality Dete</b>	ermination	High		

Study Citation:	Shelton, D. R., Ti	Shelton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology					
OECD Harmonized	47(4):850-857. Biodegradation in	Water					
Template:							
HERO ID:	2215626						
			EXTRACTIO	N			
Parameter		Data					
CACDNI - and Taret Meterial		94 74 9. Dibutul abdulate					
Confidentiality EndPoint Ty	una	None: screening test: Experimental: c	ther Angeropic degra	dation in digaster sludge			
Guideline	ype,	None, screening test, Experimental, o	difer. Anaerobie degra	idation in digester studge			
Solvent, Reactivity, Storage,	Stability	NR; NR; NR; NR					
Radiolabel, Source, State, Pu	urity	NR; NR; NR; NR					
Blank and Control		Unamended bottles.; Not reported					
Oxygen and Inoculum		anaerobic; anaerobic sludge: Holt, M	I; 0.89% organic matte	er; average retention time 39 days			
Duration, Parameter, System	i, and	8 weeks; CH4 and CO2 evolution: dig	gested sewage sludge d	liluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL			
Sampling Frequency		of test chemical.; weekly					
pH Adjusted and pH		Not Reported					
	4	Not Reported					
CEC Water Agentian Dilutio	erature	Not reported: Not reported: vec: 10% CO2/00% N2 headspace					
ness and Other Design	on, Continuous Dark-	Not reported, Not reported, yes, 10% CO2/90% N2 headspace					
Results Details Method, Res	ults per Degradation	UniMeasure pressure transducer; % of theoretical gas production using RAMM; ASTM; Supplemental medium; Not Reported					
Parameter, and	1 0						
Direct Quantum Yield Resul	ts						
Results Value, Results Stan	dard Deviation, Re-	46%; 59%; 19%; $\pm 3.2\%$ ; $\pm 0\%$ ; $\pm 5.4\%$ ; Not reported; Not Reported					
sults Sample Time, and Res	sults Reference Sub-						
Results Remarks and Results	s Details	ASTM medium overpressures were a result of abiological fluxes of CO2 into the headspace from the buffer (30% CO2-HCO3- system). Degra-					
		dation is expressed as percentage of theoretical gas production based on the stoichiometry of mineralization to CH4 + CO2 and correcting for gas					
		solubilities.	0 1				
Results Mean Total Recovery	y and Results per Re-	Not reported; Not reported					
covery							
			Εναι Πατιο	N			
Domain		Metric		Comments			
Domain 1: Test Substance	e	moure	Runng	Commonts			
Domain 1. 1050 Substance	Metric 1:	Test Substance Identity	High	The test substance was identified definitively by name			
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity were not reported.			
				· · · · · · · · · · · · · · · · · · ·			

Domain 2: Test Design

Metric 3:Study ControlsMetric 4:Test Substance Stability

HighA concurrent control was included.MediumThe test substance stability, homogeneity, preparation or storage conditions were not<br/>reported; however, these factors were not likely to influence the test substance or were<br/>not likely to have a substantial impact on study results.

# PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

HERO ID: 2215626 Table: 2 of 11

#### ... continued from previous page **Study Citation:** Shelton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology 47(4):850-857. **OECD Harmonized** Biodegradation in Water **Template: HERO ID:** 2215626 **EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability High The test method was suitable for the test substance. Metric 6: **Testing Conditions** High Testing conditions were monitored, reported, and appropriate for the method. Metric 7: Testing Consistency High Test conditions were consistent across samples or study groups. Metric 8: System Type and Design N/A The metric is not applicable to this study type. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The inoculum source was reported. Metric 10: Sampling Methods N/A The metric is not applicable to this study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology addressed or reported the intended outcome of interest. Metric 12: Test Substance Purity High The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being analyzed. Domain 6: Confounding/Variable Control Confounding Variables Metric 13: High Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation. Health Outcomes Unrelated to Metric 14: N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium The target chemical and transformation product concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results. Statistical Methods and Metric 16: High Statistical methods or kinetic calculations were clearly described and address the dataset. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of High Reported values were within expected range. Results Metric 18: QSAR Models N/A The metric is not applicable to this study type. **Overall Quality Determination** High

Study Citation: Shel	Shelton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology						
47(4 DECD H	):850-857.	<b>XX</b> 7 .					
<b>OECD Harmonized</b> Biod	legradation in	Water					
HERO ID: 2215	5626						
			EXTRACTIO	N			
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl phthalate					
Confidentiality, EndPoint, Type,		None; screening test; Experimental;	other: Anaerobic degra	adation in digester sludge			
Solvent, Reactivity, Storage, Stabi	lity	NR; NR; NR; NR					
Radiolabel, Source, State, Purity	2	NR; NR; NR; NR					
Blank and Control		Unamended bottles.; Not reported					
Oxygen and Inoculum		anaerobic; anaerobic sludge: Ionia. N	/II; average retention ti	me 17 days			
Duration, Parameter, System, and		8 weeks; CH4 and CO2 evolution: di	gested sewage sludge d	liluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL			
Sampling Frequency		of test chemical.; weekly		,			
pH Adjusted and pH		Not Reported; 7					
Concentration		Not Reported					
Composition and Test Temperature	e	Revised anaerobic mineral medium (RAMM); ASTM medium; Supplemental medium; 35°C					
CEC, Water Aeration Dilution, Con	ntinuous Dark-	Not reported; Not reported; yes; 10% CO2/90% N2 headspace					
ness, and Other Design		U. Manuel and the second se					
Results Details Method, Results p	er Degradation	UniMeasure pressure transducer; % of theoretical gas production using RAMM; ASTM; Supplemental medium; Not Reported					
Direct Quantum Yield Results							
Results Value. Results Standard 1	Deviation, Re-	72%: 117%: 77%: $\pm 3.6\%$ : $\pm 4.7\%$ : $\pm 16.7\%$ : Not reported: Not Reported					
sults Sample Time, and Results R	Reference Sub-						
stance Compartments							
Results Remarks and Results Deta	ils	ASTM medium overpressures were a result of abiological fluxes of CO2 into the headspace from the buffer (30% CO2-HCO3- system).; Degra-					
		dation is expressed as percentage of	theoretical gas product	ion based on the stoichiometry of mineralization to CH4 + CO2 and correcting for gas			
Pagulta Maan Total Pagayany and I	Pagulta par Pa	solubilities.					
covery	Kesuits per Ke-	Not reported; Not reported					
,							
			<b>EVALUATIO</b>	Ň			
Domain		Metric	Rating	Comments			
Domain 1: Test Substance							
Met	ric 1:	Test Substance Identity	High	The test substance was identified definitively by name.			
Met	ric 2:	Test Substance Purity	Medium	The test substance source and purity were not reported.			
Domain 2: Test Design							
Domain 2. 1681 Design	ric 3:	Study Controls	Uiah	A concurrent control was included			
Mat	ric J.	Test Substance Stability	Madium	The test substance stability homogeneity propagation or storage conditions were not			
WIEL.	110 4.	Test Substance Stability	wieuruill	The test substance stability, nonlogeneity, preparation of storage conditions were not			

Continued on next page ...

reported; however, these factors were not likely to influence the test substance or were

not likely to have a substantial impact on study results.

# PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

HERO ID: 2215626 Table: 3 of 11

#### ... continued from previous page **Study Citation:** Shelton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology 47(4):850-857. **OECD Harmonized** Biodegradation in Water **Template: HERO ID:** 2215626 **EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability High The test method was suitable for the test substance. Metric 6: **Testing Conditions** High Testing conditions were monitored, reported, and appropriate for the method. Metric 7: Testing Consistency High Test conditions were consistent across samples or study groups. Metric 8: System Type and Design N/A The metric is not applicable to this study type. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The inoculum source was reported. Metric 10: Sampling Methods N/A The metric is not applicable to this study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology addressed or reported the intended outcome of interest. Metric 12: Test Substance Purity High The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being analyzed. Domain 6: Confounding/Variable Control Confounding Variables Metric 13: High Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation. Health Outcomes Unrelated to Metric 14: N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium The target chemical and transformation product concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results. Statistical Methods and Metric 16: High Statistical methods or kinetic calculations were clearly described and address the dataset. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of High Reported values were within expected range. Results Metric 18: QSAR Models N/A The metric is not applicable to this study type. **Overall Quality Determination** High

Study Citation:	Shelton, D. R., Ti 47(4):850-857	Shelton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology						
OECD Harmonized	Biodegradation in Water							
Template: HERO ID:	2215626							
			EXTRACTIO	N				
Parameter		Data						
CASRN and Test Material		84-74-2; Dibutyl phthalate						
Confidentiality, EndPoint, T	Гуре,	None; screening test; Experimental;	other: Anaerobic degra	dation in digester sludge				
Guideline Solvent Reactivity Storage	Stability	ND · ND · ND · ND						
Radiolabel Source State F	z, Stability Purity	NR, NR, NR, NR NR NR NR NR						
Blank and Control	unty	Unamended bottles.: Not reported						
Oxygen and Inoculum		anaerobic; anaerobic sludge: Adrian	, MI					
Duration, Parameter, Syster	m, and	8 weeks; CH4 evolution: digested sewage sludge diluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL of test						
Sampling Frequency		chemical.; Not reported						
pH Adjusted and pH		Not Reported; 7						
Concentration								
Composition and Test Temp	perature	phosphate buffer, KH2PO4 and K2HPO4 (adjusted to pH 7.0); mineral salts, NH4C1, CaCl2.2H2O, MgCl.6H2O, and FeCl2.4H2O; and trace metals MnCl2 4H2O, H3BO3, ZnCl2, CuCl2, NaMo4 2H2O, CoCl2 6H2O, NiCl2 6H2O, and Na2SeO3 · 35°C						
CEC, Water Aeration Diluti	on, Continuous Dark-	Not reported; Not reported; yes; 10% CO2/90% N2 headspace						
ness, and Other Design								
Results Details Method, Re	sults per Degradation	GC-FID; % of theoretical methane production; Not Reported						
Parameter, and Direct Quantum Vield Resu	ilte							
Results Value, Results Sta	ndard Deviation, Re-	24%: Not reported; 8 weeks; Not Reported						
sults Sample Time, and Re	esults Reference Sub-							
stance Compartments								
Results Remarks and Resul	ts Details	Not Reported; Net methane production was calculated by subtracting background methane production in unamended bottles from that in test						
Results Mean Total Recover covery	ry and Results per Re-	Not reported; Not reported						
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 1: Test Substan	ce							
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively by name.				
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity were not reported				

Domain 2: Test Design

Metric 3:Study ControlsMetric 4:Test Substance Stability

Continued on next page ...

High

Medium

A concurrent control was included.

not likely to have a substantial impact on study results.

The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were

# PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

HERO ID: 2215626 Table: 4 of 11

#### ... continued from previous page **Study Citation:** Shelton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology 47(4):850-857. **OECD Harmonized** Biodegradation in Water **Template: HERO ID:** 2215626 **EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability High The test method was suitable for the test substance. Metric 6: **Testing Conditions** High Testing conditions were monitored, reported, and appropriate for the method. Metric 7: Testing Consistency High Test conditions were consistent across samples or study groups. Metric 8: System Type and Design N/A The metric is not applicable to this study type. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The inoculum source was reported. Metric 10: Sampling Methods N/A The metric is not applicable to this study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology addressed or reported the intended outcome of interest. Metric 12: Test Substance Purity High The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being analyzed. Domain 6: Confounding/Variable Control Confounding Variables Metric 13: High Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation. Health Outcomes Unrelated to Metric 14: N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium The target chemical and transformation product concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results. Statistical Methods and Metric 16: High Statistical methods or kinetic calculations were clearly described and address the dataset. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of High Reported values were within expected range. Results Metric 18: QSAR Models N/A The metric is not applicable to this study type.

# **Overall Quality Determination**

\* Related References: Cited in ECHA; Same as HERO ID 2215626.

High

Study Citation:	Shelton, D. R., Ti	helton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology 7(4):850-857						
OECD Harmonized	Biodegradation in	Water						
HERO ID:	2215626							
			EXT	RACTIO	N			
Parameter		Data						
CASRN and Test Material		84-74-2; Dibutyl pht	thalate					
Confidentiality, EndPoint, T	ype,	None; screening test	; Experimental; other: Ana	erobic degra	adation in digester sludge			
Solvent Reactivity Storage	Stability	$NR \cdot NR \cdot NR \cdot NR$						
Radiolabel Source State P	urity	NR · NR · NR · NR						
Blank and Control	unity	Unamended bottles	· Not reported					
Oxygen and Inoculum		anaerabic: anaerabic sludge: Jackson MI: inflow of 6.8X1017 I /day: 1.00% organic matter						
Duration Parameter System	a and	8 weeks: CH4 evolution: digested sewage sludge diluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL of test						
Sampling Frequency	i, uid	chemical.; Not reported						
pH Adjusted and pH		Not Reported; 7						
Concentration		50 µg C/mL						
Composition and Test Temp	erature	phosphate buffer, KH2PO4 and K2HPO4 (adjusted to pH 7.0); mineral salts, NH4CI, CaCl2.2H2O, MgCl.6H2O, and FeCl2.4H2O; and trace metals, MnCl2.4H2O, H3BO3, ZnCl2, CuCl2, NaMo4.2H2O, CoCl2.6H2O, NiCl2.6H2O, and Na2SeO3.; 35°C						
CEC, Water Aeration Dilution	on, Continuous Dark-	Not reported; Not reported; yes; 10% CO2/90% N2 headspace						
ness, and Other Design								
Results Details Method, Res	sults per Degradation	GC-FID; % of theoretical methane production; Not Reported						
Direct Quantum Vield Resu	lts							
Results Value, Results Star	idard Deviation, Re-	49%: Not reported: 8 weeks: Not Reported						
sults Sample Time, and Re	sults Reference Sub-	······································						
stance Compartments								
Results Remarks and Result	s Details	Not Reported; Net	methane production was c	alculated by	v subtracting background methane production in unamended bottles from that in test			
Results Mean Total Recover	v and Results per Re-	bottles. Not reported: Not reported						
covery	y and results per re		poned					
5								
			EVA	LUATION	N			
Domain		Metric		Rating	Comments			
Domain 1: Test Substance	e							
	Metric 1:	Test Substance Ide	entity	High	The test substance was identified definitively by name.			

Domain 2: Test Design

Metric 3:Study ControlsMetric 4:Test Substance Stability

Test Substance Purity

Metric 2:

Continued on next page ...

The test substance source and purity were not reported.

not likely to have a substantial impact on study results.

The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were

A concurrent control was included.

Medium

High

Medium

# PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

HERO ID: 2215626 Table: 5 of 11

and used widely accepted methods/approaches for the chemical and media being ana-

#### ... continued from previous page **Study Citation:** Shelton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology 47(4):850-857. **OECD Harmonized** Biodegradation in Water **Template: HERO ID:** 2215626 **EVALUATION** Domain Metric Rating Comments **Domain 3: Test Conditions** Metric 5: Test Method Suitability High The test method was suitable for the test substance. Metric 6: **Testing Conditions** High Testing conditions were monitored, reported, and appropriate for the method. Metric 7: Testing Consistency High Test conditions were consistent across samples or study groups. Metric 8: System Type and Design N/A The metric is not applicable to this study type. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The inoculum source was reported. Metric 10: N/A Sampling Methods The metric is not applicable to this study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology addressed or reported the intended outcome of interest. Metric 12: Test Substance Purity High The study reported the use of sampling methods that address the outcome of interest,

<b>Overall Quality Determination</b>			High	
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
	wicule 17.	Results	Ingli	reported values were within expected range.
Domain 8: Other	Metric 17 <sup>.</sup>	Verification or Plausibility of	High	Reported values were within expected range
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.
Domain 7. Data Fres	Metric 15:	Data Reporting	Medium	The target chemical and transformation product concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.
Domain 7: Data Prese	entation and Analysis			
		Exposure		
	Metric 14:	Health Outcomes Unrelated to	N/A	and between study groups were considered and accounted for in data evaluation. The metric is not applicable to this study type.
Domain 6: Confound	ing/Variable Control Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques
				lyzed.

Study Citation:	Shelton, D. R., Ti 47(4):850-857.	helton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology (4):850-857.						
OECD Harmonized	Biodegradation in	Water						
HERO ID:	2215626							
			EXTRACTIO	N				
Parameter		Data						
CASRN and Test Material		84-74-2; Dibutyl phthalate						
Confidentiality, EndPoint, 7	Гуре,	None; screening test; Experimental; oth	er: Anaerobic degra	dation in digester sludge				
Guideline Solvent, Reactivity, Storage	, Stability	NR; NR; NR; NR						
Radiolabel, Source, State, F	Purity	NR; NR; NR; NR						
Blank and Control	2	Unamended bottles.; Not reported						
Oxygen and Inoculum		anaerobic: anaerobic sludge: Ann Arbor, MI						
Duration, Parameter, Syster	n, and	8 weeks; CH4 evolution: digested sewage sludge diluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL of test						
Sampling Frequency		chemical.; Not reported						
pH Adjusted and pH		Not Reported; 7						
Concentration		50 µg C/mL						
Composition and Test Temp	perature	phosphate buffer, KH2PO4 and K2HPO4 (adjusted to pH 7.0); mineral salts, NH4Cl, CaCl2.2H2O, MgCl.6H2O, and FeCl2.4H2O; and trace metals MnCl2.4H2O, H3BO3, ZnCl2, CuCl2, NaMo4, 2H2O, CoCl2, 6H2O, NiCl2, 6H2O, and Na2SeO3 : 35°C						
CEC. Water Aeration Diluti	on. Continuous Dark-	Not reported; Not reported; yes; 10% CO2/90% N2 headspace						
ness, and Other Design								
Results Details Method, Re	sults per Degradation	GC-FID; % of theoretical methane production; Not Reported						
Parameter, and								
Direct Quantum Yield Resu	Ilts ndard Deviation Re	01%: Not reported: 8 weeks: Not Deported						
sults Sample Time, and Re	sults Reference Sub-	91%; not reported; 8 weeks; not keponed						
stance Compartments								
Results Remarks and Resul	ts Details	Not Reported; Net methane production	n was calculated by	subtracting background methane production in unamended bottles from that in test				
Pacults Mann Total Pacova	w and Pacults par Pa	bottles. Not reported: Not reported						
coverv	y and Results per Re-	Not reported, Not reported						
, , , , , , , , , , , , , , , , , , ,								
			EVALUATION	N				
Domain		Metric	Rating	Comments				
Domain 1: Test Substand	ce							
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively by name.				
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity were not reported.				

Domain 2: Test Design

Metric 3:Study ControlsMetric 4:Test Substance Stability

HighA concurrent control was included.MediumThe test substance stability, homogeneity, preparation or storage conditions were not<br/>reported; however, these factors were not likely to influence the test substance or were<br/>not likely to have a substantial impact on study results.

# PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

HERO ID: 2215626 Table: 6 of 11

#### ... continued from previous page **Study Citation:** Shelton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology 47(4):850-857. **OECD Harmonized** Biodegradation in Water **Template: HERO ID:** 2215626 **EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability High The test method was suitable for the test substance. Metric 6: **Testing Conditions** High Testing conditions were monitored, reported, and appropriate for the method. Metric 7: Testing Consistency High Test conditions were consistent across samples or study groups. Metric 8: System Type and Design N/A The metric is not applicable to this study type. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The inoculum source was reported. Metric 10: Sampling Methods N/A The metric is not applicable to this study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology addressed or reported the intended outcome of interest. Metric 12: Test Substance Purity High The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being analyzed. Domain 6: Confounding/Variable Control Confounding Variables Metric 13: High Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation. Health Outcomes Unrelated to Metric 14: N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium The target chemical and transformation product concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results. Statistical Methods and Metric 16: High Statistical methods or kinetic calculations were clearly described and address the dataset. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of High Reported values were within expected range. Results Metric 18: QSAR Models N/A The metric is not applicable to this study type. **Overall Quality Determination** High

Study Citation:	Shelton, D. R., Ti	helton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology 7(4):850-857						
OECD Harmonized	Biodegradation in	Water						
Template: HERO ID:	2215626							
			FV	TPACTIO	N			
Parameter		Data		I KAC HO	IN			
1 ul ullicitor		Dutu						
CASDN I T M-41		94 74 2 Dibuted also	4-1-4-					
Castin and Test Material	Gran a	84-74-2; Dibutyi phi	inalate	a anabia da ana	dation in diagona aludaa			
Guideline	lype,	None; screening test	; Experimental; other: Af	haerobic degra	idadion in digester studge			
Solvent, Reactivity, Storage	, Stability	NR; NR; NR; NR						
Radiolabel, Source, State, P	urity	NR; NR; NR; NR						
Blank and Control		Unamended bottles.;	; Not reported					
Oxygen and Inoculum		anaerobic; anaerobic	sludge: St Johns, MI					
Duration, Parameter, Syster	n, and	8 weeks; CH4 evolution: digested sewage sludge diluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL of test						
Sampling Frequency		chemical.; Not reported						
pH Adjusted and pH		Not Reported; 7						
Concentration		50 µg C/mL						
Composition and Test Temp	perature	phosphate buffer, KH2PO4 and K2HPO4 (adjusted to pH 7.0); mineral salts, NH4CI, CaCl2.2H2O, MgCl.6H2O, and FeCl2.4H2O; and trace						
CEC Water Aerotion Diluti	on Continuous Dark	metals, MnC12.4H2O, H3BO3, ZnC12, CuC12, NaMo4.2H2O, CoC12.6H2O, N1C12.6H2O, and Na2SeO3.; 35°C Not reported: Not reported: yes: 10% CO2/90% N2 headspace						
ness and Other Design	on, Continuous Dark-	not reported, not reported, jus, 10% CO2/20% in 2 neadspace						
Results Details Method, Re	sults per Degradation	GC-FID; % of theoretical methane production; Not Reported						
Parameter, and	1 0							
Direct Quantum Yield Resu	ılts							
Results Value, Results Star	ndard Deviation, Re-	37%; Not reported; 8 weeks; Not Reported						
sults Sample Time, and Re	sults Reference Sub-							
Results Remarks and Result	ts Details	Not Reported. Net methane production was calculated by subtracting background methane production in unamended bottles from that in test						
		bottles.						
Results Mean Total Recover	ry and Results per Re-	Not reported; Not reported						
covery								
					A.			
Dom		M - +: -	E	VALUATION Datime	N Compression			
Domain Domain 1. Test Sub-terr		Metric		Kaung	Comments			
Domain 1: Test Substand	Matria 1.	Track Carbona II		TT: -1-				
	Metric 1:	Test Substance Ide		High	I ne test substance was identified definitively by name.			
	Metric 2:	Test Substance Pu	nuy	wiedium	I ne test substance source and purity were not reported.			

Domain 2: Test Design

Metric 3:Study ControlsMetric 4:Test Substance Stability

not likely to have a substantial impact on study results.

A concurrent control was included.

The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were

Continued on next page ...

High

Medium

# PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

HERO ID: 2215626 Table: 7 of 11

#### ... continued from previous page **Study Citation:** Shelton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology 47(4):850-857. **OECD Harmonized** Biodegradation in Water **Template: HERO ID:** 2215626 **EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability High The test method was suitable for the test substance. Metric 6: **Testing Conditions** High Testing conditions were monitored, reported, and appropriate for the method. Metric 7: Testing Consistency High Test conditions were consistent across samples or study groups. System Type and Design Metric 8: N/A The metric is not applicable to this study type. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The inoculum source was reported. Metric 10: Sampling Methods N/A The metric is not applicable to this study type. Domain 5: Outcome Assessment Test Substance Identity Metric 11: High The outcome assessment methodology addressed or reported the intended outcome of interest.

	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.
Domain 6: Confoun	ding/Variable Control			
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Pres	sentation and Analysis	5		
	Metric 15:	Data Reporting	Medium	The target chemical and transformation product concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quality Determination</b>			High	

\* Related References: Cited in ECHA; Same as HERO ID 2215626.

Study Citation:	Shelton, D. R., Ti	edje, J. M. (1984). General meth	nod for determining	anaerobic biodegradation potential. Applied and Environmental Microbiology			
OECD Harmonized	Biodegradation in	gradation in Water					
HERO ID:	2215626	15626					
			EXTRACTIO	N			
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl phthalate					
Confidentiality, EndPoint, T	Гуре,	None; screening test; Experimental;	other: Anaerobic degra	dation in digester sludge			
Guideline	Ctability	ND. ND. ND. ND					
Badialabal Source State E	c, Stability	NR, NR, NR, NR ND, ND, ND, ND					
Rauloiabel, Source, State, F	unity	INN, INN, INN, INN Unamended bottles : Not reported					
Oxygen and Inoculum		anaerobic: anaerobic sludge: Ionia	MI: overage retention ti	me 17 dave			
Duration Parameter System	n and	anactoric, anactoric studge: 1011a, MI; average felention time 17 days 8 weaks: CH4 evolution: directed sewage sludge diluted to 10% and incubated apparabically in 160 ml some bettles with 50 up of C/mL of test					
Sampling Frequency	n, and	chemical: Not reported					
pH Adjusted and pH		Not Reported; 7					
Concentration		50 µg C/mL					
Composition and Test Temp	perature	phosphate buffer, KH2PO4 and K2HPO4 (adjusted to pH 7.0); mineral salts, NH4CI, CaCl2.2H2O, MgCl.6H2O, and FeCl2.4H2O; and trace					
		metals, MnCl2.4H2O, H3BO3, ZnCl2, CuCl2, NaMo4.2H2O, CoCl2.6H2O, NiCl2.6H2O, and Na2SeO3.; 35°C					
CEC, Water Aeration Diluti	on, Continuous Dark-	Not reported; Not reported; yes; 10% CO2/90% N2 neadspace					
Results Details Method. Re	sults per Degradation	GC-FID; % of theoretical methane production; Not Reported					
Parameter, and	suits per Degradation						
Direct Quantum Yield Resu	ilts						
Results Value, Results Star	ndard Deviation, Re-	36%; Not reported; 8 weeks; Not Reported					
sults Sample Time, and Re	sults Reference Sub-						
Results Remarks and Result	ts Details	Not Reported. Net methane production was calculated by subtracting background methane production in unamended bottles from that in test					
Results Remarks and Resul	to Details	bottles.					
Results Mean Total Recovery and Results per Re-		Not reported; Not reported					
covery							
			FVALUATION				
Domain		Metric	Rating	Comments			
Domain 1: Test Substand	ce		8				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively by name.			
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity were not reported.			

Domain 2: Test Design

Metric 3:Study ControlsMetric 4:Test Substance Stability

# reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.

A concurrent control was included.

The test substance stability, homogeneity, preparation or storage conditions were not

Continued on next page ...

High

Medium

# PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

HERO ID: 2215626 Table: 8 of 11

#### ... continued from previous page **Study Citation:** Shelton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology 47(4):850-857. **OECD Harmonized** Biodegradation in Water **Template: HERO ID:** 2215626 **EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability High The test method was suitable for the test substance. Metric 6: **Testing Conditions** High Testing conditions were monitored, reported, and appropriate for the method. Metric 7: Testing Consistency High Test conditions were consistent across samples or study groups. Metric 8: System Type and Design N/A The metric is not applicable to this study type. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The inoculum source was reported. Metric 10: Sampling Methods N/A The metric is not applicable to this study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology addressed or reported the intended outcome of interest. Metric 12: Test Substance Purity High The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being analyzed. Domain 6: Confounding/Variable Control Confounding Variables Metric 13: High Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation. Health Outcomes Unrelated to Metric 14: N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium The target chemical and transformation product concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results. Statistical Methods and Metric 16: High Statistical methods or kinetic calculations were clearly described and address the dataset. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of High Reported values were within expected range. Results Metric 18: QSAR Models N/A The metric is not applicable to this study type. **Overall Quality Determination** High

Study Citation:	Shelton, D. R., Ti	edje, J. M. (1984). General me	thod for determining	Shelton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology				
OECD Harmonized	47(4):850-857. Biodegradation in	Water						
Template:	-							
HERO ID:	2215626							
			EXTRACTIO	N				
Parameter		Data						
CASRN and Test Material		84-74-2; Dibutyl phthalate						
Confidentiality, EndPoint, T	ype,	None; screening test; Experimental	l; other: Anaerobic degra	adation in digester sludge				
Guideline Solvent Reactivity Storage	Stability	NR · NR · NR · NR						
Radiolabel, Source, State, P	urity	NR: NR: NR: NR						
Blank and Control	unty	Unamended bottles.; Not reported						
Oxygen and Inoculum		anaerobic: anaerobic sludge: Mason, MI						
Duration, Parameter, System	n, and	8 weeks; CH4 evolution: digested sewage sludge diluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL of test						
Sampling Frequency		chemical.; Not reported						
pH Adjusted and pH		Not Reported; /						
Concentration	anotana	JU HS CHILL phosphate buffer, KU2DO4 and K2UDO4 (adjusted to pU 7.0); minoral solts, NU4CL CoCl2.2U2O, MaCL6U2O, and EaCl2.4U2O; and trace						
Composition and rest remp	belature	metals. MnCl2.4H2O, H3BO3, ZnCl2, CuCl2, NaMo4.2H2O, CoCl2.6H2O, NiCl2.6H2O, and Na2SeO3.; 35°C						
CEC, Water Aeration Dilution	on, Continuous Dark-	Not reported; Not reported; yes; 10% CO2/90% N2 headspace						
ness, and Other Design		CC EID: % of theoretical methane production: Not Reported						
Results Details Method, Res	sults per Degradation	GC-FID; % of theoretical methane production; Not Reported						
Direct Quantum Yield Resu	lts							
Results Value, Results Star	ndard Deviation, Re-	0%; Not reported; 8 weeks; Not Reported						
sults Sample Time, and Re	sults Reference Sub-							
Results Remarks and Result	ts Details	Not Reported. Net methane production was calculated by subtracting background methane production in unamended bottles from that in test						
		bottles.						
Results Mean Total Recovery and Results per Re-		Not reported; Not reported						
covery								
Domain		Metric	Rating	Comments				
Domain 1: Test Substance	ce							
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively by name.				
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity were not reported.				

Domain 2: Test Design

Metric 3:Study ControlsMetric 4:Test Substance Stability

HighA concurrent control was included.MediumThe test substance stability, homogeneity, preparation or storage conditions were not<br/>reported; however, these factors were not likely to influence the test substance or were<br/>not likely to have a substantial impact on study results.

# PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

HERO ID: 2215626 Table: 9 of 11

#### ... continued from previous page **Study Citation:** Shelton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology 47(4):850-857. **OECD Harmonized** Biodegradation in Water **Template: HERO ID:** 2215626 **EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability High The test method was suitable for the test substance. Metric 6: **Testing Conditions** High Testing conditions were monitored, reported, and appropriate for the method. Metric 7: Testing Consistency High Test conditions were consistent across samples or study groups. Metric 8: System Type and Design N/A The metric is not applicable to this study type. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The inoculum source was reported. Metric 10: Sampling Methods N/A The metric is not applicable to this study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology addressed or reported the intended outcome of interest. Metric 12: Test Substance Purity High The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being analyzed. Domain 6: Confounding/Variable Control Confounding Variables Metric 13: High Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation. Health Outcomes Unrelated to Metric 14: N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium The target chemical and transformation product concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results. Statistical Methods and Metric 16: High Statistical methods or kinetic calculations were clearly described and address the dataset. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of High Reported values were within expected range. Results Metric 18: QSAR Models N/A The metric is not applicable to this study type. **Overall Quality Determination** High

Starday Citediana		- J. I. M. (1094). Company largethe					
Study Citation:	47(4)·850-857	edje, J. M. (1984). General metho	ba for determining	anaerobic biodegradation potential. Applied and Environmental Microbiology			
<b>OECD Harmonized</b>	Biodegradation in	Water					
Template:							
HERO ID:	2215626						
			EXTRACTIO	N			
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl phthalate					
Confidentiality, EndPoint, T	ype,	None; screening test; Experimental; o	ther: Anaerobic degra	adation in digester sludge			
Guideline Solvent Reactivity Storage	Stability	NR · NR · NR · NR					
Radiolabel Source State F	hrity	NR: NR: NR: NR					
Blank and Control	unty	Unamended bottles.: Not reported					
Oxygen and Inoculum		anaerobic: anaerobic sludge: Chelsea, MI: Inflow 1.6X10+6 liters/day.					
Duration, Parameter, Syster	n, and	8 weeks; CH4 evolution: digested sewage sludge diluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL of test					
Sampling Frequency		chemical.; Not reported					
pH Adjusted and pH		Not Reported; 7					
Concentration		50 µg C/mL					
Composition and Test Temp	berature	metals MnCl2 4H2O H3BO3 ZnCl2 CuCl2 NaMo4 2H2O CoCl2 6H2O NiCl2 6H2O and Na2SeO3 · 35°C					
CEC, Water Aeration Diluti	on, Continuous Dark-	Not reported; Not reported; yes; 10% CO2/90% N2 headspace					
ness, and Other Design		CC FID: 01 of the section backbone are destined. Not Described					
Results Details Method, Re	sults per Degradation	GC-FID; % of theoretical methane production; Not Reported					
Direct Quantum Yield Resu	lts						
Results Value, Results Star	ndard Deviation, Re-	0%; Not reported; 8 weeks; Not Reported					
sults Sample Time, and Re	sults Reference Sub-						
stance Compartments	ta Dataila	Not Poportad: Nat mathema producti	on was calculated by	subtracting background mothers production in unamended bottles from that in test			
Kesuns Kemarks and Kesur	is Details	Not reported; Net methane production was calculated by subtracting background methane production in unamended bottles from that in test bottles					
Results Mean Total Recovery and Results per Re-		Not reported; Not reported					
covery							
Ъ.,			EVALUATION	N			
Domain Domain 1: Test Seek (		Metric	Kating	Comments			
Domain 1: Test Substand	Metric 1:	Test Substance Identity	High	The test substance use identified definitively by nome			
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity were not reported			
	Micule 2.	rest Substance I unity	Ivicululli	The lest substance source and purity were not reported.			

Domain 2: Test Design

Metric 3:Study ControlsMetric 4:Test Substance Stability

# HighA concurrent control was included.MediumThe test substance stability, homogeneity, preparation or storage conditions were not<br/>reported; however, these factors were not likely to influence the test substance or were<br/>not likely to have a substantial impact on study results.

# PUBLIC RELEASE DRAFT May 2025

HERO ID: 2215626 Table: 10 of 11

# Biodegradation in Water ...continued from previous page P. Tiadia, I. M. (1984). General method for datermining anaerobic biodegradation potential. Applied a

Study Citation:	Shelton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology						
OFCD Harmonized	47(4):850-857. Biodegradation in Water						
Template:							
HERO ID:	2215626						
		I	TVAL HATIO	N			
Domain		Metric	Rating	Comments			
Domain 3: Test Conditio	ons						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.			
Jomain 4: Test Organisi	ms Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
		1 0					
Domain 5: Outcome Ass	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.			
Domain 6: Confounding	Variable Control	Confounding Variables	High				
	Metric 13:	Confounding variables	High	sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Damain 7. Data Presant	ation and Analysis						
Domain 7: Data Presenta	Metric 15:	Data Reporting	Medium	The target chemical and transformation product concentrations, extraction efficiency,			
				percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.			
	Metric 16:	Statistical Methods and	High	Statistical methods or kinetic calculations were clearly described and address the			
		Kinetic Calculations		dataset.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.			
	Metric 18.	Results OSAR Models	N/A	The metric is not applicable to this study type			
		201111100010	1 1/ 1 1	The means is not approache to any study type.			
<b>Overall Qualit</b>	ty Determina	ation	High				

Study Citation:	Shelton, D. R., Ti 47(4):850-857	edje, J. M. (1984). General 1	nethod for determining	anaerobic biodegradation potential. Applied and Environmental Microbiology		
OECD Harmonized	Biodegradation in	Water				
HERO ID:	2215626	2215626				
			EXTRACTIO	DN		
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, EndPoint, T	Гуре,	None; screening test; Experimen	tal; other: Anaerobic degra	adation in digester sludge		
Guideline	Q. 1 11.		-			
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR; NR				
Radiolabel, Source, State, P	urity	INK; INK; INK; INK Unamandad battlas : Nat raport	.d			
Oxygen and Inoculum		anaerobic: anaerobic sludge: Po	rtland MI			
Duration Parameter System	n and	anactoric, anactoric studge: Fortianu, MI 8 weaks: CHA evolution: directed services sludge diluted to 10% and incubated anacrohically in 160 ml serum bottles with 50 up of C/mL of text				
Sampling Frequency	ii, and	chemical.; Not reported				
pH Adjusted and pH		Not Reported; 7				
Concentration		50 μg C/mL				
Composition and Test Temp	perature	phosphate buffer, KH2PO4 and K2HPO4 (adjusted to pH 7.0); mineral salts, NH4CI, CaCl2.2H2O, MgCl.6H2O, and FeCl2.4H2O; and trace metals, MnCl2.4H2O, H3BO3, ZnCl2, CuCl2, NaMo4.2H2O, CoCl2.6H2O, NiCl2.6H2O, and Na2SeO3.; 35°C				
CEC, Water Aeration Dilution	on, Continuous Dark-	Not reported; Not reported; yes; 10% CO2/90% N2 headspace				
Results Details Method Re	sults per Degradation	GC-FID; % of theoretical methane production; Not Reported				
Parameter, and	suits per Degradation					
Direct Quantum Yield Resu	ılts					
Results Value, Results Star	ndard Deviation, Re-	0%; Not reported; 8 weeks; Not Reported				
sults Sample Time, and Re	sults Reference Sub-					
Results Remarks and Result	ts Details	Not Reported. Net methane production was calculated by subtracting background methane production in unamended bottles from that in test				
		bottles.				
Results Mean Total Recovery and Results per Re-		Not reported; Not reported				
covery						
			EVALUATIO	NT .		
Domain		Metric	E VALUATIO	Comments		
Domain 1: Test Substand	20	Weute	Katilig	Connients		
Domain 1. 10st Substant	Metric 1.	Test Substance Identity	High	The test substance was identified definitively by name		
	Metric 2:	Test Substance Purity	Medium	The test substance was identified definitively by fame.		
	··· ·	· · · · · · · · · · · · · · · · · · ·		a second size of a second size and second size of the second size of t		

Domain 2: Test Design

Metric 3:Study ControlsMetric 4:Test Substance Stability

 High
 A concurrent control was included.

 Medium
 The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.

# PUBLIC RELEASE DRAFT May 2025

HERO ID: 2215626 Table: 11 of 11

# Biodegradation in Water ...continued from previous page

Study Citation:	Shelton, D. R., 7	helton, D. R., Tiedje, J. M. (1984). General method for determining anaerobic biodegradation potential. Applied and Environmental Microbiology				
OECD Harmonized	4/(4):850-857. Biodegradation ir	n Water				
Template:	2215/2/					
HERO ID:	2215626					
		]	EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 3: Test Condi	tions					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.		
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.		
Domain 4: Test Organ	isms					
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.		
Denterin 5. Outerment						
Domain 5: Outcome A	Assessment	Trad Calendary - Idaudita	II: -h			
	Metric 11:	Test Substance Identity	High	interest.		
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana-		
				lyzed.		
Demein (. Cenferredi						
Domain o: Contoundi	Matria 12.	Confounding Variables	Iliah			
	Metric 15:	Confounding variables	пign	and between study groups were considered and accounted for in data evaluation		
	Metric 14.	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type		
		Exposure	10/11	The model is not applicable to this study type.		
		•				
Domain 7: Data Prese	ntation and Analysis					
	Metric 15:	Data Reporting	Medium	The target chemical and transformation product concentrations, extraction efficiency,		
				percent recovery, or mass balance were not reported; however, these omissions were not		
	Matria 16.	Statistical Matheda and	LUah	inkery to nave a substantial impact on study results.		
	wieuric 16:	Statistical Methods and Kinetic Calculations	riign	statistical methods or kinetic calculations were clearly described and address the		
		Kinetic Calculations		union.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.		
		Results	2			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.		
o		/ <b>•</b>				
<b>Overall Qual</b>	ity Determin	ation	High			

Study Citation:	SRC, (1983). Exhi	bit I shake flask biodegradation of 14 commercial phthalate esters.					
OECD Harmonized	Biodegradation in	Water					
Template:							
HERO ID:	1316198						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, EndPoint, T	ype,	None; ready biodegradability; Experimental; other: Non-guideline shake flask carbon dioxide evolution biodegradation study					
Solvent, Reactivity, Storage,	, Stability	NR; NR; NR					
Radiolabel, Source, State, P	urity	NR; NR; NR					
Blank and Control		one blank and one glucose control; Not applicable					
Oxygen and Inoculum		aerobic; other:: soil from Berry Park, Syracuse, NY and raw, domestic, influent sewage microorganisms from Meadowbrook Limestone Treatment Plant, Fayetteville, NY					
Duration, Parameter, System	n, and	28 days; CO2 evolution: flasks, darkened, shaken; Days 2, 6, 9, 14, 21, 28					
pH Adjusted and pH		Not Reported: 7 +0.2					
Concentration		Not Reported					
Composition and Test Temp	erature	Mineral salts media; $22\pm 2^{\circ}C$					
CEC, Water Aeration Dilutioness, and Other Design	on, Continuous Dark-	Not reported; aerated distilled water; yes; Test substance concentration was the equivalent to 4 mg carbon at the start of acclimation					
Results Details Method, Res Parameter, and	sults per Degradation	GC-FID; % primary biodegradation; Not Reported					
Direct Quantum Yield Result Results Value, Results Stan sults Sample Time, and Res stance Compartments	lts ndard Deviation, Re- sults Reference Sub-	68.3 to >99% after 28 days (average 89.8%); raw data, averages, and S.D. reported; 28 days; t1/2=3.38 days					
Results Remarks and Result Results Mean Total Recover covery	s Details y and Results per Re-	Primary biodegradation in 28 days; Degradation still occurring after 28 days for some study replicates (that were less than 99% on day 28) 91-104; Not applicable					
		EVALUATION					

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Subst	tance			
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
	Metric 2:	Test Substance Purity	Medium	The source and purity of the test substance were not reported; however, the test sub- stance was identified by analytical means.
Domain 2: Test Desig	gn Metric 3:	Study Controls	High	Starile controls were used
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 3: Test Cond	itions			
		(	Continued on next p	page

continued from previous page						
Study Citation: OECD Harmonized	SRC, (1983). Exh Biodegradation in	ibit I shake flask biodegradation of 14 co Water	ommercial phth	alate esters.		
Template: HERO ID:	1316198					
	EVALUATION					
Domain		Metric	Rating	Comments		
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	The conditions of the exposure were documented.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.		
	Metric 8:	System Type and Design	High	The system type and design were appropriate.		
Domain 4: Test Organis	sms					
Domain 1. Tost Organis	Metric 9:	Outcome Assessment Methodology	Medium	The inoculum sources were reported and is routinely used for similar study types and appropriate for the study method.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this review article.		
Domain 5: Outcome As	ssessment Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of		
		1050 5 405 41100 1401444		interest.		
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted approaches for the chemical and media being analyzed.		
Domain 6: Confounding	g/Variable Control Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation and all		
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this review article.		
		Exposure				
Domain 7. Data Present	tation and Analysis					
	Metric 15:	Data Reporting	High	Analytical methods used were suitable for detection and quantification of the target chemical and sufficient evidence was presented to confirm that parent compound disapproximately was not likely due to come other process.		
	Metric 16.	Statistical Methods and	High	Statistical methods and kinetic calculations were clearly described and address the		
	Wetter 10.	Kinetic Calculations	Ingn	dataset.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.		
	Metric 18.	Results OSAR Models	N/A	The metric is not applicable to this review article		
	Methe 10.	Zovit models	11/17	The metric is not applicable to this fevrew article.		
<b>Overall Quality Determination</b>			High			

Study Citation: OECD Harmonized	SRC, (1983). Exhi Biodegradation in	SRC, (1983). Exhibit I shake flask biodegradation of 14 commercial phthalate esters. Biodegradation in Water				
HERO ID:	1316198					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, EndPoint, T	ype,	None; Ultimate biodegradation; Experimental; other: Non-guideline shake flask carbon dioxide evolution biodegradation study				
Guideline Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	urity	NR; NR; NR				
Blank and Control		one blank and one glucose control; Not applicable				
Oxygen and Inoculum		aerobic; other:: soil from Berry Park, Syracuse, NY and raw, domestic, influent sewage microorganisms from Meadowbrook Limestone Treatment Plant, Fayetteville, NY				
Duration, Parameter, System	n, and	28 days; CO2 evolution: flasks, darkened, shaken; Days 2, 6, 9, 14, 21, 28				
Sampling Frequency						
pH Adjusted and pH		Not Reported; $7 \pm 0.2$				
Concentration		See other field				
Composition and Test Temp	berature	Mineral salts media; 22±2°C				
CEC, Water Aeration Dilution ness, and Other Design	on, Continuous Dark-	Not reported; aerated distilled water; yes; Test substance concentration was the equivalent to 4 mg carbon at the start of acclimation				
Results Details Method, Res Parameter, and Direct Quantum Vield Result	sults per Degradation	GC-FID; % Theoretical CO2 evolution; Not Reported				
Results Value, Results Star sults Sample Time, and Res stance Compartments	ndard Deviation, Re- sults Reference Sub-	57.4% in 28 days (average, S.D. 15.2); raw data, averages, and S.D. reported; 28 days; t1/2=3.38 days				
Results Remarks and Result Results Mean Total Recover covery	ts Details y and Results per Re-	Primary biodegradation in 28 days; Degradation still occurring after 28 days for some study replicates (that were less than 99% on day 28) 91-104; Not applicable				

			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ice					
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.		
	Metric 2:	Test Substance Purity	Medium	The source and purity of the test substance were not reported; however, the test sub- stance was identified by analytical means.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	Sterile controls were used.		
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	The conditions of the exposure were documented.		
	Continued on next page					

		contin	nued from pre	vious page				
Study Citation: OECD Harmonized	SRC, (1983). Exh Biodegradation in	ibit I shake flask biodegradation of 14 cc Water	ommercial phth	alate esters.				
Template:								
HERO ID:	1316198							
	EVALUATION							
Domain		Metric	Rating	Comments				
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.				
	Metric 8:	System Type and Design	High	The system type and design were appropriate.				
Domain 4: Test Organis	ms							
C C	Metric 9:	Outcome Assessment Methodology	Medium	The inoculum sources were reported and is routinely used for similar study types and appropriate for the study method.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this review article.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted approaches for the chemical and media being analyzed.				
Domain 6: Confounding	v/Variable Control							
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation and all				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this review article.				
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	High	Analytical methods used were suitable for detection and quantification of the target chemical and sufficient evidence was presented to confirm that parent compound disap- pearance was not likely due to some other process.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods and kinetic calculations were clearly described and address the dataset.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Results	High	The study results were reasonable.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this review article.				
Overall Quali	ty Determin	ation	High					
Study Citation:	SRC, (1984). Activ	vated sludge biodegradation of 12 commercial phthalate esters contract No. PE-17.0-ET-SRC.						
--	-----------------------	--	--	--	--	--	--	--
OECD Harmonized	Biodegradation in	Biodegradation in Water						
Template:								
HERO ID:	1316206							
		EXTRACTION						
Parameter		Data						
CASRN and Test Material		84-74-2; DBP						
Confidentiality, EndPoint, T	ype,	None; inherent biodegradability; Experimental; other: Non-guideline; 19 day die away test						
Guideline Solvent Reactivity Storage	Stability	NR · NR · NR						
Radiolabel Source State P	urity	NR, NR, NR						
Radiolabel, Source, State, T	unty	blank and diethylene glycol control. Not reported						
Oxygen and Inoculum		aerobic: activated sludge, adapted: mixed culture from a SCAS procedure						
Duration, Parameter, System	n and	19 days: test mat: SCAS unit: 0, 1, 2, 3, 4, 5, 9, 12, 15 and 19 days						
Sampling Frequency		1) days, est mail. 55115 and, 6, 1, 2, 5, 1, 5, 9, 12, 15 and 17 days						
pH Adjusted and pH		Not Reported; Not reported						
Concentration		1 - 3 mg/L						
Composition and Test Temp	erature	Mineral nutrient solution; 23°C						
CEC, Water Aeration Dilutio	on, Continuous Dark-	Not reported; Aerated tap water; Not reported; Not applicable						
ness, and Other Design	ulta non Dogwodation	CC ECD, half life, Not Deported						
Parameter and	suits per Degradation	OC-ECD; nall-life; Not Reported						
Direct Quantum Yield Resul	lts							
Results Value, Results Standard Deviation, Re-		<0.26 days; Not reported; 19 days; 69% DOC removal (average, range from 66 to 71%).						
sults Sample Time, and Results Reference Sub-								
stance Compartments	D ( 1							
Results Remarks and Result	s Details	Not applicable; $k = >2.7$ days-1						
covery	y and Results per Re-	Not applicable; 99-105%						
covery								
		EVALUATION						

	EVALUATION					
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.		
	Metric 2:	Test Substance Purity	Medium	The source and purity of the test substance were not reported; however, the test sub- stance was identified by analytical means.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	Sterile and reference controls were used.		
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.		
Domain 3: Test Condition	ons					

Continued on next page ...

		continu	ued from pre	vious page				
Study Citation: OECD Harmonized	SRC, (1984). Act Biodegradation ir	SRC, (1984). Activated sludge biodegradation of 12 commercial phthalate esters contract No. PE-17.0-ET-SRC. Biodegradation in Water						
Template:								
HERO ID:	1316206							
		H	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	High	The conditions of the exposure were documented.				
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.				
	Metric 8:	System Type and Design	High	The system type and design were appropriate.				
Domain 4: Test Organis	sms		TT: 1					
	Metric 9:	Outcome Assessment Methodology	High	The inoculum sources were reported and is routinely used for similar study types and appropriate for the study method				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this review article				
				The second se				
Domain 5: Outcome As	ssessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted approaches for the chemical and media being analyzed.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation and all reported variability or uncertainty was not likely to influence the outcome assessment				
	Metric 14.	Health Outcomes Unrelated to	N/A	The metric is not applicable to this review article				
		Exposure	1011					
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	High	Analytical methods used were suitable for detection and quantification of the target chemical and sufficient evidence was presented to confirm that parent compound disappearance was not likely due to some other process.				
	Metric 16:	Statistical Methods and	High	Statistical methods and kinetic calculations were clearly described and address the				
		Kinetic Calculations	U	dataset.				
Domain 8: Other	Matria 17	Varification on Disco-ibility of	TT: _L					
	Metric 1/:	vernication or Plausibility of Results	High	i ne study results were reasonable.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this review article.				
<b>Overall Quali</b>	ty Determin	ation	High					

\* Related References: Same data reported in HERO ID 679791.

Study Citation:	Tabak, H. H., Quave, S. A., Mashni, C. I., Barth, E. F. (1981). Biodegradability studies with organic priority pollutant compounds. Journal of Water					
OECD Harmonized	ollution Control Federation 53(10):1503-1518.					
Template:						
HERO ID:	9861					
			EXTRACTIO	N		
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, EndPoint, Typ Guideline	pe,	None; screening test; Experimental; othe	r: Biodegradation	in domestic wastewater, static-culture flask-screening		
Solvent, Reactivity, Storage, S	Stability	Absolute ethanol; NR; NR; NR				
Radiolabel, Source, State, Pur	rity	NR; NR; NR; NR				
Blank and Control		Synthetic medium containing 5mg yeast	extract; Not report	ted		
Oxygen and Inoculum		aerobic; sewage, domestic, non-adapted: tion.	Weekly "subcultu	res" involved adding fresh test samples to existing cultures to test for inoculum adapta-		
Duration, Parameter, System, Sampling Frequency	and	28 days; test mat.: Static-culture in Erler	meyer flask.; Days	s 7, 14, 21, and 28		
pH Adjusted and pH		Not Reported; Not reported				
Concentration		5 - 10 mg/L				
Composition and Test Temper	rature	5mg/L yeast extract synthetic medium; 2	5°C			
CEC, Water Aeration Dilution	, Continuous Dark-	Not reported; Not reported; yes; Homog	ot reported; Not reported; yes; Homogenous suspensions of the test substance in the chilled synthetic medium were prepared in a heavy duty			
ness, and Other Design		blender for 2 minutes.				
Results Details Method, Result	lts per Degradation	GC and TOC determinations. GC LOD: 0.1 mg/L; Average loss of test substance after 7 days at 5 mg/L.; Not Reported				
Parameter, and Direct Quantum Vield Results						
Results Value Results Stand	ard Deviation Re-	100%; Not reported; 7 days; Not reported				
sults Sample Time, and Resu	lts Reference Sub-					
stance Compartments						
Results Remarks and Results	Details	Adapted cultures were tested at 14, 21, and 28 days and achieved 100% biodegradation as well. At 10 mg/L, 100% biodegradation was achieved				
		after 7 days.; Adaptation of the inoculum to DBP was classified as "rapid" and significant degradation occurred.				
Results Mean Total Recovery	and Results per Re-	62-149%; Not Reported				
covery						
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substance						
]	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.		
]	Metric 2:	Test Substance Purity	N/A	The test substance purity was not reported; however, the omission is unlikely to have an		
				impact on the study results.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	Appropriate blanks were used without inoculum and without substrate.		
]	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported and appropriate.		
			4inual ar 4			
		Con	unuea on next ]	page		

	continued from previous page						
Study Citation:	Tabak, H. H., Qu Pollution Control	Tabak, H. H., Quave, S. A., Mashni, C. I., Barth, E. F. (1981). Biodegradability studies with organic priority pollutant compounds. Journal of Water Pollution Control Federation 53(10):1503-1518.					
OECD Harmonized	Biodegradation in	n Water					
HERO ID:	9861						
		Ι	EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 3: Test Condition	ons						
Domain 5. Test Condition	Metric 5:	Test Method Suitability	Low	The test substance was tested above its aqueous solubility which may have had an im- pact on the study results.			
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.			
	Metric 7:	Testing Consistency	High	The testing conditions were consistent across the sample groups.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.			
Domain 4. Test Organis	ms						
Domain 1. Test Organis	Metric 9:	Outcome Assessment Methodology	N/A	The inoculum type was reported and appropriate for the study type			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	The sampling methods were reported and appropriate.			
Domain 6: Confounding	v/Variable Control						
2 onnam of Contouridung	Metric 13:	Confounding Variables	Low	Sources of uncertainty were not reported which may impact the study results.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.			
Domain 7: Data Present	ation and Analysis						
2 omain 7. Duu 1 room	Metric 15:	Data Reporting	High	The data reporting was appropriate, percentage removal of the test substance was re- ported, and the analytical method was suitable.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical analysis was not reported; however, the omission is unlikely to have a sub- stantial impact on the study results.			
Domain 9, Other							
Domain 8: Other	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.			
<b>Overall Quali</b>	ty Determin	ation	High				

Study Citation: OECD Harmonized	Taylor, B. F., Curry, R. W., Corcoran, E. F. (1981). Potential for biodegradation of phthalic Acid esters in marine regions. Applied and Environmental Microbiology 42(4):590-595. Biodegradation in Water					
Template:						
HERO ID:	/89301					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		Not Reported; Not Reported				
Confidentiality, EndPoint, T	Гуре,	None; other; experimental; other				
Guideline Solvent, Reactivity, Storage	e. Stability	NR: NR: NR				
Radiolabel, Source, State, I	Purity	None; Aldrich Chemical Co (Milwaukee, WI); NR; 99% pure				
Blank and Control	•	Not applicable; Not applicable				
Oxygen and Inoculum		aerobic; other:: Marine isolates including gram-negative bacteria isolated on DMP (DMP 1-1); gram-negative bacteria isolated on DEP (DEP 4-1); gram positive bacteria isolated on DEHP (DEHP 4-1).				
Duration, Parameter, Syster Sampling Frequency	m, and	Not reported; O2 consumption: Warburg apparatus; 1-2 hours after tipping the substrate				
pH Adjusted and pH		Not reported; Not reported				
Concentration		0.05 % (wt/vol)				
Composition and Test Temp	perature	NaCl; MgSO4.7H20; KCl; 30°C				
CEC, Water Aeration Diluti	on, Continuous Dark-	Not reported; Not reported; Not reported; Cultures were incubated with rotary shaking (200 rpm).				
Results Details Method, Re Parameter, and	sults per Degradation	GC-ECD; Not Reported; Not Reported				
Direct Quantum Yield Resu Results Value, Results Sta sults Sample Time, and Re stance Compartments	ults ndard Deviation, Re- esults Reference Sub-	Not Reported; Not reported; 1-2 hours after tipping the substrate; Not Reported				
Results Remarks and Resul	ts Details	O2 consumption (uL/h): 258 (DMP 1-1); 150 (DEP 4-1); 241 (DEHP 4-1).; Not Reported				
Results Mean Total Recover covery	ry and Results per Re-	92% or better; Not Reported				

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substa	ince			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name
	Metric 2:	Test Substance Purity	High	The source or purity of the test substance were reported.
Domain 2: Test Desigr	Metric 3: Metric 4:	Study Controls Test Substance Stability	Uninformative Medium	The study did not include control groups that consequently make the study unusable. The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
			Continued on next page	

		0	ontinued from previous page	2					
Study Citation:	Taylor, B. F., Cu Microbiology 42	rry, R. W., Corcoran, E. F. (1981). Potent (4):590-595.	ial for biodegradation of phth	halic Acid esters in marine regions. Applied and Environmental					
OECD Harmonized	Biodegradation in	Biodegradation in Water							
Template: HERO ID:	789301								
			<b>EVALUATION</b>						
Domain		Metric	Rating	Comments					
Domain 3: Test Conditi	ions								
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.					
	Metric 6:	Testing Conditions	Medium	Some testing conditions were not reported, but are not likely to have substantial impact on the results.					
	Metric 7:	Testing Consistency	High	The test conditions were consistent.					
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.					
Domain 4: Test Organi	sms								
e	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported.					
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.					
Domain 5: Outcome A	ssessment								
	Metric 11:	Test Substance Identity	Medium	There were minor omissions, including biodegradation rate. Bacterial isolates with potential to degrade the test substance were reported, and some biodegradation products were reported.					
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate.					
Domain 6: Confoundin	g/Variable Control		TT: 1						
	Metric 13: Matria 14:	Logith Outgomes Unrelated to	High	No confounding variables were noted.					
	Metric 14:	Exposure	IN/A	The metric is not applicable to this study type.					
Domain 7: Data Presen	tation and Analysis								
Domain 7. Data Presen	Metric 15:	Data Reporting	Medium	The target chemical concentrations, extraction efficiency, percent recovery, or mass bal-					
		1 0		ance were not reported; however, these omissions were not likely to have a substantial					
	Metric 16:	Statistical Methods and	Medium	Kinetic calculations were not clearly described.					
		Kinetic Calculations							
Domain 8: Other									
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.					
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.					
<b>Overall Quali</b>	ty Determin	nation	Uninformative						

Study Citation: OECD Harmonized	US Testing Co. Inc., (1991). Modified OECD test for ready biodegradability of CT-451-90 with cover letter dated 053091. Biodegradation in Water				
HERO ID:	1332997				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Dibutyl phthalate			
Confidentiality, EndPoint, T	ype,	None; ready biodegradability; Experimental; OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)			
Guideline Solvent Reactivity Storage	Stability	A cetone: NR · NR · NR			
Radiolabel Source State P	hrity	NR: American Cyanamid Company: Mixture CT-451-90 containing dibutyl phthalate and dimethyl phthalate. NR			
Blank and Control	anty	Dilution water with and without inoculum and filter paper control experiments were performed. Not reported			
Oxygen and Inoculum		aerobic; activated sludge (adaptation not specified): Activated sludge bacteria from Bergen County, NJ. Inoculum was kept in activated sludge			
Duration, Parameter, System, and		28 days; O2 consumption: Closed bottle incubation; 4 samples were taken: days 0, 5, 15, and 28.			
pH Adjusted and pH		Not Reported: 7			
Concentration		2 mg/L			
Composition and Test Temp	berature	Not reported; $20\pm1^{\circ}C$			
CEC, Water Aeration Dilutioness, and Other Design	on, Continuous Dark-	Not reported; Not reported; yes; Exact composition of sample was not known, only that it was a mixture of dibutyl phthalate and dimethyl phthalate.			
Results Details Method, Res Parameter, and	sults per Degradation	Dissolved oxygen analysis.; % degradation: oxygen depletion (BOD, mg/L)/(conc. of test material (mg/L) x TOD); Not Reported			
Direct Quantum Yield Results					
Results Value, Results Standard Deviation, Re-		2mg of sample reached 100% biodegradation after 5 days. The calculation assumed 80% carbon content.; Not reported; Not reported; 98%			
suits Sample Time, and Results Reference Sub- stance Compartments		biodegradation			
Results Remarks and Result	ts Details	100% biodegradation after 5 days passes ready test.; Biodegradation in 1mg/L sample reached 100% after 5 days; in 5mg/L sample, reached 43.0% after 28 days.			
Results Mean Total Recover covery	y and Results per Re-	Not reported; Not reported			

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substar	nce					
	Metric 1:	Test Substance Identity	Low	The test substance was a mixture of two chemicals, including the target chemical, but at an unspecified concentration.		
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported; however, the omission is unlikely to have a substantial impact on the study results.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	Reference substances and blank controls were used.		
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported and appropriate.		
Continued on next page						

continued from previous page							
Study Citation: OECD Harmonized	US Testing Co. In Biodegradation in	c., (1991). Modified OECD test for read Water	y biodegradabi	lity of CT-451-90 with cover letter dated 053091.			
Template:							
HERO ID:	1332997						
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 3: Test Condition	Domain 3: Test Conditions						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate.			
	Metric 7:	Testing Consistency	High	There were no reported differences between the study groups.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.			
Domain 4: Test Organisms							
Domain in Tost organis	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and is suitable for the study type.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	Medium	Some details regarding the sampling methods were not reported but the omission is unlikely to have a substantial impact on the study results.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	Medium	Replicate experiments were performed but standard deviations were not reported. How- ever, the omission is unlikely to impact the study results.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.			
Domain 7. Data Present	ation and Analysis						
	Metric 15:	Data Reporting	Medium	Mass balance or transformation products were not reported but their omission is unlikely to have a substantial impact on the study results.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical analysis was not reported.			
<b>D</b>							
Domain 8: Other	M . 17		TT' 1				
	Metric 1/:	Verification or Plausibility of	High	The reported values are reasonable as defined by the reference substance.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.			
<b>Overall Quality Determination</b>			Low				

Study Citation:	Walker, W. W., Ci	Walker, W. W., Cripe, C. R., Pritchard, P. H., Bourquin, A. W. (1984). Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere					
OECD Harmonized	13(12):1283-1294. Biodegradation in	Water					
Template:	Diodegradation	(full)					
HERO ID:	5432807						
			EXTRACTIO	N			
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, EndPoint, T	ype,	None; screening test; Experimental; of	her: No guideline des	scribed			
Guideline Solvent Reactivity Storage	Stability	NR · NR · NR · NR					
Radiolabel Source State P	hrity	NR: Sigma Company: NR: 99%					
Blank and Control	unty	Yes, sterile water and sediment: Not R	eported				
Oxygen and Inoculum		aerobic: activated sludge (adaptation n	ot specified): water a	nd sediment from LA. MS. and FL			
Duration, Parameter, System	n. and	1 day: TOC: flasks, darkened, shaken:	Not Reported				
Sampling Frequency	,	<b>,</b> ,,,,	·······				
pH Adjusted and pH		Not Reported; 7.8					
Concentration		500 μg/L					
Composition and Test Temp	berature	Not applicable; 25°C					
CEC, Water Aeration Dilution ness, and Other Design	on, Continuous Dark-	Not reported; yes; yes; Range Point, Salinity: 18 g/L, TOC: 43.0(activated sediment) & 6.9(activated water) mg/L					
Results Details Method, Res	sults per Degradation	GC-Ni63 ECD; Test substance; Not Reported					
Parameter, and	160						
Results Value. Results Star	ndard Deviation. Re-	k1=11.9E-4/H (sterile conditions): Not Reported: 16 days: Not Reported					
sults Sample Time, and Re	sults Reference Sub-	RI-III/2 (III (Serie Conditions), 1101 Reported, 10 days, 1101 Reported					
stance Compartments							
Results Remarks and Result	ts Details	Over all first order rate constant: 11.9*10^-4 1/HFirst order rate constant: 9.9 * 10^-4 1//H; Not Reported					
Results Mean Total Recover	y and Results per Re-	discussed but not reported; Not reported					
covery							
			EVALUATIO	Ň			
Domain		Metric	Rating	Comments			
Domain 1: Test Substance	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity was not reported; however, the omission is unlikely			
		-		to have a substantial impact on the study results.			

Domain 2: Test Design

Metric 3:Study ControlsHighMetric 4:Test Substance StabilityMedium

Continued on next page ...

Appropriate blanks and controls were used.

Details regarding this metric were not discussed; however, the omissions were not likely to have hindered the interpretation of the results.

		contir	ued from prev	vious page
Study Citation:	Walker, W. W., C 13(12):1283-1294	Cripe, C. R., Pritchard, P. H., Bourquin, 4.	A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere
OECD Harmonized	Biodegradation ir	n Water		
Template:	5 122005			
HERO ID:	5432807			
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 3: Test Condition	ons			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	The system type and design were appropriate.
Domain 4: Test Organis	sms			
C C	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	sessment			
	Metric 11:	Test Substance Identity	Medium	Limited detail on analytical method; however, this is not likely to hinder the results.
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Present	ation and Analysis	•		
	Metric 15:	Data Reporting	High	The target chemical and transformation product(s) concentrations (if required), extrac- tion efficiency, percent recovery, or mass balance were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis reported and acceptable.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	Reported values were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quali</b>	ty Determin	ation	High	

Study Citation: W	/alker, W. W., Ci	ripe, C. R., Pritchard, P. H., Bou	rquin, A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere		
OECD Harmonized B	iodegradation in	Water				
Template:	8					
HERO ID: 54	432807					
			EXTRACTIO	N		
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, EndPoint, Type Guideline	÷,	None; screening test; Experimental	; other: No guideline de	scribed		
Solvent, Reactivity, Storage, St	ability	NR; NR; NR; NR				
Radiolabel, Source, State, Purit	У	NR; NR; NR; NR				
Blank and Control		Yes, sterile water and sediment; No	t Reported			
Oxygen and Inoculum		aerobic; activated sludge, adapted:	water and sediment fron	n LA, MS, and FL		
Duration, Parameter, System, a Sampling Frequency	nd	2 days; TOC: flask, dark, shaken; N	lot Reported			
pH Adjusted and pH		Not Reported; 7.0				
Concentration		500 μg/L				
Composition and Test Tempera	ture	Sand:6.4%, Silt:72.9%, Clay:20.7%; 25°C				
CEC, Water Aeration Dilution, one of the construction of the const	Continuous Dark-	Not reported; yes; yes; Tickfew(12/82), Salinity: 0g/L, TOC: 20.1(activated sediment) mg/L				
Results Details Method, Result Parameter, and	s per Degradation	GC-Ni63 ECD; Test substance; Not	t Reported			
Results Value, Results Standar sults Sample Time, and Result stance Compartments	d Deviation, Re- s Reference Sub-	k1=22.7E-4 1/H (sterile conditions)	); Not Reported; 14 days	s; Not Reported		
Results Remarks and Results D	etails	Over all first order rate constant: 22.7*10^-4 1/HFirst order rate constant: 9.5 * 10^-4 1//H; Not Reported				
Results Mean Total Recovery ar covery	nd Results per Re-	discussed but not reported; Not repo	orted			
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substance						
Ν	letric 1:	Test Substance Identity	High	The test substance was identified by name.		
M	Ietric 2:	Test Substance Purity	Medium	The test substance source and purity was not reported; however, the omission is unlikely to have a substantial impact on the study results.		
Domain 2: Test Design						
N	letric 3:	Study Controls	High	Appropriate blanks and controls were used.		
Ν	letric 4:	Test Substance Stability	Medium	Details regarding this metric were not discussed; however, the omissions were not likely to have hindered the interpretation of the results.		
Domain 3: Test Conditions						
Ν	letric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		

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Continued on next page ...

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HERO ID: 5432807 Table: 2 of 16

continued from previous page				
Study Citation:	Walker, W. W., C	ripe, C. R., Pritchard, P. H., Bourquin,	A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere
OECD Harmonized	Biodegradation in	Water		
HERO ID:	5432807			
			FVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	The system type and design were appropriate.
	_			
Domain 4: Test Organism	S Metric Q:	Outcome Assessment Methodology	High	The test organism information or inoculum source ware reported
	Metric 10.	Sampling Methods	N/A	The metric is not applicable to this study type
			1.011	
Domain 5: Outcome Asse	essment			
	Metric 11:	Test Substance Identity	Medium	Limited detail on analytical method; however, this is not likely to hinder the results.
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate.
Domain 6: Confounding/	Variable Control			
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentat	ion and Analysis			
	Metric 15:	Data Reporting	High	The target chemical and transformation product(s) concentrations (if required), extrac- tion efficiency, percent recovery, or mass balance were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis reported and acceptable.
Domain & Other				
Domain 8: Other	Metric 17:	Verification or Plausibility of	High	Reported values were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quality</b>	Determina	ation	High	

Study Citation:	Walker, W. W., Cripe, C. R., Pritchard, P. H., Bourquin, A. W. (1984). Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere 13(12):1283-1294					
OECD Harmonized	13(12):1283-1294. Biodegradation in	Water				
Template:	Diodegradation in					
HERO ID:	5432807					
			EXTRACTIO	Ň		
Parameter		Data				
CASRN and Test Material		84-74-2: DBP				
Confidentiality, EndPoint, 7 Guideline	Гуре,	None; screening test; Experimental;	other: No guideline des	scribed		
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR; NR				
Radiolabel, Source, State, I	Purity	NR; Sigma Company; NR; 99%				
Blank and Control		Yes, sterile water and sediment; Not	t Reported			
Oxygen and Inoculum		aerobic; activated sludge (adaptation	n not specified): water a	nd sediment from LA, MS, and FL		
Duration, Parameter, Syster Sampling Frequency	m, and	Not Reported; TOC: flasks, darkene	ed, shaken,; Not Reporte	d		
pH Adjusted and pH		Not Reported; 8.0				
Concentration		500 µg/L				
Composition and Test Temp	perature	Sand: 45.0% ,Silt: 27.7% , Clay: 27.3%; 25°C				
CEC, Water Aeration Diluti ness, and Other Design	ion, Continuous Dark-	Not reported; yes; yes; Davis Bayou(6/82), Salinity: 10 g/L, TOC: 6.9(activated sediment) & 1.5(activated water) mg/L				
Results Details Method, Re Parameter, and	esults per Degradation	GC-Ni63 ECD; Test substance; Not Reported				
Direct Quantum Yield Results Results Value, Results Standard Deviation, Re- sults Sample Time, and Results Reference Sub- stance Commertments		k1=4.9E-4 1/H (sterile conditions); Not Reported; 8 days; Not Reported				
Results Remarks and Resul	ts Details	Over all first order rate constant: 4.9*10^-4 1/HFirst order rate constant: NA; Not Reported				
Results Mean Total Recover covery	ry and Results per Re-	discussed but not reported; Not repo	orted			
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity was not reported; however, the omission is unlikely to have a substantial impact on the study results.		
Domain 2: Test Design						
e	Metric 3:	Study Controls	High	Appropriate blanks and controls were used.		
	Metric 4:	Test Substance Stability	Medium	Details regarding this metric were not discussed; however, the omissions were not likely to have hindered the interpretation of the results.		

Test Method Suitability High

Metric 5:

Continued on next page ...

The test method was suitable for the test substance.

		continu	ued from prev	vious page
Study Citation:	Walker, W. W., C 13(12):1283-1294	Cripe, C. R., Pritchard, P. H., Bourquin, A	A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere
OECD Harmonized	Biodegradation in	Water		
Template:				
HERO ID:	5432807			
		I	EVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	The system type and design were appropriate.
Domain 4: Test Organis	ms			
8	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	sessment			
	Metric 11:	Test Substance Identity	Medium	Limited detail on analytical method; however, this is not likely to hinder the results.
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.
		Exposure		
Domain 7: Data Present	ation and Analysis			
	Metric 15:	Data Reporting	High	The target chemical and transformation product(s) concentrations (if required), extrac- tion efficiency, percent recovery, or mass balance were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis reported and acceptable.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	Reported values were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Qualit</b>	ty Determin	ation	High	

Study Citation:	Walker, W. W., Cripe, C. R., Pritchard, P. H., Bourquin, A. W. (1984). Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere 13(12):1283-1294.					
OECD Harmonized	Biodegradation in	Water				
Template: HERO ID:	5432807					
			EXTRACTIO	N		
Parameter		Data	EATRACTIO			
CASRN and Test Material		84-74-2; DBP				
Confidentiality, EndPoint, Guideline	Туре,	None; screening test; Experimental;	; other: No guideline rep	orted		
Solvent, Reactivity, Storag	e, Stability	NR; NR; NR; NR				
Radiolabel, Source, State,	Purity	NR; Sigma Company; NR; 99%				
Blank and Control		Yes, sterile water and sediment; No	t Reported			
Oxygen and Inoculum		aerobic; activated sludge (adaptation	n not specified): water a	nd sediment from LA, MS, and FL		
Duration, Parameter, Syste Sampling Frequency	em, and	4 days; TOC: flasks, darkened, shak	ken; Not Reported			
PH Adjusted and PH		Not Reported; 8.0				
Concentration						
Composition and fest fen	iperature	Sand: 19.9%, Sintinocculation, Clay: nocculation, 25 C				
ness, and Other Design	non, Continuous Dark-	Not reported, yes, yes, Davis Bayot	u(10/62), Saminty. 21 g/1	2, TOC. 16./(activated sediment) & 6.5(activated water) mg/L		
Results Details Method, R	esults per Degradation	GC-Ni63 ECD; Test substance; Not Reported				
Parameter, and			-			
Direct Quantum Yield Res Results Value, Results Sta sults Sample Time, and R stance Compartments	ults andard Deviation, Re- esults Reference Sub-	k1=13.7E-4 1/H (sterile conditions)	; Not Reported; 10 days	; Not Reported		
Results Remarks and Resu	lts Details	Over all first order rate constant: 13.7*10^-4 1/HFirst order rate constant: 0.0 *10^-4 1/H; Not Reported				
Results Mean Total Recove covery	ery and Results per Re-	discussed but not reported; Not repo	orted			
			EVALUATION	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substar	nce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity was not reported; however, the omission is unlikely to have a substantial impact on the study results.		
Domain 2: Test Design						
-	Metric 3:	Study Controls	High	Appropriate blanks and controls were used.		
	Metric 4:	Test Substance Stability	Medium	Details regarding this metric were not discussed; however, the omissions were not likely to have hindered the interpretation of the results.		

Test Method Suitability High

Metric 5:

Continued on next page ...

The test method was suitable for the test substance.

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		contin	ued from prev	vious page
Study Citation:	Walker, W. W., C 13(12):1283-1294	ripe, C. R., Pritchard, P. H., Bourquin, A	A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere
OECD Harmonized	Biodegradation in	Water		
Template:				
HERO ID:	5432807			
		1	EVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	The system type and design were appropriate.
Domain 4: Test Organis	ms			
C C	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	aaamant			
Domain 5: Outcome As	Metric 11:	Test Substance Identity	Madium	Limited detail on analytical methods however, this is not likely to hinder the results
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate
	Wieurie 12.	Test Substance I unity	Ingn	Sampling methods were appropriate.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.
		Exposure		
Domain 7: Data Present	ation and Analysis			
	Metric 15:	Data Reporting	High	The target chemical and transformation product(s) concentrations (if required), extrac- tion efficiency, percent recovery, or mass balance were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis reported and acceptable.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	Reported values were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Qualit</b>	ty Determin	ation	High	

Metric 5:

Test Method Suitability

Study Citation:	Walker, W. W., Cripe, C. R., Pritchard, P. H., Bourquin, A. W. (1984). Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere 13(12):1283-1294.					
OECD Harmonized	Biodegradation in	Water				
Template: HERO ID:	5432807					
			EVTRACTIO	N		
Parameter		Data	EATRACTIO	17		
CASRN and Test Material		84-74-2; DBP				
Confidentiality, EndPoint,	Туре,	None; screening test; Experimental;	; other: No guideline des	scribed		
Solvent, Reactivity, Storag	e, Stability	NR; NR; NR; NR				
Radiolabel, Source, State,	Purity	NR; Sigma Company; NR; 99%				
Blank and Control		Yes, sterile water and sediment; No	t Reported			
Oxygen and Inoculum		aerobic; activated sludge (adaptation	n not specified): water a	nd sediment from LA, MS, and FL		
Duration, Parameter, Syste Sampling Frequency	m, and	Not Reported; TOC: flasks, darkene	ed, shaken,; Not Reporte	d		
Concentration		500 ug/I				
Composition and Test Tem	nerature	Sond: NA Silt: NA Clav: NA: 25°C				
Composition and Test Term	ion Continuous Dark-	Not reported: ves: ves: Horn Island(6/82). Salinity: 23 g/L. TOC: 15 4(activated sediment) & 21 7(activated water) mg/L.				
ness, and Other Design	ion, continuous Durk					
Results Details Method, Re	esults per Degradation	GC-Ni63 ECD; Test substance; Not Reported				
Parameter, and	14-					
Results Value, Results Sta sults Sample Time, and R stance Compartments	andard Deviation, Re- esults Reference Sub-	k1=6.6*10^-4 1/H (sterile condition	ns); Not Reported; 16 da	ys; Not Reported		
Results Remarks and Resu	lts Details	Over all first order rate constant: 6.6*10^-4 1/HFirst order rate constant: NA; Not Reported				
Results Mean Total Recove covery	ery and Results per Re-	discussed but not reported; Not repo	orted			
			EVALUATION	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substar	ice					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity was not reported; however, the omission is unlikely to have a substantial impact on the study results.		
Domain 2: Test Design						
0	Metric 3:	Study Controls	High	Appropriate blanks and controls were used.		
	Metric 4:	Test Substance Stability	Medium	Details regarding this metric were not discussed; however, the omissions were not likely to have hindered the interpretation of the results.		

Continued on next page ...

High

The test method was suitable for the test substance.

		continu	ued from prev	vious page
Study Citation:	Walker, W. W., C 13(12):1283-1294	Cripe, C. R., Pritchard, P. H., Bourquin, A	A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere
OECD Harmonized	Biodegradation in	Water		
Template:				
HERO ID:	5432807			
		I	EVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	The system type and design were appropriate.
Domain 4: Test Organis	ms			
8	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	sessment			
	Metric 11:	Test Substance Identity	Medium	Limited detail on analytical method; however, this is not likely to hinder the results.
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.
		Exposure		
Domain 7: Data Present	ation and Analysis			
	Metric 15:	Data Reporting	High	The target chemical and transformation product(s) concentrations (if required), extrac- tion efficiency, percent recovery, or mass balance were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis reported and acceptable.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	Reported values were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Qualit</b>	ty Determin	ation	High	

Study Citation:	Walker, W. W., C	ripe, C. R., Pritchard, P. H., Bourc	uin, A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere			
OECD Harmonized	Biodegradation in	Water					
Template: HERO ID:	5432807						
			EXTRACTIO	N			
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, EndPoint, T Guideline	ype,	None; screening test; Experimental; o	other: No guideline de	scribed			
olvent, Reactivity, Storage	, Stability	NR; NR; NR; NR					
Radiolabel, Source, State, P	urity	NR; Sigma Company; NR; 99%					
3lank and Control		Yes, sterile water and sediment; Not l	Reported				
Oxygen and Inoculum		aerobic; activated sludge (adaptation	not specified): water a	nd sediment from LA, MS, and FL			
Duration, Parameter, System	n, and	2.5 days; TOC: flasks, darkened, shal	ken,; Not Reported				
Adjusted and pH		Not Reported: 8.0					
oncentration		500 μg/L Sand: 11.5%, Silt floccuation, Clay: flocculation: 25°C					
Composition and Test Temp	erature						
CEC, Water Aeration Dilution	on, Continuous Dark-	Not reported; yes; yes; Horn Island(9/82), Salinity: 27 g/L, TOC: 32.9(activated sediment) & 9.4(activated water) mg/L					
Results Details Method, Res Parameter, and	sults per Degradation	GC-Ni63 ECD; Test substance; Not Reported					
Results Value, Results Star sults Sample Time, and Res	adard Deviation, Re- sults Reference Sub-	k1=22.0*10^-4 1/H (sterile conditions); Not Reported; 16 days; Not Reported					
Results Remarks and Result	s Details	Over all first order rate constant: 22.0*10^-4 1/HFirst order rate constant: 16.9*10^-4 1/H; Not Reported					
Results Mean Total Recover covery	y and Results per Re-	discussed but not reported; Not repor	ted				
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Test Substance	e						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity was not reported; however, the omission is unlikely to have a substantial impact on the study results.			
Domain 2: Test Design							
6	Metric 3:	Study Controls	High	Appropriate blanks and controls were used.			
	Metric 4:	Test Substance Stability	Medium	Details regarding this metric were not discussed; however, the omissions were not likely to have hindered the interpretation of the results.			

Domain 3: Test Conditions

Metric 5: Test Method Suitability

High The test method was suitable for the test substance.

Continued on next page ...

		continu	ued from prev	vious page
Study Citation:	Walker, W. W., C	ripe, C. R., Pritchard, P. H., Bourquin, A	A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere
<b>OECD Harmonized</b>	Biodegradation in	Water		
Template:				
HERO ID:	5432807			
		H	EVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	The system type and design were appropriate.
Domain 4: Test Organis	ms			
-	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	sessment			
	Metric 11:	Test Substance Identity	Medium	Limited detail on analytical method; however, this is not likely to hinder the results.
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Present	ation and Analysis			
	Metric 15:	Data Reporting	High	The target chemical and transformation product(s) concentrations (if required), extrac- tion efficiency, percent recovery, or mass balance were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis reported and acceptable.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	High	Reported values were reasonable.
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Qualit</b>	ty Determin	ation	High	

Study Citation:	Walker, W. W., Ci	ripe, C. R., Pritchard, P. H., Bour	rquin, A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere		
OECD Harmonized	13(12):1283-1294. Biodegradation in	Water				
Template:						
HERO ID:	5432807					
			EXTRACTIO	N		
Parameter		Data				
CASRN and Test Material		84-74-2: DBP				
Confidentiality, EndPoint, 7 Guideline	Гуре,	None; screening test; Experimental;	other: No guideline des	scribed		
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR; NR				
Radiolabel, Source, State, I	Purity	NR; Sigma Company; NR; 99%				
Blank and Control		Yes, sterile water and sediment; Not	Reported			
Oxygen and Inoculum		aerobic; activated sludge (adaptation	n not specified): water a	nd sediment from LA, MS, and FL		
Duration, Parameter, Syster Sampling Frequency	m, and	1 day; TOC: flasks, darkened, shake	n; Not Reported			
pH Adjusted and pH		Not Reported; 7.1				
Concentration		500 µg/L				
Composition and Test Tem	perature	Sand: 18.8%, Shit: 70.1%, Clay: 11.1%; 25°C				
CEC, Water Aeration Dilution, Continuous Dark- ness, and Other Design Results Details Method. Results per Degradation		GC-Ni63 ECD; Test substance; Not Reported				
Parameter, and						
Direct Quantum Yield Results Results Value, Results Standard Deviation, Re- sults Sample Time, and Results Reference Sub- stance Compartments		k1=36.5*10^-4 1/H (sterile conditions); Not Reported; 16 days; Not Reported				
Results Remarks and Resul	ts Details	Over all first order rate constant: 36.5*10^-4 1/HFirst order rate constant: 34.4*10^-4 1/H; Not Reported				
Results Mean Total Recove covery	ry and Results per Re-	discussed but not reported; Not repo	orted			
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity was not reported; however, the omission is unlikely to have a substantial impact on the study results.		
Domain 2: Test Design						
C	Metric 3:	Study Controls	High	Appropriate blanks and controls were used.		
	Metric 4:	Test Substance Stability	Medium	Details regarding this metric were not discussed; however, the omissions were not likely to have hindered the interpretation of the results.		

Continued on next page ...

Metric 5:

Test Method Suitability

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High

The test method was suitable for the test substance.

		contin	ued from prev	vious page
Study Citation:	Walker, W. W., C 13(12):1283-1294	ripe, C. R., Pritchard, P. H., Bourquin, A	A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere
OECD Harmonized	Biodegradation in	Water		
Template:				
HERO ID:	5432807			
		1	EVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	The system type and design were appropriate.
Domain 4: Test Organis	ms			
c	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	aaamant			
Domain 5: Outcome As	Metric 11:	Test Substance Identity	Madium	Limited detail on analytical methods however, this is not likely to hinder the results
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate
	Weute 12.	Test Substance I unity	Ingn	Sampling methods were appropriate.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.
		Exposure		
Domain 7: Data Present	ation and Analysis			
	Metric 15:	Data Reporting	High	The target chemical and transformation product(s) concentrations (if required), extrac- tion efficiency, percent recovery, or mass balance were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis reported and acceptable.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	Reported values were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Qualit</b>	ty Determin	ation	High	

Study Citation:	Walker, W. W., Ci	ripe, C. R., Pritchard, P. H., Bour	rquin, A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere		
<b>OECD Harmonized</b>	Biodegradation in	Water				
Template:	U					
HERO ID:	5432807					
			EXTRACTIO	N		
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, EndPoint, T Guideline	Гуре,	None; screening test; Experimental;	other: No guideline rep	borted		
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR; NR				
Radiolabel, Source, State, F	Purity	NR; Sigma Company; NR; 99%				
Blank and Control		Yes, sterile water and sediment; Not	t Reported			
Oxygen and Inoculum		aerobic; activated sludge (adaptation	n not specified): water a	nd sediment from LA, MS, and FL		
Duration, Parameter, Syster Sampling Frequency	n, and	Not applicable; TOC: flasks, darken	ed, shaken; Not Reporte	ed		
pH Adjusted and pH		Not Reported; 6.8				
Concentration		500 µg/L				
Composition and Test Temp	perature	Sand: 54.5%, Stift: 52.8%, Clay: 12.9%; 25°C				
CEC, Water Aeration Diluti	on, Continuous Dark-	noi reporteu; yes; yes; fort Bayou, Sannity: 0 g/L, 10C: 25.9(activated sediment) & 8.6activated water) mg/L				
Results Details Method. Re	sults per Degradation	GC-Ni63 ECD: Test substance: Not Reported				
Parameter, and	····· · · · · · · · · · · · · · · · ·					
Direct Quantum Yield Resu	ılts					
Results Value, Results Star	ndard Deviation, Re-	k1=9.3E-4 /H (sterile conditions); Not Reported; 8 days; Not Reported				
sults Sample Time, and Re	esults Reference Sub-					
Results Remarks and Result	ts Details	Over all first order rate constant: 9.3 *10^-4 1/HFirst order rate constant: NA: Not Reported				
Results Mean Total Recover	ry and Results per Re-	discussed but not reported: Not reported				
covery	ry and Results per Re-	discussed but not reported; Not reported				
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substand	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity was not reported; however, the omission is unlikely		
		-		to have a substantial impact on the study results.		
Domain 2. Test Design						
Domain 2. Test Design	Metric 3.	Study Controls	High	Appropriate blanks and controls were used		
	Metric 4	Test Substance Stability	Medium	Details regarding this metric were not discussed however the omissions were not likely		
	wieute 4.	Test Substance Stability	weatum	to have hindered the interpretation of the results.		
Domain 3: Test Conditio	ns					

Continued on next page ...

Test Method Suitability

Metric 5:

High

The test method was suitable for the test substance.

		continu	ued from prev	vious page
Study Citation:	Walker, W. W., C	ripe, C. R., Pritchard, P. H., Bourquin, A	A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere
<b>OECD Harmonized</b>	Biodegradation in	Water		
Template:				
HERO ID:	5432807			
		H	EVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	The system type and design were appropriate.
Domain 4: Test Organis	ms			
-	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	sessment			
	Metric 11:	Test Substance Identity	Medium	Limited detail on analytical method; however, this is not likely to hinder the results.
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Present	ation and Analysis	•		
	Metric 15:	Data Reporting	High	The target chemical and transformation product(s) concentrations (if required), extrac- tion efficiency, percent recovery, or mass balance were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis reported and acceptable.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	High	Reported values were reasonable.
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Qualit</b>	ty Determin	ation	High	

Study Citation: Wa	alker, W. W., Cr (12)·1283-1294	ripe, C. R., Pritchard, P. H., Bour	quin, A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere			
OECD Harmonized Bio	odegradation in	Water					
Template:	6						
HERO ID: 54	32807						
			EXTRACTIO	N			
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, EndPoint, Type, Guideline		None; screening test; Experimental;	other: no guideline ind	icated			
Solvent, Reactivity, Storage, Stal	bility	NR; NR; NR; NR					
Radiolabel, Source, State, Purity		NR; NR; NR; NR					
Blank and Control		Yes, sterile water and sediment; Not	Reported				
Oxygen and Inoculum		aerobic; activated sludge (adaptation	not specified): water a	nd sediment from LA, MS, and FL			
Duration, Parameter, System, and Sampling Frequency	d	7 days; TOC: flasks, darkened, shake	en; Not Reported				
pH Adjusted and pH		Not Reported; 7.8					
Concentration		500 μg/L					
Composition and Test Temperatu	ure	Not applicable; 25°C					
CEC, Water Aeration Dilution, C	Continuous Dark-	Not reported; yes; yes; Range Point, Salinity:18 g/L, TOC: 43.0(activated sediment) & 6.9(activated water) mg/L					
ness, and Other Design	n - D l - t	CC Ni42 ECD. Test substance. Not Deported					
Results Details Method, Results	per Degradation	GC-N163 ECD; Test substance; Not	Reported				
Direct Quantum Yield Results							
Results Value, Results Standard	Deviation, Re-	ko=4.067 ug/LH; Not reported; 16 days; Not Reported					
sults Sample Time, and Results	Reference Sub-						
stance Compartments							
Results Remarks and Results De	tails	SedimentOver all zero order rate constant: 4.067 ug/LHOver all first order rate constant: 455.6 *10^-4 1/HWaterOver all first order rate constant:					
Pagulta Maan Total Pagavary and	d Doculto por Do	21.3 *10^-4 1/HFirst order rate constant: 29.3 *10^-4 1/H; Not Reported					
covery	i Kesuits per Ke-	discussed but not reported; Not reported					
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Test Substance							
Me	etric 1:	Test Substance Identity	High	The test substance was identified by name.			
Me	etric 2:	Test Substance Purity	Medium	The test substance source and purity was not reported; however, the omission is unlikely to have a substantial impact on the study results.			
р. : 0 т. (р. : 							
Domain 2: Test Design			TT' 1				
Me	etric 3:	Study Controls	High	Appropriate blanks and controls were used.			
Me	etric 4:	Test Substance Stability	Medium	Details regarding this metric were not discussed; however, the omissions were not likely			

Domain 3: Test Conditions

Continued on next page ...

to have hindered the interpretation of the results.

		contin	ued from pre	vious page
Study Citation:	Walker, W. W., C 13(12):1283-1294	ripe, C. R., Pritchard, P. H., Bourquin, .	A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere
OECD Harmonized	Biodegradation in	Water		
Template:				
HERO ID:	5432807			
		]	EVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	The system type and design were appropriate.
Domain 4. Test Organis	sms			
Domain 4. Test Organis	Metric 9.	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
				···· ······ ··························
Domain 5: Outcome As	ssessment			
	Metric 11:	Test Substance Identity	Medium	Limited detail on analytical method; however, this is not likely to hinder the results.
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate.
Domain 6: Confounding	g/variable Control		NT/ A	
	Metric 13:	Confounding variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.
		Exposure		
Domain 7: Data Present	tation and Analysis			
	Metric 15:	Data Reporting	High	The target chemical and transformation product(s) concentrations (if required), extrac- tion efficiency, percent recovery, or mass balance were reported.
	Metric 16:	Statistical Methods and	High	Statistical analysis reported and acceptable.
		Kinetic Calculations		
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	High	Reported values were reasonable.
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.
Overall Ouali	tv Determin	ation	High	
	- <i>j</i> = 0001 mm		8	

Study Citation:	Walker, W. W., Cr	ipe, C. R., Pritchard, P. H., Bou	rquin, A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere			
	13(12):1283-1294.	<b>T</b> 7 .					
OECD Harmonized	Biodegradation in	Water					
HERO ID:	5432807						
			EXTRACTIO	Ň			
Parameter		Data	LATRACTIO				
CASRN and Test Material		84-74-2: DBP					
Confidentiality, EndPoint, Type,		None; screening test; Experimental	; other: no guideline indi	cated			
Guideline Solvent, Reactivity, Storage, Stability		NR; NR; NR; NR					
Radiolabel, Source, State, Purity		NR; NR; NR; NR					
Blank and Control		Yes, sterile water and sediment; No	t Reported				
Oxygen and Inoculum		aerobic; activated sludge (adaptatio	n not specified): water a	nd sediment from LA, MS, and FL			
Duration, Parameter, System, and		2 days; TOC: flasks, darkened, shak	ken; Not Reported				
pH Adjusted and pH		Not Reported; 7.0					
Concentration		500 μg/L					
Composition and Test Temp	perature	Sand: 6.4%, Silt: 72.9%, Clay: 20.7%; 25°C					
CEC, Water Aeration Dilution	on, Continuous Dark-	Not reported; yes; yes; Tickfew, Salinity: 0 g/L, TOC: 20.1(activated sediment) mg/L					
Results Details Method, Res	sults per Degradation	GC-Ni63 ECD; Test substance; Not Reported					
Parameter, and			-				
Direct Quantum Yield Result	lts						
sults Sample Time and Rev	sults Reference Sub-	Ko=1.883 ug/LH; Not Reported; 14	days; Not Reported				
stance Compartments	suits Reference Sub						
Results Remarks and Result	ts Details	SedimentOver all zero order rate constant: 1.883 ug/LHOver all first order rate constant: $125.9 \times 10^{-4}$ 1/HWaterOver all first order rate constant: $100.3 \times 10^{-4}$ 1/H. Not Reported					
Results Mean Total Recover	y and Results per Re-	discussed but not reported: Not reported					
covery							
			FVALUATION	J			
Domain		Metric	Rating	Comments			
Domain 1: Test Substance	ce		6				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity was not reported; however, the omission is unlikely to have a substantial impact on the study results.			
Domain 2: Test Design							
	Metric 3:	Study Controls	High	Appropriate blanks and controls were used.			
	Metric 4:	Test Substance Stability	Medium	Details regarding this metric were not discussed; however, the omissions were not likely to have hindered the interpretation of the results.			
Domain 3: Test Conditio	ns						
			Continued on next p	age			

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		contin	ued from pre-	vious page
Study Citation: OECD Harmonized	Walker, W. W., C 13(12):1283-1294 Biodegradation in	Cripe, C. R., Pritchard, P. H., Bourquin, A L. Water	A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere
Template:				
HERO ID:	5432807			
		I	EVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	The system type and design were appropriate.
Domain 4: Test Organis	sms			
	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	sessment			
	Metric 11:	Test Substance Identity	Medium	Limited detail on analytical method; however, this is not likely to hinder the results.
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Present	tation and Analysis			
	Metric 15:	Data Reporting	High	The target chemical and transformation product(s) concentrations (if required), extrac- tion efficiency, percent recovery, or mass balance were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis reported and acceptable.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	High	Reported values were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quali	ty Determin	ation	High	

Study Citation:	y Citation: Walker, W. W., Cripe, C. R., Pritchard, P. H., Bourquin, A. W. (1984). Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosp 13(12):1283-1294.						
OECD Harmonized	Biodegradation in	Water					
Template: HERO ID:	5432807						
			EXTRACTION	N			
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, EndPoint, ' Guideline	Туре,	None; screening test; Experimental;	; other: no guideline indi	cated			
Solvent, Reactivity, Storag	e, Stability	NR; NR; NR; NR					
Radiolabel, Source, State,	Purity	NR; NR; NR; NR					
Blank and Control		Yes, sterile water and sediment; Not	t Reported				
Oxygen and Inoculum Duration, Parameter, Syste Sampling Frequency	m, and	aerobic; activated sludge (adaptation Not applicable; TOC: flasks, darken	n not specified): water ar ned, shaken; Not Reporte	nd sediment from LA, MS, and FL d			
pH Adjusted and pH		Not Reported; 8.0					
		500 μg/L					
Composition and Test Tem	perature	Sand: 45.0%, Silt:27.7%, Clay:27.3%; 25°C					
CEC, Water Aeration Dilut ness, and Other Design	ion, Continuous Dark-	Not reported; yes; yes; Davis Bayou(6/82), Salinity: 10 g/L, TOC: 6.9(activated sediment) & 1.5(activated water) mg/L					
Results Details Method, Re Parameter, and	esults per Degradation	GC-Ni63 ECD; Test substance; Not Reported					
Direct Quantum Yield Res Results Value, Results Sta sults Sample Time, and Re stance Compartments	ults indard Deviation, Re- esults Reference Sub-	ko=1.997 ug/LH; Not Reported; 8 days; Not Reported					
Results Remarks and Resu	lts Details	SedimentOver all zero order rate constant: 1.997 ug/LHOver all first order rate constant: 38.2 *10^-4 1/HWaterOver all first order rate constant: 0.0*10^-4 1/HFirst order rate constant: NC: Not Reported					
Results Mean Total Recove covery	ery and Results per Re-	discussed but not reported; Not repo	orted				
			EVALUATION	N			
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ice						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity was not reported; however, the omission is unlikely to have a substantial impact on the study results.			
Domain 2: Test Design							
U	Metric 3:	Study Controls	High	Appropriate blanks and controls were used.			
	Metric 4:	Test Substance Stability	Medium	Details regarding this metric were not discussed; however, the omissions were not likely to have hindered the interpretation of the results.			

Domain 3: Test Conditions

Continued on next page ...

		contin	ued from pre	vious page
Study Citation:	Walker, W. W., C 13(12):1283-1294	Cripe, C. R., Pritchard, P. H., Bourquin, A.	A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere
OECD Harmonized	Biodegradation in	water		
Template:	5422807			
HERO ID:	5452807			
		J	EVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	The system type and design were appropriate.
Domain 4: Test Organis	me			
Domain 1. Test Organis	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type
		1 8 1 1 1		
Domain 5: Outcome As	sessment			
	Metric 11:	Test Substance Identity	Medium	Limited detail on analytical method; however, this is not likely to hinder the results.
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.
		Exposure		
Domain 7: Data Present	tation and Analysis			
	Metric 15:	Data Reporting	High	The target chemical and transformation product(s) concentrations (if required), extrac- tion afficiency, percent recovery, or mass balance were reported
	Metric 16:	Statistical Methods and	High	Statistical analysis reported and acceptable.
		Kinetic Calculations		
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	High	Reported values were reasonable.
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Ouali</b>	tv Determin	ation	High	
			8	

Study Citation: Wa	alker, W. W., Ci	ripe, C. R., Pritchard, P. H., Bourd	uin, A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere			
OECD Harmonized Bio	(12):1283-1294. odegradation in	Water					
Template: HERO ID: 54	32807						
			EXTRACTIO	N			
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, EndPoint, Type,		None; screening test; Experimental; o	other: no guideline ind	icated			
Solvent, Reactivity, Storage, Stal	bility	NR; NR; NR; NR					
Radiolabel, Source, State, Purity		NR; NR; NR; NR					
Blank and Control		Yes, sterile water and sediment; Not	Reported				
Oxygen and Inoculum		aerobic; activated sludge (adaptation	not specified): water a	nd sediment from LA, MS, and FL			
Duration, Parameter, System, and Sampling Frequency	d	4 days; TOC: flasks, darkened, shake	n; Not Reported				
pH Adjusted and pH		Not Reported; 8.0					
Concentration		500 µg/L					
Composition and Test Temperatu	ire	Sand: 19.9%, Silt: Flocculation, Clay: Flocculation; 25°C					
CEC, Water Aeration Dilution, C	ontinuous Dark-	Not reported; yes; yes; Davis bayou (	10/82), Salinity: 21 g/	L, TOC: 18.7(activated sludge) 8.5 (activated water) mg/L			
Results Details Method Results	ner Degradation	GC-Ni63 ECD: Test substance: Not Reported					
Parameter, and	per Degradation	Se mos Leb, fost substance, not Reported					
Direct Quantum Yield Results							
Results Value, Results Standard	Deviation, Re-	ko=3.913 ug/LH; Not Reported; 10 days; Not Reported					
sults Sample Time, and Results	Reference Sub-						
stance Compartments	toile	SedimentOver all zero order rate cor	etant: 3 013 ug/I HOy	er all firet order rate constant; 184 1*100 4 1/HWaterOver all first order rate constant;			
Results Remarks and Results De	talls	72.7*10^-4 1/HFirst order rate constant: 159.9*10^-4 1/H: Not Reported					
Results Mean Total Recovery and	l Results per Re-	discussed but not reported; Not reported					
covery							
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Test Substance							
Me	etric 1:	Test Substance Identity	High	The test substance was identified by name.			
Ме	etric 2:	Test Substance Purity	Medium	The test substance source and purity was not reported; however, the omission is unlikely to have a substantial impact on the study results.			
Domain 2: Test Design							
Me	etric 3:	Study Controls	High	Appropriate blanks and controls were used			
Me	etric 4:	Test Substance Stability	Medium	Details regarding this metric were not discussed: however, the omissions were not likely			
		Test Substance Stubinty	meanum	to have hindered the interpretation of the results			

Domain 3: Test Conditions

Continued on next page ...

		contin	ued from pre	vious page		
Study Citation:	Walker, W. W., C 13(12):1283-1294	ripe, C. R., Pritchard, P. H., Bourquin, .	A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere		
OECD Harmonized	Biodegradation in	Water				
Template:						
HERO ID:	5432807					
	EVALUATION					
Domain		Metric	Rating	Comments		
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.		
	Metric 8:	System Type and Design	High	The system type and design were appropriate.		
Domain 4: Test Organis	sms					
	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.		
Domain 5: Outcome As	sessment					
	Metric 11:	Test Substance Identity	Medium	Limited detail on analytical method; however, this is not likely to hinder the results.		
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate.		
Domain 6: Confounding	g/Variable Control					
· · · · ·	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.		
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.		
		Exposure				
Domain 7: Data Present	tation and Analysis					
	Metric 15:	Data Reporting	High	The target chemical and transformation product(s) concentrations (if required), extrac- tion efficiency, percent recovery, or mass balance were reported.		
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis reported and acceptable.		
Domain 8: Other	Matria 17.	Varifaction on Dlausikility of	Illak	Dana da dan hara mana mana da la		
	wietric 17:	Paculta	High	Reported values were reasonable.		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.		
<b>Overall Quali</b>	ty Determin	ation	High			

Study Citation:	Walker, W. W., Ci 13(12):1283-1294	ipe, C. R., Pritchard, P. H., Bour	rquin, A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere		
OECD Harmonized	Biodegradation in	Water				
Template:						
HERO ID:	5432807					
			EXTRACTIO	N		
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, EndPoint,	Туре,	None; screening test; Experimental;	other: no guideline ind	icated		
Solvent, Reactivity, Storag	e. Stability	NR: NR: NR: NR				
Radiolabel Source State	Purity	NR: NR: NR				
Blank and Control	··· · · · ·	Yes, sterile water and sediment: Not	t Reported			
Oxygen and Inoculum		aerobic: activated sludge (adaptation	n not specified): water a	nd sediment from LA, MS, and FL		
Duration. Parameter. Syste	m. and	1.5 days: TOC: flasks, darkened, sh	aken: Not Reported			
Sampling Frequency	,*					
pH Adjusted and pH		Not Reported; 7.7				
Concentration		500 µg/L				
Composition and Test Tem	perature	Not applicable; 25°C				
CEC, Water Aeration Dilut ness, and Other Design	ion, Continuous Dark-	Not reported; yes; yes; Horn Island (6/82), Salinity: 23 g/L, TOC: 15.4(activated sludge) 21.7 (activated water) mg/L				
Results Details Method, Re Parameter, and	esults per Degradation	GC-Ni63 ECD; Test substance; Not Reported				
Direct Quantum Yield Res Results Value, Results Sta sults Sample Time, and R	ults indard Deviation, Re- esults Reference Sub-	ko=4.646ug/LH; Not Reported; 16	days; Not Reported			
stance Compartments Results Remarks and Resu	lts Details	SedimentOver all zero order rate constant: 4.646ug/LHOver all first order rate constant: 152.9*10^-4 1/HWaterOver all first order rate constant: 121.2*10^-4 1/HEirst order rate constant: 213.3*10^-4 1/H: Not Reported				
Results Mean Total Recove covery	ery and Results per Re-	discussed but not reported; Not repo	orted			
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ice					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity was not reported; however, the omission is unlikely to have a substantial impact on the study results.		
Domain 2: Test Design						
e	Metric 3:	Study Controls	High	Appropriate blanks and controls were used.		
	Metric 4:	Test Substance Stability	Medium	Details regarding this metric were not discussed; however, the omissions were not likely to have hindered the interpretation of the results.		

Continued on next page ...

	continued from previous page						
Study Citation:	Walker, W. W., Cripe, C. R., Pritchard, P. H., Bourquin, A. W. (1984). Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere 13(12):1283-1294.						
OECD Harmonized	Biodegradation in Water						
Template:	-						
HERO ID:	5432807						
EVALUATION							
Domain		Metric	Rating	Comments			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.			
	Metric 8:	System Type and Design	High	The system type and design were appropriate.			
Domain 4. Test Organis	ms						
Domain 1. Test organis	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome As	sessment Metric 11: Metric 12:	Test Substance Identity Test Substance Purity	Medium High	Limited detail on analytical method; however, this is not likely to hinder the results. Sampling methods were appropriate.			
Domain 6: Confounding	y/Variable Control						
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	High	The target chemical and transformation product(s) concentrations (if required), extrac- tion efficiency, percent recovery, or mass balance were reported.			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis reported and acceptable.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	Reported values were reasonable.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Quali</b>	ty Determin	ation	High				

<b>Walker, W. W., Cripe, C. R., Pritchard, P. H., Bourquin, A. W. (1984).</b> Dibutylphthalate degradation in estuarine and fresh-water sites.							
OECD Harmonized	13(12):1283-1294. Biodegradation in Water						
Template: HERO ID:	5432807						
			EXTRACTION	N			
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, EndPoint, Type,		None; screening test; Experimental; other: no guideline indicated					
Guideline Solvent, Reactivity, Storage, Stability		NR; NR; NR					
Radiolabel. Source. State. Purity		NR; NR; NR					
Blank and Control		Yes, sterile water and sediment; Not Reported					
Oxygen and Inoculum		aerobic; activated sludge (adaptation not specified): water and sediment from LA, MS, and FL					
Duration, Parameter, System, and		2.5 days; TOC: flasks, darkened, shaken; Not Reported					
Sampling Frequency		Not Penarted: 8.0					
pH Adjusted and pH		100 reported, 6.0					
Composition and Test Temperature		Sand: 11.5% Silt: Elocculation Clay: Elocculation: 25°C					
CEC Water Aeration Dilution Continuous Dark		Not reported: ves: ves: Horn Island (9/82) Salinity: 27 of TOC: 32.9(activated sludge) 9.4(activated water) mo/					
ness, and Other Design Results Details Method, Results per Degradation Parameter, and		GC-Ni63 ECD; Test substance; Not Reported					
							Direct Quantum Yield Results Results Value, Results Standard Deviation, Re- sults Sample Time, and Results Reference Sub- stance Compartments
Results Remarks and Results Details		SedimentOver all zero order rate constant: 1.822ug/LHOver all first order rate constant: 124.3*10^-4 1/HWaterOver all first order rate constant:					
		232.0*10^-4 1/HFirst order rate constant: 409.2*10^-4 1/H; Not Reported					
Results Mean Total Recover covery	ry and Results per Re-	discussed but not reported; Not repo	orted				
			EVALUATION	N			
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ce		TT' 1				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity was not reported; however, the omission is unlikely to have a substantial impact on the study results.			
Domain 2: Test Design							
	Metric 3:	Study Controls	High	Appropriate blanks and controls were used.			
	Metric 4:	Test Substance Stability	Medium	Details regarding this metric were not discussed; however, the omissions were not likely to have hindered the interpretation of the results.			

Domain 3: Test Conditions

Continued on next page ...

#### PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

HERO ID: 5432807 Table: 14 of 16

#### ... continued from previous page **Study Citation:** Walker, W. W., Cripe, C. R., Pritchard, P. H., Bourquin, A. W. (1984). Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere 13(12):1283-1294. **OECD Harmonized** Biodegradation in Water **Template: HERO ID:** 5432807 **EVALUATION** Domain Metric Rating Comments Metric 5: Test Method Suitability High The test method was suitable for the test substance. Metric 6: **Testing Conditions** High Testing conditions were appropriate for the method. Metric 7: Testing Consistency High Test conditions were consistent across samples or study groups. The conditions of the exposure were documented. Metric 8: System Type and Design High The system type and design were appropriate. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The test organism information or inoculum source were reported. Metric 10: Sampling Methods N/A The metric is not applicable to this study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity Medium Limited detail on analytical method; however, this is not likely to hinder the results. Metric 12: Test Substance Purity High Sampling methods were appropriate. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables N/A No confounding variables were noted. Health Outcomes Unrelated to Metric 14: N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting High The target chemical and transformation product(s) concentrations (if required), extraction efficiency, percent recovery, or mass balance were reported. Metric 16: Statistical Methods and High Statistical analysis reported and acceptable. Kinetic Calculations Domain 8: Other

 Metric 18:
 QSAR Models
 N/A
 The metric is not applicable to this study type.

 Overall Quality Determination
 High

Results

Verification or Plausibility of

Metric 17:

High

Reported values were reasonable.
Study Citation:	Citation: Walker, W. W., Cripe, C. R., Pritchard, P. H., Bourquin, A. W. (1984). Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphe 13(12):1283-1294.							
OECD Harmonized	Biodegradation in	Water						
Template:								
HERO ID:	5432807							
			EXTRACTIO	N				
Parameter		Data						
CASRN and Test Material		84-74-2: DBP						
Confidentiality, EndPoint,	Туре,	None; screening test; Experimental;	other: no guideline ind	icated				
Solvent, Reactivity, Storag	e, Stability	NR; NR; NR; NR						
Radiolabel, Source, State,	Purity	NR; NR; NR; NR Notes: The list of	materials and chemical	ls was reported in an appendix to the article.				
Blank and Control		Yes, sterile water and sediment; Not	Reported					
Oxygen and Inoculum		aerobic; activated sludge (adaptatior	n not specified): water a	nd sediment from LA, MS, and FL				
Duration, Parameter, Syste Sampling Frequency	m, and	5.3 days; TOC: flasks, darkened, shaken; Not Reported						
pH Adjusted and pH		Not Reported; 7.1						
Concentration		500 µg/L						
Composition and Test Tem	perature	Sand: 18.8%, Silt: 70.1%, Clay: 11.1; 25°C						
CEC, Water Aeration Dilut ness, and Other Design	ion, Continuous Dark-	Not reported; yes; yes; Tchoutacabouffa, Salinity: 1 g/l, TOC: 18.0(activated sludge) 16.7(activated water) mg/l						
Results Details Method, Ro Parameter, and	esults per Degradation	GC-Ni63 ECD; Test substance; Not Reported						
Direct Quantum Yield Res Results Value, Results Sta	ults indard Deviation, Re-	ko=2.042ug/LH; Not Reported; 16 days; Not Reported						
suits Sample Time, and K stance Compartments	esuits Reference Sub-							
Results Remarks and Resu	lts Details	SedimentOver all zero order rate constant: 2.042ug/LHOver all first order rate constant:101.7*10^-4 1/HWaterOver all first order rate constant: 63 5*10^-4 1/HEirst order rate constant: 236 2*10^-4 1/H: Not Reported						
Results Mean Total Recove covery	ery and Results per Re-	discussed but not reported; Not repo	rted	·				
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 1: Test Substan	ice							
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.				
Metric 2:		Test Substance Purity	Medium	The test substance source and purity was not reported; however, the omission is unlikely to have a substantial impact on the study results.				

-	Metric 3:	Study Controls	High	Appropriate blanks and controls were used.
	Metric 4:	Test Substance Stability	Medium	Details regarding this metric were not discussed; however, the omissions were not likely
				to have hindered the interpretation of the results.

Domain 3: Test Conditions

Continued on next page ...

#### PUBLIC RELEASE DRAFT May 2025 **Biodegradation in Water**

HERO ID: 5432807 Table: 15 of 16

#### ... continued from previous page **Study Citation:** Walker, W. W., Cripe, C. R., Pritchard, P. H., Bourquin, A. W. (1984). Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere 13(12):1283-1294. **OECD Harmonized** Biodegradation in Water **Template: HERO ID:** 5432807 **EVALUATION** Domain Metric Rating Comments Metric 5: Test Method Suitability High The test method was suitable for the test substance. Metric 6: **Testing Conditions** High Testing conditions were appropriate for the method. Metric 7: Testing Consistency High Test conditions were consistent across samples or study groups. The conditions of the exposure were documented. Metric 8: System Type and Design High The system type and design were appropriate. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The test organism information or inoculum source were reported. Metric 10: Sampling Methods N/A The metric is not applicable to this study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity Medium Limited detail on analytical method; however, this is not likely to hinder the results. Metric 12: Test Substance Purity High Sampling methods were appropriate. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables N/A No confounding variables were noted. Health Outcomes Unrelated to Metric 14: N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting High The target chemical and transformation product(s) concentrations (if required), extraction efficiency, percent recovery, or mass balance were reported. Metric 16: Statistical Methods and High Statistical analysis reported and acceptable. Kinetic Calculations Domain 8: Other

QSAR Models Metric 18: **Overall Quality Determination** High

Results

Verification or Plausibility of

Metric 17:

High

N/A

Reported values were reasonable.

The metric is not applicable to this study type.

Study Citation:	Walker, W. W., Cripe, C. R., Pritchard, P. H., Bourquin, A. W. (1984). Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere 13(12):1283-1294.						
OECD Harmonized	Biodegradation in	Water					
Template:	0						
HERO ID:	5432807						
			EXTRACTIO	N			
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, EndPoint, '	Туре,	None; screening test; Experimental;	other: no guideline rep	orted			
Solvent, Reactivity, Storag	e, Stability	NR; NR; NR; NR					
Radiolabel, Source, State, I	Purity	NR; Sigma Company; NR; 99%					
Blank and Control	•	Yes, sterile water and sediment; Not	t Reported				
Oxygen and Inoculum		aerobic; activated sludge (adaptation	n not specified): water a	nd sediment from LA, MS, and FL			
Duration, Parameter, Syste	m, and	7 days; TOC: flasks, darkened, shak	en; Not Reported				
Sampling Frequency		• • • • • • • • • • • • • • • • • • • •	. 1				
pH Adjusted and pH		Not Reported; 6.8					
Concentration		500 μg/L					
Composition and Test Tem	perature	Sand: 54.3% Silt: 27.7% , Clay: 27.3%; 25°C					
CEC, Water Aeration Dilut ness, and Other Design	ion, Continuous Dark-	Not reported; yes; Fort Bayou, Salinity: 0 g/l, TOC: 23.9(activated sludge) 8.6 (activated water) mg/l					
Results Details Method, Re Parameter, and	esults per Degradation	GC-Ni63 ECD; Test substance; Not Reported					
Direct Quantum Yield Results Results Value, Results Standard Deviation, Re- sults Sample Time, and Results Reference Sub-		ko=2.584 ug/LH; Not Reported; 8 days; Not Reported					
stance Compartments Results Remarks and Results Details		SedimentOver all zero order rate constant: 2.584ug/LHOver all first order rate constant:85.5*10^-4 1/HWaterOver all first order rate constant: 52.4*10^-4 1/HFirst order rate constant: 229.1*10^-4 1/H: Not Reported					
Results Mean Total Recove covery	ry and Results per Re-	discussed but not reported; Not repo	orted				
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity was not reported; however, the omission is unlikely to have a substantial impact on the study results.			
Domain 2: Test Design							
U	Metric 3:	Study Controls	High	Appropriate blanks and controls were used.			
Metric 4:		Test Substance Stability	Medium	Details regarding this metric were not discussed; however, the omissions were not likely to have hindered the interpretation of the results.			

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# PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

		contin	ued from pre	vious page
Study Citation:	Walker, W. W., C 13(12):1283-1294	ripe, C. R., Pritchard, P. H., Bourquin, .	A. W. (1984).	Dibutylphthalate degradation in estuarine and fresh-water sites. Chemosphere
OECD Harmonized	Biodegradation in	Water		
Template:				
HERO ID:	5432807			
		]	EVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	The system type and design were appropriate.
Domain 4: Test Organis	sms			
	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	sessment			
	Metric 11:	Test Substance Identity	Medium	Limited detail on analytical method; however, this is not likely to hinder the results.
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate.
Domain 6: Confounding	g/Variable Control			
· · · · ·	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.
		Exposure		
Domain 7: Data Present	tation and Analysis			
	Metric 15:	Data Reporting	High	The target chemical and transformation product(s) concentrations (if required), extrac- tion efficiency, percent recovery, or mass balance were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis reported and acceptable.
Domain 8: Other	Matria 17.	Varifaction on Dlausikility of	Illak	Dana da dan hara mana mana da la
	wietric 17:	Paculta	High	Reported values were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quali</b>	ty Determin	ation	High	

Study Citation: OECD Harmonized	Wang, J. L., Chen, L. J., Shi, H. C., Qian, Y. (2000). Microbial degradation of phthalic acid esters under anaerobic digestion of sludge. Chemosphere 41(8):1245-1248. Biodegradation in Water				
HERO ID:	1332857				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, T	ype,	None; screening test; Experimental; other: Anaerobic biodegradation with WWTP mixed digested sludge			
Guideline Solvent, Reactivity, Storage	, Stability	NR; NR; NR			
Radiolabel, Source, State, P	urity	NR; Beijing Chemical Plant, China; NR; >99%			
Blank and Control		sterile control with sludge autoclaved for 20 min at 121°C; Not reported			
Oxygen and Inoculum		anaerobic; anaerobic sludge: Mixed digested sludge from the primary anaerobic digester of a local wastewater treatment plant			
Duration, Parameter, System, and Sampling Frequency		8 days; CH4 evolution: shake flask; periodically, about once a day, based on data in figure			
pH Adjusted and pH		Not Reported; Not reported			
Concentration		10 mg/L			
Composition and Test Temp	perature	WWTP sludge; 37°C			
CEC, Water Aeration Dilution ness, and Other Design	on, Continuous Dark-	Not reported; Not applicable; Not reported; Not Reported			
Results Details Method, Results per Degradation Parameter, and Direct Quantum Vield Results		GC-FID of test substance and methane production; half-life change in test chemical concentration. Percent theoretical methane production also reported.; Not Reported			
Results Value, Results Standard Deviation, Re- sults Sample Time, and Results Reference Sub- stance Compartments		>90% loss of test chemical; not reported; daily; Not reported			
Results Remarks and Result	ts Details	DBP degradation followed by both loss of parent substance and % theoretical methane production. Rates and half-lives calculated using loss of parent substance. Half life 32.1 hours (r2 0.971). Percent theoretical methane production 75%.; rate constant=0.0216 h-1			
Results Mean Total Recover covery	ry and Results per Re-	not reported; not reported			

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ice					
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.		
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	Medium	Sterile control were used; however, use of a reference substance was not reported.		
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.		
Domain 3: Test Conditions						

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### PUBLIC RELEASE DRAFT May 2025 Biodegradation in Water

Water

continued from previous page							
Study Citation:	Wang, J. L., Cher 41(8):1245-1248	Wang, J. L., Chen, L. J., Shi, H. C., Qian, Y. (2000). Microbial degradation of phthalic acid esters under anaerobic digestion of sludge. Chemosphere 41(8):1245-1248					
OECD Harmonized	Biodegradation in	Biodegradation in Water					
Template:	-						
HERO ID:	1332857						
		I	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 5:	Test Method Suitability	High	The method was suitable for test material.			
	Metric 6:	Testing Conditions	Medium	There were omissions in testing conditions; however, the omissions were not likely to have had a substantial impact on the study results.			
	Metric 7:	Testing Consistency	High	This metric met the criteria for high confidence as expected for this type of study.			
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.			
Domain 4: Test Organi	sms						
2 oniani il 1000 organi	Metric 9:	Outcome Assessment Methodology	Medium	Appropriate inoculum type; however, the inoculum source was not specifically reported.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome A	Metric 11: Metric 12:	Test Substance Identity Test Substance Purity	High Medium	The method is suitable for biodegradation assessment. There were omissions in sampling details; however, the omissions were not likely to have had a substantial impact on the study results.			
Domain 6: Confoundin	g/Variable Control						
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Domain 7: Data Presen	tation and Analysis						
	Metric 15:	Data Reporting	Medium	Some data were not reported, but omissions were unlikely to substantially impact the results.			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	This metric met the criteria for high confidence as expected for this type of study.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	Medium	Results were reasonable but no reference substances were used.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Quali</b>	ty Determin	ation	High				

\* Related References: Cited in HSDB

Study Citation:	Wang, J. L., Liu,	Wang, J. L., Liu, P., Shi, H. C., Yi, Q. A. (1997). Kinetics of phthalic acid ester degradation by acclimated activated sludge. Process Biochemistry					
OECD Harmonized	Biodegradation in Water						
Template:	5405590						
HERO ID:	5495580						
_		EXTRACTION					
Parameter		Data					
CASDN d T t M-t		Net Deserted, die hetelstelste					
CASKIN and Test Material	Tuno	Note Reported, di-fi-butyi printatate					
Guideline	type,	None, oner, experimental, oner. Non-guidenne. Degradation using accumated activated sudge					
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR					
Radiolabel, Source, State, P	Purity	NR; Beijing Chemical Plant; NR; commercial grade Notes: NR					
Blank and Control		Blank control (without inoculum); not reported					
Oxygen and Inoculum		aerobic; activated sludge, adapted: Acclimated activated sludge obtained from a coke-plant wastewater treatment plant; acclimation via fill-and-					
		draw operation for 35 days using DBP concentrations of 10-500 mg/L.					
Sampling Frequency	n, and	200 hours; test mat.: 2.0L reactor; not specified					
pH Adjusted and pH		not reported: not reported					
Concentration		= 50 - = 200  mg/L					
Composition and Test Temr	perature	Basic mineral medium with 0.01-0.5 g/L DBP: tap water: 25C					
CEC, Water Aeration Diluti	on, Continuous Dark-	not reported; not reported; DBP concentrations of 50, 100, 150, and 200 mg/L used.					
ness, and Other Design	,						
Results Details Method, Re	sults per Degradation	GC with FID; MDL = 1 ng; Half-life; loss of test material (DBP concentration); not reported					
Parameter, and	1.						
Results Value Results Stat	IIIS ndard Deviation Re-	ca 50%; not reported; ca 50 hours; DRP degradation in tan water alone was minimal					
sults Sample Time, and Re	sults Reference Sub-	ea. 50%, not reported, ea. 50 nours, DDF degradation in ap water alone was minimul.					
stance Compartments							
Results Remarks and Result	ts Details	Half-lives (h) = $45.3$ , $45.3$ , $46.8$ , and $47.5$ at DBP concentrations of 50, 100, 150, and 200 mg/L, respectively.; Rate constants (h-1) = $0.0153$ , $0.0153$ , $0.0148$ , and $0.0146$ at DBP concentrations of 50, 100, 150, and 200 mg/L, respectively.					
Results Mean Total Recover	ry and Results per Re-	not reported; not reported					
covery							
		EVALUATION					

Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ice				
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.	
	Metric 2:	Test Substance Purity	High	The source and grade of the test substance was reported.	
Domain 2: Test Design	Metric 3:	Study Controls	High	An abiotic control was included.	
Continued on next page					

		contin	ued from pre	vious page			
Study Citation:	Wang, J. L., Liu, P., Shi, H. C., Yi, Q. A. (1997). Kinetics of phthalic acid ester degradation by acclimated activated sludge. Process Biochemistry 32(7):567-571.						
<b>OECD Harmonized</b>	Biodegradation	in Water					
Template:		5405500					
HERO ID:	5495580						
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.			
Domain 3: Test Conditi	ions						
	Metric 5:	Test Method Suitability	Medium	Target chemical was tested at concentrations above its aqueous solubility.			
	Metric 6:	Testing Conditions	Medium	There were reported omissions in testing conditions ; however, sufficient data were reported to determine that omissions were not likely to have a substantial impact on study results.			
	Metric 7:	Testing Consistency	High	Reported test conditions were consistent.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study.			
Domain 4: Test Organis	sms						
	Metric 9: Matria 10:	Sampling Methods	Niedium	The inoculum source was reported; only acclimated sludge was evaluated.			
	Metric 10:	Sampling Methods	IN/A	The metric is not applicable to this study.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	Medium	Limited detail regarding sampling methods.			
Domain 6: Confoundin	g/Variable Control	Confounding Mariables	Mallin				
	Metric 15:	Confounding variables	Medium	Sources of variability and uncertainty in the measurements were not reported but are not likely to impact the results			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study.			
		Exposure		··· ·			
Domain 7. Data Presen	tation and Analysis						
Domain 7. Data i resell	Metric 15:	Data Reporting	Medium	Extraction efficiency, percent recovery, or mass balance were not reported but not likely			
		р		to impact the results.			
	Metric 16:	Statistical Methods and	High	Calculations were clearly described.			
		Kinetic Calculations					
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.			
	M ( 10	Results	<b>NT/</b> 4				
	Metric 18:	QSAK Models	N/A	The metric is not applicable to this study.			
<b>Overall Quali</b>	ty Determi	nation	High				

Study Citation:	Wang, X., Grady (	Vang, X., Grady C P L, J. R. (1995). Effects of biosorption and dissolution on the biodegradation of di-n-butyl phthalate. Water Environment Research						
<b>OECD Harmonized</b>	6/(5):863-8/1. Biodegradation in	Jegradation in Water						
Template:								
HERO ID:	1333093							
	EXTRACTION							
Parameter		Data						
CASRN and Test Material	CASRN and Test Material 84.74.2: DibutyInhthalate							
Confidentiality, EndPoint, T	Type,	None; screening test; Experimental; oth	er: Biodegradation in the presenc	e and absence of a sorptive biomass incapable of biodegrading the test				
Guideline Solvent, Reactivity, Storage	, Stability	substance toluene; NR; NR; NR						
Radiolabel, Source, State, P	Purity	14C-carbonyl carbon; NR; NR; 98%						
Blank and Control		Blank of mineral salts solution and 0.25	N NaOH; Not reported					
Oxygen and Inoculum		Not reported; not specified: activated slu	adge with no other details					
Duration, Parameter, Syster Sampling Frequency	n, and	37 hours; CO2 evolution: batch reactors	with or without biomass incapabl	e of degrading test substance; 1-2 hour intervals				
pH Adjusted and pH		Not Reported; Not reported						
Concentration		not explicitly stated						
Composition and Test Temp	perature	Mineral salts solution; Not reported						
CEC, Water Aeration Diluti	on, Continuous Dark-	Not reported; Not reported; Not reported	l; Not Reported					
ness, and Other Design	oulta non Doorodation	Liquid scientillation sounting of 14000, 14002 mechanics and 140 DDD removal. Not Departed						
Parameter and	suits per Degradation	Equid semimation counting of 14CO2;	14CO2 production and 14C-DBP	removar, not kepotted				
Direct Quantum Yield Resu	lts							
Results Value, Results Star	ndard Deviation, Re-	almost complete biodegradation by 22 hours in all trials; $\pm$ 2%; 37 hours; Not reported						
sults Sample Time, and Re	sults Reference Sub-							
stance Compartments	ta Dataila	Diadagendation esta was influenced by t	act substance concentration and m	acana of comian Data shown in france 2				
Results Mean Total Bacover	is Details	Biodegradation rate was influenced by test substance concentration and presence of carrier; Data snown in figure 2						
covery	y and Results per Re-	14C balance, >90% recovery						
			EVALUATION					
Domain		Metric	Rating	Comments				
Domain 1: Test Substand	ce		C					
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.				
	Metric 2:	Test Substance Purity	N/A	The test substance purity and specific activity was reported.				
Domain 2: Test Design								
Domain 2. Test Design	Metric 3:	Study Controls	Medium	Sterile control were used: however, use of a reference substance was not reported				
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.				
Domain 3: Test Conditio	nns	•						

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Study Citation:	Wang, X., Grady	Wang, X., Grady C P L, , J. R. (1995). Effects of biosorption and dissolution on the biodegradation of di-n-butyl phthalate. Water Environment Research							
OECD Harmonized	6/(5):863-8/1. Biodegradation in	Water							
Template:	Diodegradation in	Water							
HERO ID:	1333093								
			EVALUATION						
Domain		Metric	Rating	Comments					
	Metric 5:	Test Method Suitability	Medium	The test method was suitable for the test substance with minor details not reported.					
	Metric 6:	Testing Conditions	Uninformative	The testing conditions were not fully reported and sufficient data were not provided to interpret results.					
	Metric 7:	Testing Consistency	High	This metric met the criteria for high confidence as expected for this type of study.					
	Metric 8:	System Type and Design	Medium	There were omissions in system design; however, the omissions were not likely to have had a substantial impact on the study results.					
Domain 4: Test Organis	ms								
C C	Metric 9:	Outcome Assessment Methodology	Uninformative	The test culture source was not reported.					
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.					
Domain 5: Outcome Ass	sessment								
	Metric 11:	Test Substance Identity	Uninformative	The assessment methodology did not address definitively the outcomes of interest.					
	Metric 12:	Test Substance Purity	Medium	There were omissions in sampling details; however, the omissions were not likely to have had a substantial impact on the study results.					
Domain 6: Confounding	/Variable Control								
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.					
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.					
Domain 7: Data Present	ation and Analysis								
	Metric 15:	Data Reporting	Uninformative	There were omissions in data reporting; however, the omissions were not likely to have had a substantial impact on interpretation of the study results.					
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods and kinetic calculations were clearly described and address the dataset.					
Domain 8: Other									
	Metric 17:	Verification or Plausibility of	Medium	Results were reasonable but no reference substances were used.					
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.					
Overall Qualit	ty Determina	ation	Uninformative						

Study Citation:       Ye, C., Wang, H., Lei, Z. (1997). Interfacial effects of suspended particles on biodegradation of N-(2,4-dimethyl phenyl)-N'-methylformamidin drochloride and dibutyl phthalate in waters. Journal of Environmental Sciences 9(2):226-231.         OECD Harmonized       Biodegradation in Water					
HERO ID:	1333184				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Dibutyl phthalate			
Confidentiality, EndPoint, T	ype,	None; screening test; Experimental; other: Biodegradation in water			
Guideline Solvent, Reactivity, Storage	Stability	NR· NR· NR			
Radiolabel. Source, State, P	urity	NR: NR: NR			
Blank and Control		Not reported; Not reported			
Oxygen and Inoculum		aerobic; natural sediment: Air dried sediment particles from Beijing Tonghui River			
Duration, Parameter, System, and Sampling Frequency		approximately 12 days; test mat.: open-top glass bottle with a magnetic stirrer; every couple of days per figures			
pH Adjusted and pH		Not Reported; 7.2			
Concentration		ca. 19 mg/L			
Composition and Test Temp	berature	22.5g MgSO4.7H2O, 0.25g FeCl36H2O and 27.5g CaCl2 in 1L distilled water; 20±1°C			
CEC, Water Aeration Dilution ness, and Other Design	on, Continuous Dark-	Not reported; Stirred water; yes; Not applicable			
Results Details Method, Res Parameter, and	sults per Degradation	HPLC and UV detector at 254 nm; biodegradation rates; Not Reported			
Direct Quantum Yield Resu Results Value, Results Star sults Sample Time, and Re stance Compartments	lts ndard Deviation, Re- sults Reference Sub-	k=0.053-0.178 at 0-500 mg/L CSS; Not reported; approximately 12 days; Not reported			
Results Remarks and Result	ts Details	Not applicable; k=0.053-0.178 at 0- 500 mg/L CSS			
Results Mean Total Recover covery	y and Results per Re-	Not reported; Not reported			

			EVALUATION	Ň	
Domain		Metric	Rating	Comments	
Domain 1: Test Substand	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2:	Test Substance Purity	Low	The source and purity of the test substance were not reported or verified by analytical	
				means.	
Domain 2: Test Design	Metric 3:	Study Controls	Low	The study did not include or report crucial control groups that consequently made the study unusable.	
Continued on next page					

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HERO ID: 1333184 Table: 1 of 1

		contin	ued from pre	vious page			
Study Citation:	Ye, C., Wang, H., Lei, Z. (1997). Interfacial effects of suspended particles on biodegradation of N-(2,4-dimethyl phenyl)-N'-methylformamidine hy- drochloride and dibutyl phthalate in waters. Journal of Environmental Sciences 9(2):226-231						
OECD Harmonized	Biodegradation in	Water					
HERO ID:	1333184						
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.			
Domain 3: Test Conditi	ons						
	Metric 5:	Test Method Suitability	Medium	The test method was suitable for the test substance with minor deviations.			
	Metric 6:	Testing Conditions	Medium	There were reported deviations or omissions in testing conditions.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.			
	Metric 8:	System Type and Design	High	The system type and design were likely capable of appropriately maintaining substance concentrations.			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	High	The test inoculum source was reported.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	N/A	The method is suitable for biodegradation assessment.			
	Metric 12:	Test Substance Purity	N/A	There were omissions in sampling details; however, the omissions were not likely to have had a substantial impact on the study results.			
Domain 6: Confoundin	g/Variable Control						
Domain of Combunding	Metric 13	Confounding Variables	N/A	No confounding variables were noted			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Domain 7: Data Presen	tation and Analysis						
	Metric 15:	Data Reporting	Medium	Details regarding this metric were omitted; however, this was not likely to have hindered the interpretation of the results.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Details regarding this metric were omitted; however, this was not likely to have hindered the interpretation of the results.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	Medium	Results were reasonable but no reference substances were used.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Ouali</b>	tv Determina	ation	Low				

Study Citation:	Yuan, S. Y., Lin, Y. Y., Chang, B. V. (2011). Biodegradation of phthalate esters in polluted soil by using organic amendment. Journal of Environmental Science and Health. Part B: Pesticides. Food Contaminants, and Agricultural Wastes 46(5):419-425					
OECD Harmonized	Biodegradation in Water					
Template: HERO ID:	1249569					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, EndPoint, T	ype,	None; other; Experimental; other: Non-guideline screening test				
Guideline Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, Purity		NR; Chem Service (West Chester, PA, USA); NR; 99.0%				
Blank and Control		autoclaved sterile control; None				
Oxygen and Inoculum		aerobic; sewage, industrial (adaptation not specified): Sewage sludge from Neihu municipal sewage treatment plant in Taipei. Enrichment was performed to identify dominant species.				
Duration, Parameter, System	n, and	10 days; test mat.: bioreactor; approx. every 2 days				
pH Adjusted and pH		Not Reported: 7				
Concentration		50 - 250 mg/kg				
Composition and Test Temp	berature	microbial culture medium; 30°C				
CEC, Water Aeration Diluti	on, Continuous Dark-	NR for sludge, just soil samples; bioreactor aerated with stone diffusers at the bottom of the reactor with 12-gauge galvanized wire; yes; Not				
ness, and Other Design		applicable				
Results Details Method, Re	sults per Degradation	GC-ECD; test substance, DBP; Not Reported				
Direct Quantum Vield Resu	lte					
Results Value, Results Star	ndard Deviation, Re-	> 99% removal; Not reported; Not applicable				
sults Sample Time, and Re	sults Reference Sub-					
stance Compartments						
Results Remarks and Result	ts Details	k1=0.43-2.3 days-1; t1/2=0.3-1.6 days in sludge r=0.94-0.98				
Results Mean Total Recover covery	y and Results per Re-	96%; Not applicable				

EVALUATION							
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	nce						
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.			
	Metric 2:	Test Substance Purity	High	The test substance source or purity were reported.			
Domain 2: Test Design Metric 3: Study Controls High Sterile controls were used.							
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage was reported.			
Domain 3: Test Conditions							
Continued on next page							

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HERO ID: 1249569 Table: 1 of 1

		continu	ued from pre	vious page				
Study Citation:	Yuan, S. Y., Lin, Y. Y., Chang, B. V. (2011). Biodegradation of phthalate esters in polluted soil by using organic amendment. Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes 46(5):419-425.							
OECD Harmonized	Biodegradation in Water							
Template:	1040560							
HERO ID:	1249569							
		I	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate for the study type.				
	Metric 7:	Testing Consistency	High	This metric met the criteria for high confidence as expected for this type of study.				
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.				
Domain 4: Test Organi	sms							
C	Metric 9:	Outcome Assessment Methodology	High	The test inoculum source was reported and the test inoculum is routinely used for simi- lar study types.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome A	ssessment	<b>—</b> • • • •						
	Metric 11:	Test Substance Identity	High	This metric met the criteria for high confidence as expected for this type of study.				
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.				
Domain 6: Confoundin	g/Variable Control							
	Metric 13:	Confounding Variables	High	Sources of uncertainty were not reported but their omission likely did not impact the study results.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7: Data Preser	tation and Analysis							
Domain 7. Data Presen	Metric 15:	Data Reporting	Medium	Some details were not reported; however, these omissions were not likely to have a substantial impact on interpretation of the study results.				
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Some statistical details were not reported; however, these omissions were not likely to have a substantial impact on interpretation of the study results.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	This metric met the criteria for high confidence as expected for this type of study.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
<b>Overall Quali</b>	ty Determin	ation	High					

Study Citation: OECD Harmonized	Ziogou, K., Kirk P, W. W., Lester, J. N. (1989). Behavior of phthalic acid esters during batch anaerobic digestion of sludge. Water Research 23(6):743-748. Biodegradation in Water				
HERO ID:	1316130				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Dibutyl phthalate			
Confidentiality, EndPoint, T	ype,	None; screening test; Experimental; other: Non-guideline batch anaerobic digestion study			
Solvent, Reactivity, Storage	, Stability	NR; NR; NR			
Radiolabel, Source, State, Purity		NR; Sigma-Aldrich; NR; 99%			
Blank and Control	-	Yes, sterile (autoclaved) and azide controls; Not reported			
Oxygen and Inoculum		anaerobic; activated sludge, non-adapted: Mixed digested sludge from Hogsmill Valley Water Pollution Control Works (Thames Water Authority)			
Duration, Parameter, System, and		32 days; test mat.: Sealed jars kept stationary in a water bath at 37°C; 0, 1, 2, 4, 8, 16 and 32 days			
Sampling Frequency					
pH Adjusted and pH		Not Reported; Not reported			
Concentration		0.5 - 10 mg/L			
Composition and Test Temp	erature	50 mg/L sodium acetate, 25 mg/L sodium propionate and 25 mg/L sodium sulphide; 37°C			
CEC, Water Aeration Dilutio	on, Continuous Dark-	Not reported; Not applicable; Not reported; Not reported			
Results Details Method. Res	sults per Degradation	GC-ECD: 63 Ni-ECD: Not Reported			
Parameter, and					
Direct Quantum Yield Resu	lts				
Results Value, Results Star	idard Deviation, Re-	t1/2=65 hours; Not reported; 32 days; Not reported			
sults Sample Time, and Res	sults Reference Sub-				
Results Remarks and Result	s Details	Not applicable: $k_1 = 10.6E - 3 h - 1$ at $S_0 = 10 mg/L$			
Results Mean Total Recover	v and Results per Re-	Not reported. Not reported			
covery	j una resuns per re-				
2					

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Substand	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Sterile controls were used and removed the possibility of external influences impacting the outcome.
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 3: Test Condition	ons			

Continued on next page ...

		contin	ued from pre	vious page			
Study Citation: OECD Harmonized	Ziogou, K., Kirk P, W. W., Lester, J. N. (1989). Behavior of phthalic acid esters during batch anaerobic digestion of sludge. Water Research 23(6):743-748. Biodegradation in Water						
Template:							
HERO ID:	1316130						
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 5:	Test Method Suitability	Medium	Limited details reported on the test method but may be retrievable from the referenced primary source.			
	Metric 6:	Testing Conditions	Medium	Limited details reported on the test condition but may be retrievable from the referenced article.			
	Metric 7:	Testing Consistency	Medium	Limited details were reported but may be retrievable from the referenced article.			
	Metric 8:	System Type and Design	Medium	Limited details regarding test system type and design were provided but may be retriev- able from the referenced primary source.			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.			
	Metric 12:	Test Substance Purity	Medium	Details omitted; however, the lack of data is not likely to hinder the interpretation of the results.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	Medium	Percent recovery and pH were not reported, but was unlikely to have a substantial im- pact on evaluation of the results.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	The kinetic calculation was not reported and statistical analysis was minimal; however, the omissions are not likely to impact the study results.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of Results	High	The study results were reasonable.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Quali</b>	ty Determin	ation	High				

\* Related References: Cited in HSDB and ECHA

OECD Harmonized Biodegradation in Sediment         Biodegradation in Sediment         HERO ID:       679194         EXTRACTION         Parameter       Data         CASRN and Test Material Confidentiality, EndPoint, Type, Guideline Solvent, Reactivity, Storage, Stability       84-74-2; Dibutyl phthalate None: other; Experimental; other; Anaerobic digestion of wastewater sludge Guideline Solvent, Reactivity, Storage, Stability       NR; NR; NR NR; NR; NR NR; NR; NR Radiolabel, Source, State, Purity       NR; NR; NR NR; NR; NR anaerobic; digested sludge: Mixture of primary sludge and secondary mixed liquor from Hyperion Wastewater Treatment Plant at Playa del Rey, California         Duration, Parameter, System, and Sampling Frequency Results Sample Time, Compartment, Sludge Compartment, Water       Not reported; Sludge; Feeding sludge and digester sludge; Not reported; Not reported; Not reported Not reported; Not reported; Not reported; Not reported; Not reported Concentration       Not reported; Not reported Store proted; Not reported; Not reported; Not reported Store protection; Operated at 150 - 2255°C. He flow 1.2 mL/mi: 9	Alatriste-Mondragon, F., Iranpour, R., Ahring, B. K. (2003). Toxicity of di-(2-ethylhexyl) phthalate on the anaerobic digestion of wastewater sludge. Water				
HERO ID:       679194         EXTRACTION         Parameter       Data         CASRN and Test Material       84-74-2; Dibutyl phthalate         Confidentiality, EndPoint, Type,       None; other; Experimental; other: Anaerobic digestion of wastewater sludge         Guideline       None; other; Experimental; other: Anaerobic digestion of wastewater sludge         Solvent, Reactivity, Storage, Stability       NR; NR; NR         Radiolabel, Source, State, Purity       NR; NR; NR         Oxygen and Inoculum       anaerobic; digested sludge: Mixture of primary sludge and secondary mixed liquor from Hyperion Wastewater Treatment Plant at Playa del Rey, California         Duration, Parameter, System, and       190 days, data reported for last 12 weeks; test mat.; bench-scale digesters; Not reported         Sampling Frequency       Not reported; Sludge; Feeding sludge and digester sludge; Not reported; No					
Parameter         Data           CASRN and Test Material         84-74-2; Dibutyl phthalate           Confidentiality, EndPoint, Type,         None; other; Experimental; other: Anaerobic digestion of wastewater sludge           Guideline         Solvent, Reactivity, Storage, Stability         NR; NR; NR           Radiolabel, Source, State, Purity         NR; NR; NR; NR           Oxygen and Inoculum         anaerobic; digested sludge: Mixture of primary sludge and secondary mixed liquor from Hyperion Wastewater Treatment Plant at Playa del Rey, California           Duration, Parameter, System, and         190 days, data reported for last 12 weeks; test mat.; bench-scale digesters; Not reported           Sampling Frequency         Not reported; Sludge; Feeding sludge and digester sludge; Not reported; Not reported; Not reported           Compartment, Water         Oxot reported; Not reported; Not reported; Not reported; Not reported           Concentration         212.7 mg/L -           Analytical Method, Analytical Details, and Results         Biogas: Gas chromatograph with thermal conductivity detector; Test material: gas chromatography with flame-ionization detection; Operated at 150 - 275°C. He flow 12. ml/min: 9					
Parameter         Data           CASRN and Test Material         84-74-2; Dibutyl phthalate           Confidentiality, EndPoint, Type,         None; other; Experimental; other: Anaerobic digestion of wastewater sludge           Guideline         Solvent, Reactivity, Storage, Stability         NR; NR; NR           Radiolabel, Source, State, Purity         NR; NR; NR         Name           Oxygen and Inoculum         anaerobic; digested sludge: Mixture of primary sludge and secondary mixed liquor from Hyperion Wastewater Treatment Plant at Playa del Rey, California           Duration, Parameter, System, and         190 days, data reported for last 12 weeks; test mat.; bench-scale digesters; Not reported           Sampling Frequency         Not reported; Sludge; Feeding sludge and digester sludge; Not reported; Not reported           Compartment, Water         Not reported; Not re					
CASRN and Test Material84-74-2; Dibutyl phthalateConfidentiality, EndPoint, Type, GuidelineNone; other; Experimental; other: Anaerobic digestion of wastewater sludgeGuideline Solvent, Reactivity, Storage, StabilityNR; NR; NR; NRRadiolabel, Source, State, PurityNR; NR; NR; NRRadiolabel, Source, State, PurityNR; NR; NR; NROxygen and Inoculumanaerobic; digested sludge: Mixture of primary sludge and secondary mixed liquor from Hyperion Wastewater Treatment Plant at Playa del Rey, CaliforniaDuration, Parameter, System, and190 days, data reported for last 12 weeks; test mat.; bench-scale digesters; Not reportedSampling Frequency Results Sample Time, Compartment, SludgeNot reported; Sludge; Feeding sludge and digester sludge; Not reported; Not reported; Not reportedCompartment, Water Compartment, CEC, and pHNot reported; Not rep					
CASRN and Test Material84-74-2; Dibutyl phthalateConfidentiality, EndPoint, Type, GuidelineNone; other; Experimental; other: Anaerobic digestion of wastewater sludgeGuidelineNone; other; Experimental; other: Anaerobic digestion of wastewater sludgeSolvent, Reactivity, Storage, StabilityNR; NR; NRRadiolabel, Source, State, PurityNR; NR; NROxygen and Inoculumanaerobic; digested sludge: Mixture of primary sludge and secondary mixed liquor from Hyperion Wastewater Treatment Plant at Playa del Rey, CaliforniaDuration, Parameter, System, and190 days, data reported for last 12 weeks; test mat.; bench-scale digesters; Not reportedSampling Frequency Results Sample Time, Compartment, SludgeNot reported; Sludge; Feeding sludge and digester sludge; Not reported; Not reported; Not reportedCompartment, Water Compartment, CEC, and pHNot reported; Not rep					
Confidentiality, EndPoint, Type, GuidelineNone; other; Experimental; other: Anaerobic digestion of wastewater sludgeGuidelineNR; NR; NR; NRSolvent, Reactivity, Storage, StabilityNR; NR; NRRadiolabel, Source, State, PurityNR; NR; NROxygen and Inoculumanaerobic; digested sludge: Mixture of primary sludge and secondary mixed liquor from Hyperion Wastewater Treatment Plant at Playa del Rey, CaliforniaDuration, Parameter, System, and Sampling Frequency Results Sample Time, Compartment, Sludge Compartment, Water Control Dark, Control, and BlankNot reported; Sludge; Feeding sludge and digester sludge; Not reported; Not reported; Not reported; Not reported; Not reported; Not reported; Not reportedConcentration212.7 mg/L -Analytical Method, Analytical Details, and Re- sults Per Degredation ParameterBiogas: Gas chromatograph with thermal conductivity detector; Test material: gas chromatography with flame-ionization detection; Operated at S0°C. He flow 30 ml /min: Operated at 150 - 275°C. He flow 1.2 ml /min: 9					
GuidelineSolvent, Reactivity, Storage, StabilityNR; NR; NR; NRRadiolabel, Source, State, PurityNR; NR; NR; NROxygen and Inoculumanaerobic; digested sludge: Mixture of primary sludge and secondary mixed liquor from Hyperion Wastewater Treatment Plant at Playa del Rey, CaliforniaDuration, Parameter, System, and190 days, data reported for last 12 weeks; test mat.; bench-scale digesters; Not reportedSampling Frequency Results Sample Time, Compartment, SludgeNot reported; Feeding sludge and digester sludge; Not reported; Not reported; Not reportedCompartment, Water Compartment, WaterNot reported; Not reporte					
Radiolabel, Source, State, PurityNR; NR; NROxygen and Inoculumanaerobic; digested sludge: Mixture of primary sludge and secondary mixed liquor from Hyperion Wastewater Treatment Plant at Playa del Rey, CaliforniaDuration, Parameter, System, and190 days, data reported for last 12 weeks; test mat.; bench-scale digesters; Not reportedSampling FrequencyResults Sample Time, Compartment, SludgeResults Sample Time, Compartment, SludgeNot reported; Sludge; Feeding sludge and digester sludge; Not reported; Not reported; Not reportedCompartment, WaterNot reported; Not reportedConcentration212.7 mg/L -Analytical Method, Analytical Details, and Results Per Deerredation ParameterBiogas: Gas chromatograph with thermal conductivity detector; Test material: gas chromatography with flame-ionization detection; Operated at 150 - 275°C. He flow 1.2 mL/min: 9					
Oxygen and Inoculumanaerobic; digested sludge: Mixture of primary sludge and secondary mixed liquor from Hyperion Wastewater Treatment Plant at Playa del Rey, California 190 days, data reported for last 12 weeks; test mat.; bench-scale digesters; Not reported Sampling Frequency Results Sample Time, Compartment, Sludge Compartment, Water Control Dark, Control, and BlankNot reported; Sludge; Feeding sludge and digester sludge; Not reported; Not reported; Not reported to reported; Not reported; Not reported SourceConcentration212.7 mg/L -Analytical Method, Analytical Details, and Results Per Degredation ParameterBiogas: Gas chromatograph with thermal conductivity detector; Test material: gas chromatography with flame-ionization detection; Operated at S5°C. He flow 30 mL/min: Operated at 150 - 275°C. He flow 1.2 mL/min: 9					
CaliforniaDuration, Parameter, System, and190 days, data reported for last 12 weeks; test mat.; bench-scale digesters; Not reportedSampling Frequency190 days, data reported for last 12 weeks; test mat.; bench-scale digesters; Not reportedResults Sample Time, Compartment, SludgeNot reported; Sludge; Feeding sludge and digester sludge; Not reported; Not reported; Not reportedCompartment, WaterNot reported; Sludge; Feeding sludge and digester sludge; Not reported; Not reported; Not reportedControl Dark, Control, and BlankNot reported; Not reported; Not reportedConcentration212.7 mg/L -Analytical Method, Analytical Details, and Results Per Deserdation ParameterBiogas: Gas chromatograph with thermal conductivity detector; Test material: gas chromatography with flame-ionization detection; Operated at 150 - 275°C. He flow 1.2 mL/min: 9					
Sampling Frequency       Not reported for last 12 weeks, test math, bench-scale digesters, not reported         Results Sample Time, Compartment, Sludge       Not reported; Sludge; Feeding sludge and digester sludge; Not reported; Not reported; Not reported         Compartment, CEC, and pH       Not reported; Not reported; Not reported; Not reported         Concentration       212.7 mg/L -         Analytical Method, Analytical Details, and Results Per Degredation Parameter       Biogas: Gas chromatograph with thermal conductivity detector; Test material: gas chromatography with flame-ionization detection; Operated at 150 - 275°C. He flow 1.2 mL/min: 9					
Results Sample Time, Compartment, Sludge       Not reported; Sludge; Feeding sludge and digester sludge; Not reported; Not reported; Not reported         Compartment, CEC, and pH       Not reported; Not repo					
Compartment, Water       Compartment, CEC, and pH         Control Dark, Control, and Blank       Not reported; Not reported; Not reported         Concentration       212.7 mg/L -         Analytical Method, Analytical Details, and Results Per Degredation Parameter       Biogas: Gas chromatograph with thermal conductivity detector; Test material: gas chromatography with flame-ionization detection; Operated at 150 - 275°C. He flow 1.2 mL/min: 9					
Compartment, CEC, and pHControl Dark, Control, and BlankNot reported; Not reported; Not reportedConcentration212.7 mg/L -Analytical Method, Analytical Details, and Results Per Degredation ParameterBiogas: Gas chromatograph with thermal conductivity detector; Test material: gas chromatography with flame-ionization detection; Operated at 150 - 275°C. He flow 1.2 mL/min: 9					
Control Dark, Control, and Blank       Not reported; Not reported         Concentration       212.7 mg/L -         Analytical Method, Analytical Details, and Results Per Degredation Parameter       Biogas: Gas chromatograph with thermal conductivity detector; Test material: gas chromatography with flame-ionization detection; Operated at 150 - 275°C. He flow 1.2 mL/min: 9					
Concentration 212.7 mg/L - Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter Biogas: Gas chromatograph with thermal conductivity detector; Test material: gas chromatography with flame-ionization detection; Operated at 150 - 275 °C. He flow 1.2 mL/min: 9					
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter Biogas: Gas chromatograph with thermal conductivity detector; Test material: gas chromatography with flame-ionization detection; Operated at 150 - 275°C. He flow 1.2 mL/min: 9					
Results Remarks Biodegradation based on biogas evolution (CH4/CO2). Average removal efficiency reported over 12 week period. Average influent: 212.7±49.6					
mg/LAverage effluent: 2.9±4.5 mg/L					
Halflife, Standard Deviation Results, Reference Not reported; $\pm$ 3.4%; Not reported; Not reported					
Substance Results, and Reference Substance					
Compartment Results Results Details Not Reported					
Mean Total Decourse Decults and Decults Der De Not reported. Not reported					
coverv					
Results Value, Direct Quantum Yield Results, 96.9%; Not Reported; Not reported and Transformation Products					

			EVALUATION	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substand	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.		
	Metric 2:	Test Substance Purity	N/A	The pre-existing test substance was being detected in sludge from a treatment facility, test substance purity is not applicable.		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups. The results reported are a control group for an inoculum toxicity study.		
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		contin	ued from pre	vious page				
Study Citation:	Alatriste-Mondragon, F., Iranpour, R., Ahring, B. K. (2003). Toxicity of di-(2-ethylhexyl) phthalate on the anaerobic digestion of wastewater sludge. Water Research 37(6):1260-1269							
<b>OECD Harmonized</b>	Biodegradation in Sediment							
Template:								
HERO ID:	679194							
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 4:	Test Substance Stability	N/A	The pre-existing test substance was being detected in sludge from a treatment facility, test substance stability is not applicable.				
Domain 3: Test Conditi	ons							
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	Medium	There were omissions in test condition reporting, however sufficient data were reported to determine that the omissions were not likely to have a substantial impact on study results.				
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.				
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.				
Domain 4: Test Organis	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported the test organism, species, or inoculum are routinely used for similar study types and appropriate.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed and no notable uncertainties or limitations were expected to influence results.				
Domain 6: Confounding	g/variable Control Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques				
	Wette 15.	Comounding variables	Ingn	and between study groups (if applicable) were considered and accounted for in data evaluation and all reported variability or uncertainty was not likely to influence the outcome assessment.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7. Data Process	tation and Analysis							
Domain 7. Data Fresen	Metric 15:	Data Reporting	Medium	The target chemical extraction efficiency and mass balance were not reported; however,				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were clearly described and address the dataset(s).				
Domain & Other								
Domain 6. Other	Metric 17:	Verification or Plausibility of Results	N/A	The metric is not applicable to this study type.				
		Conti	nued on next i	Dage				
Continued on next page								

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			continued from pre	vious page		
Study Citation: OECD Harmonized	Alatriste-Mondragon, F., Iranpour, R., Ahring, B. K. (2003). Toxicity of di-(2-ethylhexyl) phthalate on the anaerobic digestion of wastewater sludge. Water Research 37(6):1260-1269. Biodegradation in Sediment					
Template: HERO ID:	679194					
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.		
Overall Quali	ty Determi	nation	High			

Study Citation: OECD Harmonized Template:	ATSDR, (1999). To Biodegradation in S	oxicological profile for di-n-butyl phthalate (update): Draft for public comment. Sediment		
HERO ID:	5676112			
		EXTRACTION		
Parameter		Data		
CASRN and Test Material		84-74-2; Di-n-butyl phthalate		
Confidentiality, EndPoint, T	Type,	Not Reported; biodegradability; experimental; Not Reported		
Guideline Solvent, Reactivity, Storage	, Stability	Not Reported; Not Reported; Not Reported; Not Reported		
Radiolabel, Source, State, P	Purity	Not Reported; Not Reported; Not Reported; Not Reported		
Oxygen and Inoculum		Not Reported; Not Reported: river and estuarine sediments		
Duration, Parameter, System, and Sampling Frequency		Not Reported; Not Reported; Not Reported; Not Reported		
Results Sample Time, Co	ompartment, Sludge	Not Reported; Not Reported; Not Reported; Not Reported; Not Reported; Not Reported		
Compartment, Water				
Compartment, CEC, and pH	I D11-	Mad Dava stadi Mad Dava stadi Mad Dava stadi		
Control Dark, Control, and	Втапк	Noi Reported; Noi Reported; Noi Reported		
Analytical Method Analyt	ical Details and Pe	JUD µg/L Not Reported: Not Reported: Not Reported		
sults Per Degredation Paran	neter	Noi Reported, Noi Reported		
Results Remarks		Not Reported		
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results		1-5 days; Not Reported; Not Reported; Not Reported		
Results Details		Not Reported		
Mean Total Recovery Result	ts and Results Per Re-	Not Reported; Not Reported		
Results Value, Direct Qua and Transformation Product	ntum Yield Results, ts	Not Reported; Not Reported; Not Reported		

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substa	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified.
	Metric 2:	Test Substance Purity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
Domain 2: Test Design	1			
	Metric 3:	Study Controls	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 4:	Test Substance Stability	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
			Continued on next page	

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		conti	nued from previou	s page			
Study Citation: DECD Harmonized	ATSDR, (1999). Biodegradation i	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment. Biodegradation in Sediment					
HERO ID:	5676112						
			EVALUATION				
Domain		Metric	Rating	Comments			
Domain 3: Test Condit	ions						
	Metric 5:	Test Method Suitability	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
	Metric 6:	Testing Conditions	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
	Metric 7:	Testing Consistency	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
	Metric 8:	System Type and Design	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
Domain 4: Test Organi	sms						
	Metric 9:	Outcome Assessment Methodology	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study.			
Domain 5: Outcome A	ssessment						
	Metric 11:	Test Substance Identity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
	Metric 12:	Test Substance Purity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
Domain 6: Confoundin	ug/Variable Control						
	Metric 13:	Confounding Variables	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study.			
Domain 7: Data Preser	tation and Analysis						
	Metric 15:	Data Reporting	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of Results	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study.			

		continued from previous page				
Study Citation: OECD Harmonized Template:	ATSDR, (1999). Toxicological profile for di-n Biodegradation in Sediment	-butyl phthalate (update): Draft for public comm	ent.			
HERO ID:	5676112					
		EVALUATION				
Domain	Metric	Rating	Comments			
<b>Overall Quali</b>	ty Determination	Medium				

\* Related References: Source cited: EPA 1984 - EPA-600/s4-84-074. Has multiple HERO IDs 1333383, 5193807, 5353253 (not in distiller at time of extraction)

Study Citation: OECD Harmonized	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment. Biodegradation in Sediment					
HERO ID:	5676112					
			EXTRACTION			
Parameter		Data				
CASRN and Test Material		84-74-2; Di-n-butyl phthalate				
Confidentiality, EndPoint, T	ype,	Not Reported; biodegradability; ex	xperimental; Not Reported			
Guideline Solvent, Reactivity, Storage,	, Stability	Not Reported: Not Reported: Not Reported: Not Reported				
Radiolabel, Source, State, P	urity	14C; Not Reported; Not Reported	; Not Reported			
Oxygen and Inoculum		aerobic; Not Reported: 4 samples of river sediment (Little Popo Agie River, Wyoming) taken from up and downstream of an oil field waste water				
Duniting Dunington Conton		discharge point				
Sampling Frequency	n, and					
Results Sample Time, Co	ompartment, Sludge	Not Reported; Not Reported; Not Reported; Not Reported; Not Reported; Not Reported				
Compartment, Water	1 2			1		
Compartment, CEC, and pH	I					
Control Dark, Control, and I	Blank	Not Reported; Not Reported; Not	Reported			
Concentration		25.6 µg/L				
Analytical Method, Analyti	ical Details, and Re-	Not Reported; Not Reported; CO2 evolution				
Results Remarks	icici	Not Reported				
Halflife Standard Deviation	n Results. Reference	Not Reported: Not Reported: Not Reported: Not Reported				
Substance Results, and R	Reference Substance	Tot Reported, Tot Reported, Tot Reported				
Compartment Results						
Results Details Not Reported						
Mean Total Recovery Result	s and Results Per Re-	Not Reported; Not Reported				
Results Value, Direct Qua and Transformation Product	ntum Yield Results,	71-75%/14 days (in one soil, samp	ole taken from discharge point, degradation wa	as = 2.2%); Not Reported; Not Reported		
			EVALUATION			
Domain		Metric	Rating	Comments		

	Metric 1: Metric 2:	Test Substance Identity Test Substance Purity	High Medium	The test substance was identified. Limited detail reported in this secondary source; additional detail may be in source cited.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 4:	Test Substance Stability	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.

Continued on next page ...

#### ... continued from previous page **Study Citation:** ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment. **OECD Harmonized** Biodegradation in Sediment **Template: HERO ID:** 5676112 **EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability Medium Limited detail reported in this secondary source; additional detail may be in source cited. Metric 6: **Testing Conditions** Medium Limited detail reported in this secondary source; additional detail may be in source cited. Metric 7: Testing Consistency Medium Limited detail reported in this secondary source; additional detail may be in source cited. Metric 8: System Type and Design Medium Limited detail reported in this secondary source; additional detail may be in source cited Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology Medium Limited detail reported in this secondary source; additional detail may be in source cited. Metric 10: Sampling Methods N/A The metric is not applicable to the study. Domain 5: Outcome Assessment Metric 11: Test Substance Identity Medium Limited detail reported in this secondary source; additional detail may be in source cited. Metric 12: Test Substance Purity Medium Limited detail reported in this secondary source; additional detail may be in source cited. Domain 6: Confounding/Variable Control Metric 13: **Confounding Variables** Medium Limited detail reported in this secondary source; additional detail may be in source cited. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to the study. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium Limited detail reported in this secondary source; additional detail may be in source cited. Metric 16: Statistical Methods and Medium Limited detail reported in this secondary source; additional detail may be in source Kinetic Calculations cited. Domain 8: Other Metric 17: Verification or Plausibility of Medium Limited detail reported in this secondary source; additional detail may be in source cited. Results **OSAR** Models N/A Metric 18: The metric is not applicable to the study. **Overall Quality Determination** Medium

\* Related References: Source cited Heitkamp and Johnson (1984) HERO ID 8748771 (not in distiller at time of extraction)

Study Citation:	Balabanic, D., Kle aerobic and combin	Balabanic, D., Klemencic, A. K. (2011). Presence of phthalates, bisphenol a, and nonylphenol in paper mill wastewaters in slovenia and efficiency of aerobic and combined aerobic-anaerobic biological wastewater treatment plants for their removal. Fresenius Environmental Bulletin 20(1):93-100.				
OECD Harmonized	Biodegradation in	Sealment				
HERO ID:	1322110					
		EXTRACTION				
Parameter		Data				
CACDN and Track Material		84.74.2. Different about a bate				
Confidentiality, EndPoint, I	lype,	None; other; Experimental; other: Removal enciencies of on-site biological wastewater treatment plants used to treat entuent from two paper				
Solvent, Reactivity, Storage	, Stability	INTERS. NR: NR: NR				
Radiolabel, Source, State, P	Purity	NR; NR; Standard or analytical grade				
Oxygen and Inoculum	•	aerobic/anaerobic: sewage, predominantly industrial, adapted: Plant A used aerobic biological treatment: plant B used combined aerobic/anaerobic				
		biological treatment.				
Duration, Parameter, System	n, and	Samples collected for four months; test mat.; Plant A used aerobic biological treatment; plant B used combined aerobic/anaerobic biological				
Sampling Frequency		treatment.; 60 samples from each location over four months (120 total)				
Results Sample Time, Co	ompartment, Sludge	Samples were refrigerated and transported directly to the laboratory for analysis.; Not reported; Not reported; Not reported; Not reported; Plant A:				
Compartment, water	4	Innuent: 7.0-8.2; einuent: 7.0-7.4; Plant B: Innuent: 7.5-8.1; einuent: 7.0-7.4				
Control Dark, Control, and	Blank	Not Reported; Not reported; Not reported				
Concentration		Not Reported				
Analytical Method, Analyt	ical Details, and Re-	GC-MS: Agilent 7890 GC-MS in splitless mode. 1uL injection. Concentrations calculated using calibration curves of standards.: 7				
sults Per Degredation Parameter						
Results Remarks		Plant A influent conc.: 90-220±41 ng/LPlant A effluent conc.: 34-54±6.3 ng/LPlant B influent conc.: 2775-3202±147 ng/LPlant B effluent conc.:				
		320-406±30 ng/L				
Halflife, Standard Deviation Results, Reference		Not reported; (Estimated from table) Plant A: $\pm 8\%$ ; Plant B: $\pm 2\%$ ; Not reported; Not reported				
Substance Results, and F	Reference Substance					
Compartment Results Results Details		Not reported				
Mean Total Recovery Result	ts and Results Per Re-	Not reported				
coverv						
Results Value, Direct Qua	ntum Yield Results,	Plant A removal %: 73; Plant B removal %: 88; Not Reported; Not reported				
and Transformation Product	ts					

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.	
	Metric 2:	Test Substance Purity	High	Standard and analytical grade chemicals were used.	
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Controls were not reported but their omission is unlikely to have a substantial impact on the study results.	
Continued on next page					

PUBLIC RELEASE DRAFT May 2025 Biodegradation in Sediment

HERO ID: 1322110 Table: 1 of 1

		contin	ued from pre	vious page			
Study Citation:	Balabanic, D., Kl aerobic and comb	Balabanic, D., Klemencic, A. K. (2011). Presence of phthalates, bisphenol a, and nonylphenol in paper mill wastewaters in slovenia and efficiency of aerobic and combined aerobic-anaerobic biological wastewater treatment plants for their removal. Fresenius Environmental Bulletin 20(1):93-100.					
OECD Harmonized	Biodegradation in Sediment						
Template:	1222110						
HERO ID:	1522110						
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 4:	Test Substance Stability	High	Test substance preparation and storage conditions were reported and appropriate.			
Domain 3: Test Conditi	ons						
Domain 5. Test Conditi	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance			
	Metric 6:	Testing Conditions	High	Testing conditions were monitored and clearly reported			
	Metric 7:	Testing Consistency	High	Testing was consistent across study groups.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.			
		2) store - 5, F t and - 13-8-					
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	High	The inoculum type was reported and appropriate for the study type.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	Medium	Some details regarding the sampling methods were not reported but their omission is			
				uninkery to impact the study results.			
Domain 6: Confounding	g/Variable Control						
Domain of Comountain	Metric 13	Confounding Variables	High	Uncertainty was accounted for in the measurements and was not likely to influence the			
	moule 15.	Comounding variables	mgn	outcome assessment.			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.			
		Exposure					
Domain 7: Data Present	tation and Analysis		N/ "				
	Metric 15:	Data Reporting	Medium	Percent recoveries were not reported but their omission is unlikely to have a substantial			
	Metric 16.	Statistical Methods and	High	Impact on the study results. Statistical methods were not reported but their omission is unlikely to have a substantial			
	wiente 10.	Kinetic Calculations	ingi	impact on the study results.			
		Kinete Calculations					
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.			
	M ( 10	Results					
	Metric 18:	QSAK Models	N/A	The metric is not applicable to the study type.			
Overall Over	ty Dotomin	ation	Uiah				
Overall Quali	iy Determin	alion	nign				

Study Citation: OECD Harmonized Template: HERO ID:	<ul> <li>Call, D. J., Cox, D. A., Geiger, D. L., Genisot, K. I., Markee, T. P., Brooke, L. T., Polkinghorne, C. N., Vandeventer, F. A., Gorsuch, J. W., Robillard, K. A., Parkerton, T. F., Reiley, M. C., Ankley, G. T., Mount, D. R. (2001). An assessment of the toxicity of phthalate esters to freshwater benthos. 2. Sediment exposures. Environmental Toxicology and Chemistry 20(8):1805-1815. Biodegradation in Sediment</li> <li>679311</li> </ul>				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material Confidentiality, EndPoint, T Guideline	ype,	84-72-2; dibutyl phthalate no; other; experimental; other: stability concentrations in pore-water			
Solvent, Reactivity, Storage	, Stability	NR; NR; NR			
Radiolabel, Source, State, P	urity	NR; NR; NR			
Oxygen and Inoculum		not specified; natural sediment: natural sediment from Airport Pond (St. Louis County, Minnesota, USA) and West Bearskin Lake (Cook County, Minnesota, USA)			
Duration, Parameter, System	n, and	6 days; not specified; 4-L glass jar sealed with a Teflon-lined cap and rotated on a roller mill in a cold room (~4°C) for 6 d or more at a speed of			
Sampling Frequency Results Sample Time, Compartment, Sludge Compartment, Water		1, 3 and 6 days; blended sediments; 2.45% TOC; 39.3% sand; 37.7% silt; 6.06% coarse clay; 17.0% fine clay; deionized water; not reported; not reported			
Control Dark, Control, and I	Blank	Not Reported; not applicable; not applicable			
Concentration		50 - 5000 mg/kg			
Analytical Method, Analyti sults Per Degredation Param	ical Details, and Re- neter	HPLC; Not Reported; test mat.			
Results Remarks	n Doculto Doformanoo	Not Reported 2.0 days at 50 molton 50.7 days at 500 molton not coloulated at 5000 molton (consilibrium not reached), correlation $(r) = 0.064$ at 50 molton. 0.090			
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results		at 500 mg/kg; not applicable; Not Reported			
Results Details		Not Reported			
Mean Total Recovery Result covery	s and Results Per Re-	not reported; not reported			
Results Value, Direct Qua and Transformation Product	ntum Yield Results,	Not Reported; Not Reported; Not Reported			

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	Medium	The source and purity of the test substance were not reported, but are available in the cited material.
Domain 2: Test Design			N/4	
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.
			Continued on next page	

PUBLIC RELEASE DRAFT May 2025 Biodegradation in Sediment

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Study Citation: C	Call, D. J., Cox, D	. A., Geiger, D. L., Genisot, K. I., Markee,	T. P., Brooke, L. T., Polking	horne, C. N., Vandeventer, F. A., Gorsuch, J. W., Robillard, K. A.,
ex	xposures. Enviro	nmental Toxicology and Chemistry 20(8):	(2001). An assessment of t 1805-1815.	ne toxicity of phinarate esters to resilwater benutios. 2. Sediment
OECD Harmonized B	Biodegradation in	Sediment		
HERO ID: 6	79311			
			EVALUATION	
Domain		Metric	Rating	Comments
Ν	Aetric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
Domain 3: Test Conditions				
Ν	Aetric 5:	Test Method Suitability	Medium	The test method was suitable for the test substance with minor deviations.
Μ	Aetric 6:	Testing Conditions	Medium	There were reported deviations or omissions in testing conditions; however, sufficient data were reported to determine that the deviations and omissions were not likely to have a substantial impact on study results.
Ν	Aetric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported, but these dis- crepancies were not likely to have a substantial impact on study results.
M	Aetric 8:	System Type and Design	Medium	Equilibrium was not established or reported but this was not likely to have a substantial impact on study results.
Domain 4: Test Organisms				
N	Aetric 9:	Outcome Assessment Methodology	Medium	The test organism, species, or inoculum source were reported, but are not routinely used for similar study types; however, the deviation was not likely to have a substantial impact on study results.
Ν	Aetric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assess	sment			
M	Aetric 11:	Test Substance Identity	Uninformative	The assessment methodology did not address or report the outcome(s) of interest. This is a serious flaw that makes the study unusable.
Ν	Aetric 12:	Test Substance Purity	Medium	Minor limitations were identified in sampling methods of the outcome(s) of interest were reported; however, the limitations were not likely to have a substantial impact on results.
Domain & Confounding/Va	wishla Control			
Domain 6: Confounding/ va M	Aetric 13:	Confounding Variables	Medium	Sources of variability and uncertainty in the measurements between study groups were reported in the study and accounted for in data evaluation.
Ν	Aetric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentatio	on and Analysis			
N	Aetric 15:	Data Reporting	Medium	The target chemical and transformation product(s) concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.
		Co	ontinued on next page	

May 2025 Dibutyl Phthalate **Biodegradation in Sediment** HERO ID: 679311 Table: 1 of 3 ... continued from previous page **Study Citation:** Call, D. J., Cox, D. A., Geiger, D. L., Genisot, K. I., Markee, T. P., Brooke, L. T., Polkinghorne, C. N., Vandeventer, F. A., Gorsuch, J. W., Robillard, K. A., Parkerton, T. F., Reiley, M. C., Ankley, G. T., Mount, D. R. (2001). An assessment of the toxicity of phthalate esters to freshwater benthos. 2. Sediment exposures. Environmental Toxicology and Chemistry 20(8):1805-1815. **OECD Harmonized Biodegradation in Sediment Template: HERO ID:** 679311 **EVALUATION** Domain Metric Rating Comments Statistical Methods and Metric 16: Medium Kinetic calculations were not clearly described but these differences were not likely to have a substantial impact on study results. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of Medium The study results were reasonable. Results QSAR Models Metric 18: N/A The metric is not applicable to this study type. **Overall Quality Determination** Uninformative

PUBLIC RELEASE DRAFT

Study Citation:	Call, D. J., Cox, D. A., Geiger, D. L., Genisot, K. I., Markee, T. P., Brooke, L. T., Polkinghorne, C. N., Vandeventer, F. A., Gorsuch, J. W., Robillard, K. A., Parkerton, T. F., Reiley, M. C., Ankley, G. T., Mount, D. R. (2001). An assessment of the toxicity of phthalate esters to freshwater benthos. 2. Sediment exposures. Environmental Toxicology and Chemistry 20(8):1805-1815.						
OECD Harmonized	Biodegradation in	Sediment					
Template:							
HERO ID:	6/9311						
			EXTRACTION				
Parameter		Data					
CASRN and Test Material		84-72-2; dibutyl phthalate					
Confidentiality, EndPoint, T	ype,	no; other; experimental; other: stability	concentrations in pore-water				
Guideline Solvent, Reactivity, Storage	Stability	NR: NR: NR: NR					
Radiolabel, Source, State, Pi	urity	NR: NR: NR: NR					
Oxygen and Inoculum		not specified; natural sediment: natural sediment from Airport Pond (St. Louis County, Minnesota, USA) and West Bearskin Lake (Cook County,					
		Minnesota, USA)					
Duration, Parameter, System	n, and	b days; not specified; 4-L glass jar sealed with a Tetlon-lined cap and rotated on a roller mill in a cold room (~4°C) for 6 d or more at a speed of					
Sampling Frequency Results Sample Time Compartment Sludge		1, 3 and 6 days: blended sediments: 4.80% TOC: 46.9% sand: 30.2% silt: 2.34% coarse clay: 20.5% fine clay: deionized water: not reported: not					
Compartment, Water		reported					
Compartment, CEC, and pH							
Control Dark, Control, and H	Blank	Not Reported; not applicable; not applicable;	cable				
Concentration		100 - 10,000 mg/kg					
Analytical Method, Analyti	cal Details, and Re-	HPLC; Not Reported; test mat.					
sults Per Degredation Param	leter	N-4 D-m-mail					
Kesults Kemarks	Degulta Deference	not colouishin due to remid loss at 100 d	malka 45 days at 1000 malka 80	leve at 10,000 modes, completion (r) = 0,080 at 1000 modes, 0,616 at			
Substance Results and R	eference Substance	not calculate due to rapid loss at 100 mg/kg; 4.5 days at 1000 mg/kg; 69 days at 10,000 mg/kg; correlation (r)=-0.989 at 1000 mg/kg; -0.016 at $10.000$ mg/kg; not applicable: Not Reported					
Compartment Results	bussuite		, ieu				
Results Details		Not Reported					
Mean Total Recovery Result	s and Results Per Re-	not reported; not reported					
covery							
Results Value, Direct Quar and Transformation Products	ntum Yield Results, s	Not Reported; Not Reported; Not Repo	rted				
			EVALUATION				
Domain		Metric	Rating	Comments			
Domain 1: Test Substanc	e		6				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			

	Metric 2:	Test Substance Purity	Medium	The source and purity of the test substance were not reported, but are available in the cited material.
ain 2: Test Design	Metric 3: Metric 4:	Study Controls Test Substance Stability	N/A Medium	The study did not require concurrent control groups. The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
			Continued on next page	

PUBLIC RELEASE DRAFT May 2025 Biodegradation in Sediment

Dibutyl Phthalate

		con	tinued from previous pa	ge		
Study Citation: OECD Harmonized	<ul> <li>Call, D. J., Cox, D. A., Geiger, D. L., Genisot, K. I., Markee, T. P., Brooke, L. T., Polkinghorne, C. N., Vandeventer, F. A., Gorsuch, J. W., Robillard, K. A., Parkerton, T. F., Reiley, M. C., Ankley, G. T., Mount, D. R. (2001). An assessment of the toxicity of phthalate esters to freshwater benthos. 2. Sediment exposures. Environmental Toxicology and Chemistry 20(8):1805-1815.</li> <li>Biodegradation in Sediment</li> </ul>					
Template:	Diouogradation					
HERO ID:	679311					
			EVALUATION			
Domain		Metric	Rating	Comments		
Domain 3 <sup>,</sup> Test Conditio	ons					
Domain 5. Test Conduct	Metric 5:	Test Method Suitability	Medium	The test method was suitable for the test substance with minor deviations		
	Metric 6:	Testing Conditions	Medium	There were reported deviations or omissions in testing conditions; however, sufficient data were reported to determine that the deviations and omissions were not likely to have a substantial impact on study results.		
	Metric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported, but these dis- crepancies were not likely to have a substantial impact on study results.		
	Metric 8:	System Type and Design	Medium	Equilibrium was not established or reported but this was not likely to have a substantial impact on study results.		
Domain 4: Test Organis	ms					
Domani 4. Test Organisi	Metric 9:	Outcome Assessment Methodology	Medium	The test organism, species, or inoculum source were reported, but are not routinely used for similar study types; however, the deviation was not likely to have a substantial impact on study results.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.		
Domain 5: Outcome Ass	sessment					
	Metric 11:	Test Substance Identity	Uninformative	The assessment methodology did not address or report the outcome(s) of interest. This is a serious flaw that makes the study unusable.		
	Metric 12:	Test Substance Purity	Medium	Minor limitations were identified in sampling methods of the outcome(s) of interest were reported; however, the limitations were not likely to have a substantial impact on results.		
Domain 6: Confounding	v/Variable Control					
2 children of Contourioung	Metric 13:	Confounding Variables	Medium	Sources of variability and uncertainty in the measurements between study groups were reported in the study and accounted for in data evaluation.		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.		
Domain 7: Data Present	ation and Analysis					
Domain 7. Data i lesent	Metric 15:	Data Reporting	Medium	The target chemical and transformation product(s) concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.		
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetic calculations were not clearly described but these differences were not likely to have a substantial impact on study results.		
Domain 8: Other						
		Сог	ntinued on next page			

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PUBLIC RELEASE DRAFT May 2025 Dibutyl Phthalate Biodegradation in Sediment HERO ID: 679311 Table: 2 of 3 ... continued from previous page **Study Citation:** Call, D. J., Cox, D. A., Geiger, D. L., Genisot, K. I., Markee, T. P., Brooke, L. T., Polkinghorne, C. N., Vandeventer, F. A., Gorsuch, J. W., Robillard, K. A., Parkerton, T. F., Reiley, M. C., Ankley, G. T., Mount, D. R. (2001). An assessment of the toxicity of phthalate esters to freshwater benthos. 2. Sediment exposures. Environmental Toxicology and Chemistry 20(8):1805-1815. **OECD Harmonized Biodegradation in Sediment Template:** HERO ID: 679311 **EVALUATION** Domain Metric Rating Comments Verification or Plausibility of Metric 17: Medium The study results were reasonable. Results QSAR Models N/A Metric 18: The metric is not applicable to this study type. Uninformative **Overall Quality Determination** 

HERO ID: 679311 Table: 3 of 3

Study Citation:	Call, D. J., Cox, D. A., Geiger, D. L., Genisot, K. I., Markee, T. P., Brooke, L. T., Polkinghorne, C. N., Vandeventer, F. A., Gorsuch, J. W., Robillard, K. A., Parkerton, T. F., Reiley, M. C., Ankley, G. T., Mount, D. R. (2001). An assessment of the toxicity of phthalate esters to freshwater benthos. 2. Sediment exposures. Environmental Toxicology and Chemistry 20(8):1805-1815.					
<b>OECD Harmonized</b>	Biodegradation in Sediment					
Template:						
HERO ID:	679311					
			EXTRACTION			
Parameter		Data				
CASRN and Test Material		84-72-2; dibutyl phthalate				
Confidentiality, EndPoint,	Туре,	no; other; experimental; other: stability co	oncentrations in pore-water			
Solvent, Reactivity, Storag	e, Stability	NR; NR; NR; NR				
Radiolabel, Source, State,	Purity	NR; NR; NR; NR				
Oxygen and Inoculum		not specified; natural sediment: natural sed	diment from Pequaywan Lake (S	t. Louis County, Minnesota, USA)		
Duration, Parameter, Syste	m, and	6 days; not specified; 4-L glass jar sealed	with a Teflon-lined cap and rotat	ted on a roller mill in a cold room (~4°C) for 6 d or more at a speed of		
Sampling Frequency	Compartment Sludge	approximately 8 rpm.; periodically	1% TOC: 5 60% cand: 18 2% c	ilt 4.35% coarse clay: 71.7% fine clay: deionized water: not reported:		
Compartment, Water	Joinpartment, Studge	not reported	1.170 TOC, 5.0970 Salid, 10.270 S.	in, 4.55 % coarse eray, 71.7% fine eray, deformized water, not reported,		
Compartment, CEC, and p	Н	1 I				
Control Dark, Control, and	l Blank	Not Reported; not applicable; not applicable				
Concentration		250 - 25,000 mg/kg				
Analytical Method, Analytical Details, and Re-		HPLC; Not Reported; test mat.				
Results Remarks	meter	Not Reported				
Halflife, Standard Deviation Results, Reference		not calculable due to rapid loss at 250 mg	/kg; 2.4 days at 2500 mg/kg; 17	days at 25,000 mg/kg; correlation (r)=-0.996 at 2500 mg/kg; -0.973 at		
Substance Results, and	Reference Substance	25,000 mg/kg; not applicable; Not Report	ed			
Compartment Results		Not Papartad				
Mean Total Recovery Resu	Its and Results Per Re-	not reported:				
covery	ns and Results I el Re-	not reported, not reported				
Results Value, Direct Qu	antum Yield Results,	Not Reported; Not Reported; Not Reporte	d			
and Transformation Produce	cts					
			Έλλα Γ. ΓΙΑΦΊΩΝΙ			
Domain		Metric	E VALUATION Rating	Comments		
Domain 1: Test Substar	ice	ivicule	Rung	connicity		
_ 5.1.a 1. 1050 540504	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The source and purity of the test substance were not reported, but are available in the		
		-		cited material.		
Domain 2: Test Design	Matria 2:	Study Controls	NT / A			
	Metric 4:	Suuy Collifols Test Substance Stability	IN/A Medium	The study did not require concurrent control groups.		
	Meule 7.	Test Substance Stability	wiculuit	reported; however, these factors were not likely to influence the test substance or were		

Continued on next page ...

not likely to have a substantial impact on study results.

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**Dibutyl** Phthalate HERO ID: 679311 Table: 3 of 3 **Biodegradation in Sediment** ... continued from previous page **Study Citation:** Call, D. J., Cox, D. A., Geiger, D. L., Genisot, K. I., Markee, T. P., Brooke, L. T., Polkinghorne, C. N., Vandeventer, F. A., Gorsuch, J. W., Robillard, K. A., Parkerton, T. F., Reiley, M. C., Ankley, G. T., Mount, D. R. (2001). An assessment of the toxicity of phthalate esters to freshwater benthos. 2. Sediment exposures. Environmental Toxicology and Chemistry 20(8):1805-1815. **OECD Harmonized Biodegradation in Sediment** Template: **HERO ID:** 679311 **EVALUATION** Domain Metric Rating Comments **Domain 3: Test Conditions** Metric 5: Test Method Suitability Medium The test method was suitable for the test substance with minor deviations. Metric 6: Testing Conditions Medium There were reported deviations or omissions in testing conditions; however, sufficient data were reported to determine that the deviations and omissions were not likely to have a substantial impact on study results. Metric 7: Testing Consistency Medium Some test conditions across samples or study groups were not reported, but these discrepancies were not likely to have a substantial impact on study results. Metric 8: System Type and Design Medium Equilibrium was not established or reported but this was not likely to have a substantial impact on study results. Domain 4: Test Organisms Medium The test organism, species, or inoculum source were reported, but are not routinely Metric 9: Outcome Assessment Methodology used for similar study types; however, the deviation was not likely to have a substantial impact on study results. Metric 10: N/A Sampling Methods The metric is not applicable to this study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity Uninformative The assessment methodology did not address or report the outcome fate data of interest. Metric 12: Test Substance Purity Medium Minor limitations were identified in sampling methods of the outcome(s) of interest were reported; however, the limitations were not likely to have a substantial impact on results. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables Medium Sources of variability and uncertainty in the measurements between study groups were reported in the study and accounted for in data evaluation. Health Outcomes Unrelated to Metric 14: N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium The target chemical and transformation product(s) concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results. Metric 16: Statistical Methods and Medium Kinetic calculations were not clearly described but these differences were not likely to have a substantial impact on study results. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of Medium The study results were reasonable. Results

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Continued on next page ...

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ibutyl Phthalate			HERO ID: 679311 Table: 3				
			continued from provious page				
			continued from previous page				
Study Citation:	Call, D. J., Cox	x, D. A., Geiger, D. L., Genisot,	K. I., Markee, T. P., Brooke, L. T., Polkingho	orne, C. N., Vandeventer, F. A., Gorsuch, J. W., Robillard, K. A.,			
	Parkerton, T. F., Reiley, M. C., Ankley, G. T., Mount, D. R. (2001). An assessment of the toxicity of phthalate esters to freshwater benthos. 2. Sediment						
	exposures. Environmental Toxicology and Chemistry 20(8):1805-1815.						
OECD Harmonized	Biodegradation in Sediment						
Template:							
HERO ID:	679311						
			EVALUATION				
Domain		Metric	Rating	Comments			
	Metric 18.	OSAR Models	N/A	The metric is not applicable to this study type			

# **Overall Quality Determination**

Uninformative

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PUBLIC RELEASE DRAFT

3

Study Citation:	on: Chang, B. V., Liao, C. S., Yuan, S. Y. (2005). Anaerobic degradation of diethyl phthalate, di-n-butyl phthalate, and di-(2-ethylhexyl) phthalat				
<b>OECD Harmonized</b>	Biodegradation in	Sediment			
Template:	U				
HERO ID:	679331				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, 7 Guideline	Гуре,	None; other; Experimental; other: Anaerobic degradation			
Solvent, Reactivity, Storage	e, Stability	Acetone; NR; NR; NR			
Radiolabel, Source, State, F	Purity	NR; Chem Service, West Chester, PA; NR; 99.0%			
Oxygen and Inoculum		anaerobic; natural sediment: Top 10 cm layer sediment from Taiwanese Keelung River.			
Duration, Parameter, System, and Sampling Frequency		84 days; Not Reported; Triplicate 125mL serum bottles.; 9 samples taken over 84 days.			
Results Sample Time, Compartment, Sludge Compartment, Water		Not reported; 45mL medium, 5g river sediment, and 5ug/g mixture of DEP, DBP, and DEHP. Autoclaved medium adjusted to pH 7.0; Not reported; Not reported; Initial pH=7.0; range over 84 days=6.7-7.3			
Control Dark, Control, and Blank		yes; Not reported; Autoclaved at 121 C for 1h, three times.			
Concentration		Not Reported			
Analytical Method, Analyt	tical Details, and Re-	HP 5890 GC with ECD; Detection limit: 100ug/L; 7			
Results Remarks		Anaerobic degradation rates were enhanced by the addition of the surfactants brij 35 and triton N101 at a concentration of 1 critical micelle concentration (CMC), and by the addition of yeast extract. Degradation rates were inhibited by the addition of acetate, pyruvate, lactate, FeCl3, MnO2, NaCl, heavy metals, and nonylphenol.			
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results		9.4 days - inoculated control; < 10%; Not reported; Not reported			
Results Details		Data was fit to S=So^(-k1t), where S is the substrate conc., So is the initial conc., t is time, and k1 is the biodegradation constant.			
Mean Total Recovery Resul	ts and Results Per Re-	96.5%; 94.1% DBP remaining in sterile samples after 84 days. DBP was completely degraded after 28 days in inoculated samples.			
Results Value, Direct Quantum Yield Results, and Transformation Products		k=0.074/day - inoculated control; Not Reported; Not reported			

EVALUATION									
Domain		Metric	Rating	Comments					
Domain 1: Test Substand	ce								
	Metric 1:	Test Substance Identity	High	The test substance was identified by common nomenclature.					
	Metric 2:	Test Substance Purity	High	The purity of the test substance was 99.0%.					
Domain 2: Test Design									
	Metric 3:	Study Controls	High	A sterile control was implemented.					
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported.					
Continued on next page									
		contin	ued from pre-	vious page					
------------------------	---------------------------------------	---	---------------	---	--	--	--	--	--
Study Citation:	Chang, B. V., Lia sediment in Taiw	Chang, B. V., Liao, C. S., Yuan, S. Y. (2005). Anaerobic degradation of diethyl phthalate, di-n-butyl phthalate, and di-(2-ethylhexyl) phthalate from river sediment in Taiwan. Chemosphere 58(11):1601-1607.							
OECD Harmonized	Biodegradation is	Biodegradation in Sediment							
Template:	(70221								
HERO ID:	679331								
		1	EVALUATIO	N					
Domain		Metric	Rating	Comments					
Domain 3: Test Conditi	ons								
	Metric 5:	Test Method Suitability	Medium	The test substance concentration was not reported but the omission is not likely to have a substantial impact on the study results.					
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate for the method.					
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples.					
	Metric 8:	System Type and Design	High	The sealed system was capable of maintaining the test substance concentrations.					
Domain 4: Test Organis	sms								
0	Metric 9:	Outcome Assessment Methodology	High	Information regarding the inoculum was reported and appropriate for the method.					
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.					
Domain 5: Outcome As	ssessment								
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.					
	Metric 12:	Test Substance Purity	Medium	Sampling methods were not clearly reported but their omission is not likely to impact the study results.					
Domain 6: Confounding	g/Variable Control								
	Metric 13:	Confounding Variables	High	No confounding variables between study groups were noted.					
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to the study type.					
		Exposure							
Domain 7: Data Present	tation and Analysis								
	Metric 15:	Data Reporting	High	Extraction recoveries, sterile control recoveries, and half-lives were reported.					
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Kinetic calculations were reported and appropriate.					
Domain 8: Other	N 17		TT' 1						
	Metric 17:	Verification or Plausibility of Desults	Hıgh	The study results were reasonable.					
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.					
<b>Overall Quali</b>	ty Determin	nation	High						
`````	•		0						

Study Citation: OECD Harmonized	Chang, B. V., Wang Biodegradation in S	Chang, B. V., Wang, T. H., Yuan, S. Y. (2007). Biodegradation of four phthalate esters in sludge. Chemosphere 69(7):1116-1123. Biodegradation in Sediment					
Template:							
HERO ID:	675049						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl phthalate					
Confidentiality, EndPoint, T	ype,	None; other; Experimental; other: Non-guideline aerobic degradation in sludge					
Guideline	0, 1, 11,	מזג מזג מזג מ					
Solvent, Reactivity, Storage	, Stability	NK; NK; NK					
Radiolabel, Source, State, Purity		NR; Chem Services, West Chester, PA; NR; 99%					
Oxygen and Inoculum		aerobic; sewage, industrial, adapted: Not reported					
Sumpling Frequency	n, and	Not reported; test mat.; Bioreactor; Not reported					
Results Sample Time Co	ompartment. Sludge	Not reported: Not reported: Not reported: Not reported: 7.0					
Compartment, Water	omparament, stadge						
Compartment, CEC, and pH	I						
Control Dark, Control, and	Blank	Not reported; Not reported; Sterile controls autoclaved at 121 C for 20 min.					
Concentration		Not Reported					
Analytical Method, Analytic	ical Details, and Re-	GC-ECD (Hewlett-Packard 5890); on limit: 1.0 ug/L; 7					
sults Per Degredation Paran	neter						
Results Remarks		Not reported					
Halflife, Standard Deviation	n Results, Reference	1.8 days; $< 10\%$ ; Not reported; Not reported					
Compartment Results	Reference Substance						
Results Details		Not Reported					
Mean Total Recoverv Result	ts and Results Per Re-	Not Reported; 95.5%					
covery							
Results Value, Direct Qua	ntum Yield Results,	k=0.379; Not Reported; Not Reported					
and Transformation Product	ts						

EVALUATION						
	Metric	Rating	Comments			
ric 1:	Test Substance Identity	High	The test substance was identified using established nomenclature and structure.			
ric 2:	Test Substance Purity	High	The source or purity of the test substance was reported.			
ric 3: ric 4:	Study Controls Test Substance Stability	High High	Sterile controls were utilized. The test substance preparation was reported.			
Domain 3: Test Conditions   Metric 5:   Test Method Suitability   High   The test method was suitable for the test substance.						
Continued on next page						
	ic 1: ic 2: ic 3: ic 4: ic 5:	Metric     ic 1:   Test Substance Identity     ic 2:   Test Substance Purity     ic 3:   Study Controls     ic 4:   Test Substance Stability     ic 5:   Test Method Suitability	Metric Rating   ic 1: Test Substance Identity High   ic 2: Test Substance Purity High   ic 3: Study Controls High   ic 4: Test Substance Stability High   ic 5: Test Method Suitability High   Continued on next p			

continued from previous page							
Study Citation: OECD Harmonized	Chang, B. V., Wang, T. H., Yuan, S. Y. (2007). Biodegradation of four phthalate esters in sludge. Chemosphere 69(7):1116-1123. Biodegradation in Sediment						
HERO ID:	675049						
	070019	T		N			
Domain		Metric	Rating	Comments			
Domani	Metric 6	Testing Conditions	High	Testing conditions were monitored and appropriate for the study method			
	Metric 7:	Testing Consistency	High	Tests were done in triplicate and standard deviation was less than 10%			
	Metric 8:	System Type and Design	High	The system was agitated using an impeller.			
			0				
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and appropriate.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was suitable for the desired endpoint.			
	Metric 12:	Test Substance Purity	High	Sampling methods were reported and acceptable.			
Domain 6: Confoundin	Wariahla Control						
Domain 0. Comounding	Metric 13.	Confounding Variables	High	Variance between samples was accounted for and did not influence the outcome			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type			
	Wetter 11.	Exposure	10/1	The metre is not appreade to this study type.			
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	High	The percent recovery and degradation products were reported.			
	Metric 16:	Statistical Methods and	High	Statistical analysis was performed using ANOVA.			
		Kinetic Calculations					
Domain 8: Other							
Domain 6. Outer	Metric 17.	Verification or Plausibility of	High	The study results were reasonable			
	metric 17.	Results	111511				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Quali</b>	ty Determin	ation	High				

\* Related References: Cited in HSDB

Study Citation: OECD Harmonized	Chauret, C., Inniss, W. E., Mayfield, C. I. (1996). Biotransformation at 10 degrees C of di-n-butyl phthalate in subsurface microcosms. Groundwater 34(5):791-794. Biodegradation in Sediment					
Template: HERO ID:	1333126					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Di-n-butyl phthalate				
Confidentiality, EndPoint, T	ype,	None; other; Experimental; other: Biotransformation in subsurface microcosms				
Guideline Solvent Reactivity Storage	Stability	NR·NR·NR				
Radiolabel. Source, State, P	Purity	No: Sigma Chemical Co. St. Louis, MO: NR: NR				
Oxygen and Inoculum		aerobic/anaerobic; natural water / sediment: Canadian Forces Base aquifer sediment and groundwater from Toronto, Ontario				
Duration, Parameter, System	n, and	153 days; test mat.; glove-box (anaerobic) glove-box amended with O2 (aerobic); not reported				
Sampling Frequency						
Results Sample Time, Co	ompartment, Sludge	not reported; not reported; not reported; not reported; not reported; not reported				
Compartment, water Compartment, CEC, and pF	ł					
Control Dark, Control, and	Blank	Not Reported; not reported; included				
Concentration		5 mg/L				
Analytical Method, Analyt	ical Details, and Re-	FID-GC; MDL 50 µg/L; 7				
sults Per Degredation Paran	neter					
Kesults Kemarks	n Doculto Dofononco	not reported				
Substance Results and F	Reference Substance	after 26 and 153 days=2.9+2.2 3 nmoles DBP/g sediment and 6.1+2.2 nmoles DBP/g sediment (anaerobic sterile control).				
Compartment Results	bucstance					
Results Details		biotransformation rate=0.57 µg DBP/g sediment/day, 2.05±0.90 nmoles DBP/g sediment/day (aerobic)				
Mean Total Recovery Result	ts and Results Per Re-	not reported; not reported				
covery Results Value, Direct Qua and Transformation Product	ntum Yield Results, ts	DPB transformed after 26 and 153 days under anaerobic conditions: 28.8±4.0 nmoles DBP/g sediment and 58.6±5.4 nmoles DBP/g sediment, respectively; Not Reported; not reported				

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substance						
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.		
	Metric 2:	Test Substance Purity	Medium	The test substance source was reported, purity was not reported.		
Domain 2: Test Design	Metric 3:	Study Controls	High	Controls were included.		
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.		
Continued on next page						

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		continu	ed from previou	s page			
Study Citation:	Chauret, C., In 34(5):791-794.	niss, W. E., Mayfield, C. I. (1996). Biotran	sformation at 10	degrees C of di-n-butyl phthalate in subsurface microcosms. Groundwater			
OECD Harmonized	Biodegradation in Sediment						
Template:							
HERO ID:	1333126						
		E	EVALUATION				
Domain		Metric	Rating	Comments			
Domain 3. Test Conditio	าทร						
Domain 5. Test Condition	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	Medium	Testing conditions were reported and appropriate for the method. Soil and water charac- teristics were limited.			
	Metric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported, but these dis- crepancies were not likely to have a substantial impact on study results.			
	Metric 8:	System Type and Design	High	The system type and design were appropriate.			
Domain 4: Test Organia	ma						
Domain 4. Test Organisi	Metric 9:	Outcome Assessment Methodology	Medium	Limited detail regarding the inoculum.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome Ass	sessment		TT: 1				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.			
	Metric 12:	Test Substance Purity	Low	Details regarding sampling methods of the outcome(s) were not fully reported, and the omissions may have a substantial impact on study results.			
Demain (, Cenferradia							
Domain 6: Confounding	Metric 13.	Confounding Variables	Low	Sources of variability and uncertainty in the measurements and statistical techniques and			
	Weule 15.	contounding variables	Low	between study groups were not considered or accounted for in data evaluation resulting in some uncertainty.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Domain 7: Data Prosant	ation and Analysi						
Domain 7: Data Present	Metric 15:	Data Reporting	Medium	The target chemical concentrations, extraction efficiency, percent recovery, or mass bal-			
	Medie 15.	Dum Reporting	Wiedduin	ance were not reported; however, these omissions were not likely to have a substantial impact on study results.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail regarding calculations.			
Domain 8: Other							
2 oniun of Outor	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.			
	Metric 18:	Results OSAR Models	N/A	The metric is not applicable to this study type			
			- 1// 1				
		Contin	ued on next nage				

#### ... continued from previous page **Study Citation:** Chauret, C., Inniss, W. E., Mayfield, C. I. (1996). Biotransformation at 10 degrees C of di-n-butyl phthalate in subsurface microcosms. Groundwater 34(5):791-794. Biodegradation in Sediment **OECD Harmonized Template:** HERO ID: 1333126 **EVALUATION** Rating Medium Domain Metric Comments

\* Related References: Cited in HSDB

**Overall Quality Determination** 

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Study Citation:	Ejlertsson, J., Johansson, E., Karlsson, A., Meyerson, U., Svensson, B. H. (1996). Anaerobic degradation of xenobiotics by organisms form municipal					
OFCD Harmonized	solid waste under l	solid waste under landfilling conditions. Antonie van Leeuwenhoek 69(1):6/-74.				
Template:	Biodegradation in	Seament				
HERO ID:	1315944					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, EndPoint, T	Type,	None; screening test; Experimental; other: municipal solid waste anaerobic microflora				
Guideline Solvent Reactivity Storage	Stability					
Radiolabel, Source, State, P	Purity	NR, NR, NR NR: MERCK: NR: NR				
Oxygen and Inoculum		anaerobic; anaerobic microorganisms				
Duration, Parameter, Syster	n, and	100 days; test mat.; Experimental bottles (118 ml); every 10 days				
Sampling Frequency						
Compartment Water	ompartment, Sludge	0, 3, 9 and 10 day interval; liquid sampled; Milled Municipal Sewage Waste with a particle size of approximately 1 cm; aqueous phosphate buffer; Not reported: mineral medium=pH 7				
Compartment, CEC, and pH	ł	Not reported, mineral medium-pri 7				
Control Dark, Control, and	Blank	Not reported; Not reported; Yes, check for methane production from waste material in the inoculum				
Concentration		50 mgC/L				
Analytical Method, Analyt	ical Details, and Re-	GC for methane and GC-MS for test substance detection; Not Reported; 1				
Results Remarks	neter	DRP completely hydrolyzed to monobutyl phthalate				
Halflife. Standard Deviatio	n Results. Reference	100% degradation at 100 days: Not reported: Not reported: Not reported				
Substance Results, and Reference Substance						
Compartment Results						
Results Details		Not reported				
Mean Total Recovery Result	ts and Results Per Re-	Not reported; Not reported				
Results Value, Direct Oua	ntum Yield Results.	19%; Not Reported; monobutyl phthalate, methane and carbon dioxide				
and Transformation Product	ts					

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.		
	Metric 2:	Test Substance Purity	High	The test substance source was reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	Use of a control group was reported.		
	Metric 4:	Test Substance Stability	Medium	Loss due to abiotic processes and/or adsorption were not controlled.		
Domain 3: Test Conditions						
Continued on next page						

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		continu	ued from pre	vious page				
Study Citation:	Ejlertsson, J., Joh solid waste under	Ejlertsson, J., Johansson, E., Karlsson, A., Meyerson, U., Svensson, B. H. (1996). Anaerobic degradation of xenobiotics by organisms form municipal solid waste under landfilling conditions. Antonie van Leeuwenhoek 69(1):67-74.						
OECD Harmonized	Biodegradation in	Biodegradation in Sediment						
Template:								
HERO ID:	1315944							
		I	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 5:	Test Method Suitability	Medium	Some details were omitted.				
	Metric 6:	Testing Conditions	High	Test conditions were consistent across samples or study groups.				
	Metric 7:	Testing Consistency	High	No inconsistencies were reported or identified.				
	Metric 8:	System Type and Design	High	The system type was appropriate.				
Domain 4: Test Organis	sms							
	Metric 9:	Outcome Assessment Methodology	High	The test organism source was reported and appropriate for the study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	sessment							
Domain 5. Outcome As	Matric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest				
	Metric 12:	Test Substance Purity	High	The outcome assessment methodology addressed the methods that address the outcome of interest.				
	Wetter 12.	Test Substance Fullty	mgn	and used accepted methods for the chemical and media being analyzed.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	High	All reported variability or uncertainty was not likely to influence the outcome assess- ment.				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.				
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	Medium	Extraction efficiency and recovery were not reported.				
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical and kinetic calculations were not described in detail.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Qualit	tv Determin	ation	High					
S	- <i>j</i> = eter min		8					

Study Citation:	Gavala, H. N., Atriste-Mondragon, F., Iranpour, R., Ahring, B. K. (2003). Biodegradation of phthalate esters during the mesophilic anaerobic digestion of sludge. Chemosphere 52(4):673-682						
OECD Harmonized	Biodegradation in Sediment						
Template:	670550						
	517552						
Danamatan		Data	EXTRACTION				
rarameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, EndPoint, Typ	e,	None; other; Experimental; other	: anerobic biodegradation in b	batch kinetic experiment			
Solvent, Reactivity, Storage, S	tability	Ethanol: NR: NR: NR					
Radiolabel, Source, State, Pur	itv	NR: NR: NR: NR					
Oxygen and Inoculum		anaerobic; activated sludge, dom	estic, non-adapted: Primary	v sludge from Lundofte municipal wastewater treatment plant in Lyngby, De	nmark,		
		and 30 mL BA medium					
Duration, Parameter, System,	and	14 d; test mat.; 58 mL serum vial	s; Not reported				
Sampling Frequency Results Sample Time Corr	nortment Sludge	Not reported: Not reported: Not I	Papartad: Not Papartad: Not r	transited: 6.0			
Compartment. Water	ipartinent, Siudge	ge Not reported; Not reported; Not Reported; Not reported; 0.9					
Compartment, CEC, and pH							
Control Dark, Control, and Bl	ank	Not reported; Not reported; Not r	reported				
Concentration		Not Reported					
Analytical Method, Analytica	l Details, and Re-	gas chromatography with mass se	elective detector; Test material	al extracted with dichloromethane; Not Reported			
sults Per Degredation Paramet	er						
Results Remarks		Not Reported					
Halflife, Standard Deviation	Results, Reference	5.1 d; Not reported; Not reported	; Not reported				
Compartment Results	lefence Substance						
Results Details		Batch kinetic experiments Kineti	c constant (K h): 13.69E-2±1	±1.78E-2 /davR^2: 0.97			
Mean Total Recovery Results a	and Results Per Re-	Not reported					
covery		<b>~</b> · <b>~</b>					
Results Value, Direct Quant	um Yield Results,	Not reported; Not Reported; Not	reported				
and Transformation Products							
			EVALUATION				
Domain		Matric	E VALUATION Dating	Comments			
Domain 1: Test Substance		Meure	Kaung	Comments			
Domain 1. Test Substance	Matria 1.	Test Substance Identity	Uigh T	The test substance was identified definitively			

	Wieure 1.	Test Substance Identity	Ingn	The test substance was identified definitively.
	Metric 2:	Test Substance Purity	Medium	The test substance source was not reported; however, the omissions were not likely to have a substantial impact on the study results.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	A concurrent negative control, or blank group, were included.
	Metric 4:	Test Substance Stability	High	The test substance preparation were reported and were appropriate for the study.

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Study Citation:   Gavala, H. N., Atriste-Mondragon, F., Iranpour, R., Ahring, B. K. (2003). Biodegradation of phthalate esters during the mesophilic anaerobic digestion sludge. Chemosphere 52(4):673-682. Biodegradation in Sediment     OECD Harmonized Template:   Biodegradation in Sediment     HERO ID:   679552     Domain   Metric S:   Test Method Suitability   High The test method was suitable for the test substance.     Metric 6:   Testing Conditions   High The test method was suitable for the test substance.     Metric 7:   Testing Conditions   High The test method was suitable for the test substance.     Metric 7:   Testing Conditions   High Test conditions were monitored, reported, and appropriate for the method.     Domain 4: Test Organisms   Metric 9:   Outcome Assessment Methodology   High The test inoculum source were reported and the test inoculum are routinely used for similar study types and are appropriate.     Domain 5: Outcome Assessment   Metric 11:   Test Substance Identity   High The outcome assessment methodology addressed or reported the intended outcome(sinterest, and used widely accepted methods/approaches for the chemical and media being and lyzed (e.g., sampling equipment, sample storage conditions).     Domain 5: Outcome Assessment   Metric 12:   Test Substance Identity   High The outcome assessment methodology addressed or reported the intended outcome(sinterest, and used widely accepted methods/approaches for the chemical			contin	ued from pre	vious page		
OECD Harmonized Template:   Biodegradation in Sediment     HERO ID:   679552     Domain   Metric   EVALUATION Rating   Comments     Domain 3: Test Conditions   Metric 5:   Test Method Suitability Metric 6:   Test Method Suitability Testing Conditions   High High High High   The test method was suitable for the test substance.     Domain 4: Test Organisms   Metric 9:   Outcome Assessment Methodology Metric 10:   High Sustement Methodology   The test incculum source were reported and the test inoculum are routinely used for similar study types and are appropriate.     Domain 5: Outcome Assessment Metric 10:   Sampling Methods   N/A   The outcome assessment methodology addressed or reported the intended outcome(s interest.     Domain 5: Outcome Assessment Metric 12:   Test Substance Identity   High High   The outcome assessment methodology addressed or reported the intended outcome(s interest. and used widely accepted methods/approaches for the chemical and media being and Iyzel (e.g., sampling methods that address the outcome of interest. and used widely accepted methods/approaches for the chemical and media being and Iyzel (e.g., sampling nethods that address the outcome of interest. and used widely accepted methods/approaches for the chemical and media being and Iyzel (e.g., sampling nethods that address the outcome of interest. and used widely accepted methods/approaches for the chemical and media being and Iyzel (e.g., sampling nethods that address the outcome of interest. and used widely accepted methods/approaches for the chemical and media bein	Study Citation:	Gavala, H. N., Atriste-Mondragon, F., Iranpour, R., Ahring, B. K. (2003). Biodegradation of phthalate esters during the mesophilic anaerobic digestion of sludge. Chemosphere 52(4):673-682.					
Template: HERO ID:   679552     Domain   Metric   EVALUATION Rating   Comments     Domain 3: Test Conditions   Metric 5:   Test Method Suitability   High High   The test method was suitable for the test substance.     Metric 6:   Testing Conditions   High Metric 7:   Testing Conditions   Test substance.     Metric 7:   Testing Consistency   High Metric   The test method was suitable for the test substance.     Domain 4: Test Organisms   System Type and Design   Medium   There were some omissions in system type and design; however, the omissions were similar study types and are appropriate.     Domain 5: Outcome Assessment Metric 10:   Sampling Methods   N/A   The metric is not applicable to this study type.     Domain 5: Outcome Assessment Metric 12:   Test Substance Identity   High High   The outcome assessment methodology addressed or reported the intended outcome (similar study types and used videly accepted methods/approaches for the chemical and media being and used videly accepted methods/approaches for the chemical and media being and used videly accepted methods/approaches for the chemical and media being and used videly accepted methods/approaches for the chemical and media being and used videly accepted methods/approaches for the chemical and media being and used videly accepted methods/approaches for the chemical and media being and used videly accepted methods/approaches for the chemical and media being and used videly accepted methods/approaches for the ch	<b>OECD Harmonized</b>	Biodegradation in Sediment					
HERO ID:   679552     Domain   Metric   EVALUATION Rating   Comments     Domain 3: Test Conditions   Metric 5:   Test Method Suitability   High Metric 6:   The test method was suitable for the test substance.     Metric 6:   Testing Conditions   High Metric 7:   Test conditions   The test method was suitable for the test substance.     Metric 8:   System Type and Design   High Metric 8:   Test conditions were consistent across samples or study groups.     Domain 4: Test Organisms   Metric 9:   Outcome Assessment Methodology   High Metric 10:   The test inoculum source were reported and the test inoculum are routinely used for similar study types and are appropriate.     Domain 5: Outcome Assessment   Metric 10:   Sampling Methods   N/A   The metric is not applicable to this study type.     Domain 5: Outcome Assessment   Metric 11:   Test Substance Identity   High High   The outcome assessment methodology addressed or reported the intended outcome(s initerest.     Domain 6: Confounding/Variable Control   Test Substance Purity   High High   The study reported the use of sampling methods that address the outcome of interest. and used widely accepted methods/approaches for the chemical and metia being and used widely accepted methods/approaches for the chemical and metia being and used widely accepted methods/approaches for the chemical and metia being and used widel	Template:						
Domain     Metric     EVALUATION Rating     Comments       Domain 3: Test Conditions     Metric 5: Metric 5: Test Method Suitability Metric 6: Testing Conditions     High Testing conditions were monitored, reported, and appropriate for the method. High Test conditions were consistent across samples or study groups. Metric 8: System Type and Design     High Metric 8: Metric 9:     The test method was suitable for the test substance. High Test conditions were consistent across samples or study groups. Medium       Domain 4: Test Organisms Metric 9:     Outcome Assessment Methodology Metric 10:     High Sampling Methods     The test inoculum source were reported and the test inoculum are routinely used for similar study types and are appropriate. Metric 10:     Sampling Methods     N/A       Domain 5: Outcome Assessment Metric 11:     Test Substance Identity     High interest.     The outcome assessment methodology addressed or reported the intended outcome(s interest. Metric 12:     Test Substance Identity     High interest.       Domain 6: Confounding/Variable Control Metric 13:     Confounding Variables     High Variables     Sources of variability and uncertainty in the measurements, and statistical techniques	HERO ID:	679552					
DomainMetricRatingCommentsDomain 3: Test ConditionsMetric 5: Test Method SuitabilityHigh The test method was suitable for the test substance. High Testing conditions were monitored, reported, and appropriate for the method. Metric 6: Testing Consistency Metric 8:High Test conditions were monitored, reported, and appropriate for the method. Metric 7: Testing Consistency Metric 8:Domain 4: Test Organisms Metric 10:Outcome Assessment Methodology Metric 10:High Sampling MethodsThe test inoculum source were reported and the test inoculum are routinely used for similar study types and are appropriate.Domain 5: Outcome Assessment Metric 12:Test Substance IdentityHigh The outcome assessment methodology addressed or reported the intended outcome(s interest.Metric 12:Test Substance PurityHigh HighThe outcome assessment methodology addressed or reported the intended outcome(s interest.Domain 6: Confounding/Variable Control Metric 13:Confounding VariablesHigh HighSources of variability and uncertainty in the measurements, and statistical techniques				EVALUATIO	N		
Domain 3: Test Conditions   Metric 5:   Test Method Suitability   High   The test method was suitable for the test substance.     Metric 6:   Testing Conditions   High   Test conditions were monitored, reported, and appropriate for the method.     Metric 7:   Testing Consistency   High   These conditions were consistent across samples or study groups.     Metric 8:   System Type and Design   Medium   There were some omissions in system type and design; however, the omissions were likely to have a substantial impact on study results.     Domain 4: Test Organisms   Metric 10:   Sampling Methods   N/A     Metric 10:   Sampling Methods   N/A   The metric is not applicable to this study type.     Domain 5: Outcome Assessment   Metric 11:   Test Substance Identity   High     Metric 12:   Test Substance Identity   High   The outcome assessment methodology addressed or reported the intended outcome(s interest, and used widely accepted methods/approaches for the chemical and media being ana lyzed (e.g., sampling equipment, sample storage conditions).     Domain 6: Confounding/Variable Control   Metric 13:   Confounding Variables   High	Domain		Metric	Rating	Comments		
Domain 3: Test Conditions   Metric 5:   Test Method Suitability   High   The test method was suitable for the test substance.     Metric 6:   Testing Conditions   High   Testing conditions were monitored, reported, and appropriate for the method.     Metric 7:   Testing Consistency   High   There were some omissions in system type and design; however, the omissions were likely to have a substantial impact on study results.     Domain 4: Test Organisms   Metric 9:   Outcome Assessment Methodology   High     Metric 10:   Sampling Methods   N/A   The metric is not applicable to this study type.     Domain 5: Outcome Assessment   Metric 11:   Test Substance Identity   High     Metric 12:   Test Substance Identity   High   The outcome assessment methodology addressed or reported the intended outcome(sinterest.     Domain 6: Confounding/Variable Control   Metric 13:   Confounding Variables   High	Domani		Wettle	Rating	Comments		
Domain 6: Confounding/Variable Control   Metric 13:   Test Substance Identity   High The outcome Assession of the character of the control     Domain 6: Confounding/Variable Control   Metric 13:   Confounding Variables   High Sources of variability and uncertainty in the measurements, and statistical techniques	Domain 3: Test Condition	ons					
Metric 6:   Testing Conditions   High   Testing conditions were monitored, reported, and appropriate for the method.     Metric 7:   Testing Consistency   High   Test conditions were consistent across samples or study groups.     Metric 8:   System Type and Design   Medium   There were some omissions in system type and design; however, the omissions were likely to have a substantial impact on study results.     Domain 4: Test Organisms   Metric 9:   Outcome Assessment Methodology   High   The test inoculum source were reported and the test inoculum are routinely used for similar study types and are appropriate.     Metric 10:   Sampling Methods   N/A   The metric is not applicable to this study type.     Domain 5: Outcome Assessment   High   The outcome assessment methodology addressed or reported the intended outcome(sinterest, Metric 12:     Metric 12:   Test Substance Identity   High   The outcome assessment methodology addressed or reported the intended outcome (sinterest, and used widely accepted methods/approaches for the chemical and media being ana lyzed (e.g., sampling equipment, sample storage conditions).     Domain 6: Confounding/Variable Control   Metric 13:   Confounding Variables   High	Domain Dr. 1000 Containe	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
Metric 7:   Testing Consistency   High   Test conditions were consistent across samples or study groups.     Metric 8:   System Type and Design   Medium   There were some omissions in system type and design; however, the omissions were likely to have a substantial impact on study results.     Domain 4: Test Organisms   Metric 9:   Outcome Assessment Methodology   High   The test inoculum source were reported and the test inoculum are routinely used for similar study types and are appropriate.     Metric 10:   Sampling Methods   N/A   The metric is not applicable to this study type.     Domain 5: Outcome Assessment   Metric 11:   Test Substance Identity   High     Metric 12:   Test Substance Purity   High   The outcome assessment methodology addressed or reported the intended outcome (sinterest. and used widely accepted methods/approaches for the chemical and media being ana lyzed (e.g., sampling equipment, sample storage conditions).     Domain 6: Confounding/Variable Control   Metric 13:   Confounding Variables   High		Metric 6	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method		
Metric 7.   Testing Consistency   Trigin   Test Conductors were consistent actors analyzes of study groups.     Metric 8:   System Type and Design   Medium   There were some omissions in system type and design; however, the omissions were likely to have a substantial impact on study results.     Domain 4: Test Organisms   Metric 9:   Outcome Assessment Methodology   High   The test inoculum source were reported and the test inoculum are routinely used for similar study types and are appropriate.     Domain 5:   Metric 10:   Sampling Methods   N/A   The outcome assessment methodology addressed or reported the intended outcome(s interest.     Metric 12:   Test Substance Identity   High   The outcome assessment methodology addressed or reported the intended outcome(s interest.     Metric 12:   Test Substance Purity   High   The study reported the use of sampling methods that address the outcome of interest. and used widely accepted methods/approaches for the chemical and media being ana lyzed (e.g., sampling equipment, sample storage conditions).     Domain 6:   Confounding/Variable Control   Metric 13:   Confounding Variables		Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups		
Domain 4: Test Organisms   Metric 9:   Outcome Assessment Methodology   High   The test inoculum source were reported and the test inoculum are routinely used for similar study types and are appropriate.     Metric 10:   Sampling Methods   N/A   The metric is not applicable to this study type.     Domain 5: Outcome Assessment   Metric 11:   Test Substance Identity   High     Metric 12:   Test Substance Identity   High   The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana lyzed (e.g., sampling equipment, sample storage conditions).     Domain 6: Confounding/Variable Control   Metric 13:   Confounding Variables		Metric 8:	System Type and Design	Medium	There were some omissions in system type and design; however, the omissions were not		
Domain 4: Test Organisms   Metric 9:   Outcome Assessment Methodology   High   The test inoculum source were reported and the test inoculum are routinely used for similar study types and are appropriate.     Metric 10:   Sampling Methods   N/A   The metric is not applicable to this study type.     Domain 5: Outcome Assessment   Metric 11:   Test Substance Identity   High   The outcome assessment methodology addressed or reported the intended outcome(sinterest.     Metric 12:   Test Substance Purity   High   The study reported the use of sampling methods that address the outcome of interest. and used widely accepted methods/approaches for the chemical and media being and lyzed (e.g., sampling equipment, sample storage conditions).     Domain 6: Confounding/Variable Control   Metric 13:   Confounding Variables   High		Weule 8.	System Type and Design	Wiedium	likely to have a substantial impact on study results.		
Metric 9:   Outcome Assessment Methodology   High   The test inoculum source were reported and the test inoculum are routinely used for similar study types and are appropriate.     Metric 10:   Sampling Methods   N/A   The metric is not applicable to this study type.     Domain 5: Outcome Assessment   Metric 11:   Test Substance Identity   High   The outcome assessment methodology addressed or reported the intended outcome(s interest.     Metric 12:   Test Substance Purity   High   The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana lyzed (e.g., sampling equipment, sample storage conditions).     Domain 6: Confounding/Variable Control   Metric 13:   Confounding Variables   High	Domain 4: Test Organis	ms					
Metric 10:   Sampling Methods   N/A   The metric is not applicable to this study type.     Domain 5: Outcome Assessment   Metric 11:   Test Substance Identity   High   The outcome assessment methodology addressed or reported the intended outcome(s interest.     Metric 12:   Test Substance Purity   High   The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana lyzed (e.g., sampling equipment, sample storage conditions).     Domain 6: Confounding/Variable Control   Metric 13:   Confounding Variables   High   Sources of variability and uncertainty in the measurements, and statistical techniques		Metric 9:	Outcome Assessment Methodology	High	The test inoculum source were reported and the test inoculum are routinely used for similar study types and are appropriate.		
Domain 5: Outcome Assessment   Metric 11:   Test Substance Identity   High   The outcome assessment methodology addressed or reported the intended outcome(s interest.     Metric 12:   Test Substance Purity   High   The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana lyzed (e.g., sampling equipment, sample storage conditions).     Domain 6: Confounding/Variable Control   Metric 13:   Confounding Variables		Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.		
Domain 5: Outcome Assessment      Metric 11:   Test Substance Identity   High   The outcome assessment methodology addressed or reported the intended outcome(s interest.     Metric 12:   Test Substance Purity   High   The study reported the use of sampling methods that address the outcome of interest. and used widely accepted methods/approaches for the chemical and media being ana lyzed (e.g., sampling equipment, sample storage conditions).     Domain 6: Confounding/Variable Control   Metric 13:   Confounding Variables   High   Sources of variability and uncertainty in the measurements, and statistical techniques							
Metric 11: Test Substance Identity Metric 12: Test Substance Purity Domain 6: Confounding/Variable Control Metric 13: Confounding Variables Metric 13: Confounding Variables Metric 13: Metric 13: Confounding Variables Metric 13: Confounding Variables Metric 13: Metric 13: Metric 13: Confounding Variables Metric 13: Metric	Domain 5: Outcome Ass	sessment					
Metric 12: Test Substance Purity High The study reported the use of sampling methods that address the outcome of interest and used widely accepted methods/approaches for the chemical and media being and lyzed (e.g., sampling equipment, sample storage conditions).		Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.		
Domain 6: Confounding/Variable Control Metric 13: Confounding Variables High Sources of variability and uncertainty in the measurements, and statistical techniques		Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed (e.g., sampling equipment, sample storage conditions).		
Domain 6: Confounding/Variable Control Metric 13: Confounding Variables High Sources of variability and uncertainty in the measurements, and statistical techniques							
Metric 13: Confounding Variables High Sources of variability and uncertainty in the measurements, and statistical techniques	Domain 6: Confounding	g/Variable Control					
and between study groups (if applicable) were considered and accounted for in data evaluation and all reported variability or uncertainty was not likely to influence the outcome assessment.		Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups (if applicable) were considered and accounted for in data evaluation and all reported variability or uncertainty was not likely to influence the outcome assessment.		
Metric 14:   Health Outcomes Unrelated to   N/A   The metric is not applicable to this study type.     Exposure   Exposure		Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.		
Domain 7: Data Presentation and Analysis	Domain 7: Data Present	ation and Analysis					
Metric 15: Data Reporting High Analytical methods used were suitable for detection and quantification of the target chemical and sufficient evidence was presented to confirm that parent compound dist		Metric 15:	Data Reporting	High	Analytical methods used were suitable for detection and quantification of the target chemical and sufficient evidence was presented to confirm that parent compound disap-		
Metric 16: Statistical Methods and High Statistical methods or kinetic calculations were clearly described and address the dataset(s).		Metric 16:	Statistical Methods and Kinetic Calculations	High	pearance was not likely due to some other process. Statistical methods or kinetic calculations were clearly described and address the dataset(s).		
Domain 8: Other	Domain 8: Other						
Metric 17: Verification or Plausibility of High The study results were reasonable.		Metric 17:	Verification or Plausibility of	High	The study results were reasonable.		
Results QSAR ModelsN/AThe metric is not applicable to this study type.		Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.		
Continued on next page			Contin	nued on next i	page		

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		continued from previous page				
Study Citation:	Gavala, H. N., Atriste-Mondragon, F., Iranpour sludge, Chemosphere 52(4):673-682.	, R., Ahring, B. K. (2003). Biodegradation	n of phthalate esters during the mesophilic anaerobic digestion of			
<b>OECD Harmonized</b>	Biodegradation in Sediment					
Template:						
HERO ID:	679552					
		EVALUATION				
Domain	Metric	Rating	Comments			
Overall Quali	ty Determination	High				

\* Related References: Cited in HSDB

Study Citation: Gav	Gavala, H. N., Atriste-Mondragon, F., Iranpour, R., Ahring, B. K. (2003). Biodegradation of phthalate esters during the mesophilic anaerobic digestion of					
OECD Harmonized Bio	sludge. Chemosphere 52(4):6/3-682. Biodegradation in Sediment					
Template:						
HERO ID: 679	9552					
		1	EXTRACTIO	DN		
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, EndPoint, Type,		None; other; Experimental; other: anerobic	biodegradation	in batch kinetic experiment		
Guideline Solvent, Reactivity, Storage, Stab	oility	Ethanol; NR; NR; NR				
Radiolabel, Source, State, Purity		NR; NR; NR; NR				
Oxygen and Inoculum		anaerobic; activated sludge, domestic, adap	ted: Primary slu	udge from Lundofte municipal wastewater treatment plant in Lyngby, Denmark, and 30		
Duration Daramator System and	4	mL BA medium	orted			
Sampling Frequency	1	14 u, test mat.; 38 mL serum vials; Not rep	oned			
Results Sample Time, Compar	rtment, Sludge	Not reported; Not reported; Not Reported; 1	Not Reported; N	Not reported; 6.9		
Compartment, Water				•		
Compartment, CEC, and pH		<b>X</b>				
Control Dark, Control, and Blank	ζ.	Not reported; Not reported; Not reported				
Concentration	Details and De	Not Reported	<u>د </u>	en internet den ide die blannen et en en Net Den erte d		
Analytical Method, Analytical L sults Per Degredation Parameter	Jetails, and Re-	gas chromatography with mass selective de	tector; lest mate	terial extracted with dichloromethane; Not Reported		
Results Remarks		Not Reported				
Halflife, Standard Deviation Res	sults, Reference	6.2 d; Not reported; Not reported; Not repo	rted			
Substance Results, and Refere	ence Substance					
Compartment Results						
Results Details		Batch kinetic experiments Kinetic constant	(K_h): 11.18E-2	-2±1.24E-2 /dayR^2: 0.99		
Mean Total Recovery Results and	Results Per Re-	Not reported; Not reported				
Results Value Direct Quantum	Yield Results	Not reported: Not Reported: Not reported				
and Transformation Products	Tiela Results,	not reported, not reported, not reported				
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substance						
Me	etric 1:	Test Substance Identity	High	The test substance was identified definitively.		
Me	etric 2:	Test Substance Purity	Medium	The test substance source was not reported; however, the omissions were not likely to have a substantial impact on the study results.		
Domain 2: Test Design						

Metric 3:	Study Controls	High	A concurrent negative control, or blank group, were included.
Metric 4:	Test Substance Stability	High	The test substance preparation were reported and were appropriate for the study.

Domain 3: Test Conditions

continued from previous page							
Study Citation:	Gavala, H. N., Atı	riste-Mondragon, F., Iranpour, R., Ahring	, B. K. (2003).	Biodegradation of phthalate esters during the mesophilic anaerobic digestion of			
OFCD Harmonized	sludge. Chemosph Biodegradation in	sludge. Chemosphere 52(4):673-682.					
Template:	Biodegradation in Sediment						
HERO ID:	679552						
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.			
	Metric 8:	System Type and Design	Medium	There were some omissions in system type and design; however, the omissions were not likely to have a substantial impact on study results.			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	High	The test inoculum source were reported and the test inoculum are routinely used for similar study types and are appropriate.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	lest Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.			
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being ana-			
				lyzed (e.g., sampling equipment, sample storage conditions).			
Domain 6: Confounding	Wariable Control						
Domain 0. Comounding	Metric 13.	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques			
	metrie 15.	Comounding variables	mgn	and between study groups (if applicable) were considered and accounted for in data			
				evaluation and all reported variability or uncertainty was not likely to influence the			
				outcome assessment.			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.			
		Exposure					
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	High	Analytical methods used were suitable for detection and quantification of the target			
		I B	8	chemical and sufficient evidence was presented to confirm that parent compound disap-			
				pearance was not likely due to some other process.			
	Metric 16:	Statistical Methods and	High	Statistical methods or kinetic calculations were clearly described and address the			
		Kinetic Calculations		dataset(s).			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.			
	4 D-4	- 49	TT' I				
Overall Qualit	ty Determin	ation	High				
Continued on next page							

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		continued from previous page				
Study Citation:	Gavala, H. N., Atriste-Mondragon, F., Iranpour,	, R., Ahring, B. K. (2003). Biodegradat	ion of phthalate esters during the mesophilic anaerobic digestion of			
OECD Harmonized	sludge. Chemosphere 52(4):673-682. Biodegradation in Sediment					
Template:	C					
HERO ID:	679552					
		EVALUATION				
Domain	Metric	Rating	Comments			

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Study Citation: H	Hartmann, H., Ahring, B. K. (2003). Phthalic acid esters found in municipal organic waste: Enhanced anaerobic degradation under hyper-thermophilic						
OECD Harmonized Bi	conditions. Water Science and Technology 48(4):175-183. Biodegradation in Sediment						
Tomplate:	blodegradation in Sediment						
	670640						
	/9040						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, EndPoint, Type	,	None; other; Experimental; other: aerobic biodegradation in a continuous stirred tank reactor					
Guideline Solvent Reactivity Storage Sta	ability	untreated organic fraction of municipal solid waster NP, NP, NP					
Radiolabel Source State Purity	aonnty N	NR: Grinsted co-digestion plant Denmark: NR: NA					
Oxygen and Inoculum	y	anaerohic: activated sludge, domestic (adaptation not specified): untreated organic fraction of municipal solid waste from Grinsted plant. Denmark					
Oxygen and moculum		diluted to a slurry of 6% TS (w/w)					
Duration, Parameter, System, ar	nd	490 d; test mat.; continuous stirred tank reactor; Not reported					
Sampling Frequency							
Results Sample Time, Comp	artment, Sludge	Not reported; water and sediment; influent sediment; influent and effluent liquid; Not reported; Not reported					
Compartment, Water							
Control Dark Control and Blar	nk	Nat reported: Nat reported					
Concentration	lik	Not reported					
Analytical Method Analytical	Details and Re-	GC-MS: DBP extracted with dichloromethane detection limit $0.005 \text{ mg/L}$ : 7					
sults Per Degredation Parameter	r	OC-WS, DDF extracted with demotoinemane, detection mint 0.005 mg/L, 7					
Results Remarks		After 140 days, the liquid effluent from phase 1 was recycled for dilution of OFMSW used as influent into phase 1. The phase 1 effluent was					
		treated in a second reactor during phase 2 starting on day 340.0-140 d: 0.33 mg/L DBP; 49.1% reduction141-339 d: 0.44 mg/L DBP; 45.6%					
		reduction340-442 d: 0.29 mg/L DBP (phase 1): 38.4% reduction ; 0.15 mg/L DBP (phase 2): 62.2% reduction443-490 d: 0.18 mg/L DBP (phase					
		1): 49.1% reduction; 0.10 mg/L DBP (phase 2); 74.0% reduction					
Halflife, Standard Deviation Results, Reference		Not reported; Not reported; Not reported					
Compartment Results	Tenee Substance						
Results Details		0-140 d: Kh=0.0643 / d141-339 d: Kh=0.0463 / d340-442 d: Kh=0.0443 / d (phase 1); Kh=0.4067 / d (phase 2)443-490 d: Kh=0.1122 / d (phase					
		1); Kh=0.7930 / d (phase 2)					
Mean Total Recovery Results and Results Per Re-		Not reported; Not reported					
Covery Regults Value Direct Overtur	m Viald Dagulta	74.0% / 442.4004: Not Papartad: Not applicable					
and Transformation Products	in riela Kesults,	14.0% / 445-4900; Not Reported; Not applicable					

			EVALUATIO	N	
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	nce				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2:	Test Substance Purity	High	The test substance was identified by GC-MS.	

Domain 2: Test Design

		contin	ueu from pre-	nous page		
Study Citation:	Hartmann, H., Ah conditions. Water	ring, B. K. (2003). Phthalic acid esters Science and Technology 48(4):175-183.	found in muni	cipal organic waste: Enhanced anaerobic degradation under hyper-thermophilic		
OECD Harmonized	Biodegradation in Sediment					
Template:	C C					
HERO ID:	679640					
		]	EVALUATIO	Ň		
Domain		Metric	Rating	Comments		
	Metric 3:	Study Controls	Medium	Some concurrent control group details were not included; however, the lack of data was not likely to have a substantial impact on study results.		
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported, and was appropriate for the study.		
Domain 3: Test Conditis	ane.					
Joinanii 5. Test Conditio	Matric 5:	Test Method Suitsbility	High	The test method was suitable for the test substance		
	Metric 5:	Testing Conditions	High	The test method was suitable for the test substance.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups (i.e., same exposure		
	Methe 7.	Testing Consistency	mgn	method and timing, comparable particle size characteristics). The conditions of the exposure were documented.		
	Metric 8:	System Type and Design	Medium	There were some omissions in system type and design; however, the omissions were not likely to have a substantial impact on study results.		
Domain 4: Tast Organis	<b>m</b> .e					
Domain 4. Test Organisi	Metric 9.	Outcome Assessment Methodology	High	The test inoculum source was reported and it's routinely used for similar study types and		
	Weate 9.	Outcome Assessment Methodology	mgn	is appropriate.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.		
Demain 5. Outerman Are						
Domain 5: Outcome Ass	Motrio 11.	Test Substance Identity	High			
	Metric 11:	Test Substance identity	nign	interest.		
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed (e.g., sampling equipment, sample storage conditions).		
Domain 6: Confounding	Wariable Control					
Domain 0. Comounding	Metric 13.	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques		
	Wetter 15.	Conforming variables	Ingn	and between study groups (if applicable) were considered and accounted for in data evaluation and all reported variability or uncertainty was not likely to influence the outcome assessment.		
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.		
		Exposure				
Domain 7: Data Present	ation and Analysis					
	Metric 15:	Data Reporting	Medium	The target chemical extraction efficiency and mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.		
	Metric 16:	Statistical Methods and	High	Statistical methods or kinetic calculations were clearly described and address the		

			May 2025	
Phthalate		HERO ID: 679640 Table: 1 of		
			tinued from pre	vious nage
Study Citation:	Hartmann, H., conditions. Wa	Ahring, B. K. (2003). Phthalic acid este ter Science and Technology 48(4):175-18	ers found in mun	icipal organic waste: Enhanced anaerobic degradation under hyper-thermophilic
<b>OECD Harmonized</b>	Biodegradation	in Sediment		
Template:				
HERO ID:	679640			
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 8: Other			-	
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Qualit</b>	ty Determi	ination	High	

PUBLIC RELEASE DRAFT

Study Citation:	Hartmann, H., Ahring, B. K. (2003). Phthalic acid esters found in municipal organic waste: Enhanced anaerobic degradation under hyper-thermophilic conditions. Water Science and Technology 48(4):175-183.				
OECD Harmonized	Biodegradation in S	Sediment			
Template: HERO ID:	679640				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; DBP			
Confidentiality, EndPoint, T	ype,	None; other; Experimental; other: aerobic biodegradation in a continuous stirred tank reactor			
Solvent, Reactivity, Storage	, Stability	untreated organic fraction of municipal solid waste; NR; NR; NR			
Radiolabel, Source, State, P	urity	NR; Grinsted co-digestion plant, Denmark; NR; NA			
Oxygen and Inoculum		anaerobic; activated sludge, domestic (adaptation not specified): untreated organic fraction of municipal solid waste from Grinsted plant, Denmark, stabilized to 50:50% VS sludge and cow manure			
Duration, Parameter, System, and		442 d; test mat.; continuous stirred tank reactor; Not reported			
Results Sample Time, Compartment, Sludge Compartment, Water		Not reported; water and sediment; influent sediment; influent and effluent liquid; Not reported; Not reported			
Control Dark, Control, and	Blank	Not reported; Not reported; Not reported			
Concentration		Not Reported			
Analytical Method, Analytical sults Per Degredation Param	ical Details, and Re- neter	GC-MS; DBP extracted with dichloromethane, detection limit 0.005 mg/L; 7			
Results Remarks		141-339 d: 0.20 mg/L DBP: 47.8% reduction340-442 d : 0.21 mg/L DBP: 69.9% reduction			
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results		Not reported; Not reported; Not reported			
Results Details 141-339 d: Kh=0.0652 / d340-442 d: Kh=0		141-339 d: Kh=0.0652 / d340-442 d: Kh=0.1632 / d			
Mean Total Recovery Result covery	s and Results Per Re-	Not reported; Not reported			
Results Value, Direct Qua and Transformation Product	ntum Yield Results,	69.9% / 340-442d; Not Reported; Not applicable			

			EVALUATION	N
Domain		Metric	Rating	Comments
Domain 1: Test Substand	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
	Metric 2:	Test Substance Purity	High	The test substance was identified by GC-MS.
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Some concurrent control group details were not included: however, the lack of data was
				not likely to have a substantial impact on study results.
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported, and was appropriate for the study.
Domain 3: Test Condition	ons			

#### ... continued from previous page **Study Citation:** Hartmann, H., Ahring, B. K. (2003). Phthalic acid esters found in municipal organic waste: Enhanced anaerobic degradation under hyper-thermophilic conditions. Water Science and Technology 48(4):175-183. **OECD Harmonized** Biodegradation in Sediment **Template: HERO ID:** 679640 **EVALUATION** Domain Metric Rating Comments Metric 5: Test Method Suitability High The test method was suitable for the test substance. Metric 6: **Testing Conditions** High Testing conditions were monitored, reported, and appropriate for the method. Metric 7: Testing Consistency High Test conditions were consistent across samples or study groups (i.e., same exposure method and timing, comparable particle size characteristics). The conditions of the exposure were documented. Metric 8: System Type and Design Medium There were some omissions in system type and design; however, the omissions were not likely to have a substantial impact on study results. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The test inoculum source was reported and it's routinely used for similar study types and is appropriate. The metric is not applicable to this study type. Metric 10: Sampling Methods N/A Domain 5: Outcome Assessment Metric 11: Test Substance Identity The outcome assessment methodology addressed or reported the intended outcome(s) of High interest. Metric 12: Test Substance Purity High The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed (e.g., sampling equipment, sample storage conditions). Domain 6: Confounding/Variable Control Metric 13: Confounding Variables High Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups (if applicable) were considered and accounted for in data evaluation and all reported variability or uncertainty was not likely to influence the outcome assessment. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium The target chemical extraction efficiency and mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results. Metric 16: Statistical Methods and High Statistical methods or kinetic calculations were clearly described and address the dataset(s). Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of High The study results were reasonable. Results QSAR Models N/A Metric 18: The metric is not applicable to this study type. Continued on next page ...

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		continued from previous page			
Study Citation:	Hartmann, H., Ahring, B. K. (2003). Phthalic	Hartmann, H., Ahring, B. K. (2003). Phthalic acid esters found in municipal organic waste: Enhanced anaerobic degradation under hyper-thermophilic			
<b>OECD Harmonized</b>	Biodegradation in Sediment	-).175-105.			
Template:					
HERO ID:	679640				
		EVALUATION			
Domain	Metric	Rating	Comments		
<b>Overall Quali</b>	ty Determination	High			

Study Citation:	Huang, M. Z., Ma, Y. W., Wang, Y., Wan, J. Q., Zhang, H. P. (2010). The fate of di-n-butyl phthalate in a laboratory-scale anaerobic/anoxic/oxic wastewater						
OECD Harmonized	Biodegradation in S	Biodegradation in Sediment					
Template:	-						
HERO ID:	1323136						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Di-n-butyl phthalate					
Confidentiality, EndPoint, T	ype,	None; other; Experimental; other: Laboratory scale waste water treatment					
Solvent, Reactivity, Storage	, Stability	NR; NR; NR					
Radiolabel, Source, State, P	urity	NR; Hubei university Co., China; NR; NR					
Oxygen and Inoculum	-	other; other: Sludge was taken from a sewage treatment plant and a synthetic wastewater feed consisting of varying DNBP concentrations from					
Duration Parameter System	n and	Hydraulic retention times: 12–18–24 and 30 hours (fixed SRT at 15 days). Sludge retention times: 10–15–20 and 25 days (fixed HRT of 18					
Sampling Frequency	,	hours); test mat.; Influent entered an anaerobic reactor, followed by an anoxic reactor then an oxic reactor, before reaching the settling tank.;					
Results Sample Time. Co	ompartment. Sludge	1 L samples were collected timing not specified. Not reported Sludge taken from sewage treatment plant in Guangzhou. DNBP concentrations					
Compartment, Water	omparaneni, bradge	tested were 150, 170, 180, 240, 260 and 300µg/L; Not reported; Samples were acidified to pH 3 with 3% sulfuric acid.					
Compartment, CEC, and pH	I						
Control Dark, Control, and	Blank	Not Reported; Not reported					
Concentration		Not Reported CC MS in a lastern impact (TI) and calculation in a marker (SINO). Chamical among damand animal linear marked called total nimeron					
sults Per Degredation Paran	neter	ammonium nitrogen, and total phosphorus were monitored.; 7					
Results Remarks		Changing the hydraulic retention time from 12-30 hours had no significant effect on the DnBP removal efficiency. Optimal conditions were 18h					
		0.5% in waste sludge.					
Halflife, Standard Deviation	n Results, Reference	Not reported; Not reported; Not reported; Not reported					
Substance Results, and Reference Substance							
Compariment Results Results Details		Removal kinetics in 1) anaerobic reactor: $Y = 16.178x \pm 0.0268$ (R^2=0.9025): 2) anoxic reactor: $Y = 17.089x \pm 0.0178$ (R^2=0.9760): 3) oxic					
Results Details		reactor: $Y=16.256x + 0.151$ (R <sup>2</sup> =0.9872)					
Mean Total Recovery Result	ts and Results Per Re-	Not reported; Not reported					
covery Begulte Value Direct One	ntum Viold Dogulta	Influent/offluent removal (%) with HDT of 12, 18, 24, and 20 hours, 05,8, 07,4, 07,7, and 06,0, recreatively. Demoval with SDT of 10, 15, 20, and					
and Transformation Product	ts	25 days: 92.3, 97.4, 96.6, and 96.2, respectively.; Not Reported; Not reported					

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substance	e					
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.		
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported but the omission is unlikely to have a substan- tial impact on the study results.		

		contin	ued from pre	vious page			
Study Citation:	Huang, M. Z., Ma, Y. W., Wang, Y., Wan, J. Q., Zhang, H. P. (2010). The fate of di-n-butyl phthalate in a laboratory-scale anaerobic/anoxic/oxic wastewater						
OECD Harmonized	Biodegradation in Sediment						
Template: HERO ID:	1323136						
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 2: Test Design							
	Metric 3:	Study Controls	Medium	No blank controls were included.			
	Metric 4:	lest Substance Stability	High	Some details regarding the test substance preparation and storage conditions were not reported but are unlikely to have a substantial impact on study results.			
Domain 3: Test Condition	ons						
	Metric 5:	Test Method Suitability	High	The test method was suitable and the target chemical was tested below its aqueous solu- bility.			
	Metric 6:	Testing Conditions	High	Testing conditions were monitored and appropriate.			
	Metric 7:	Testing Consistency	High	Testing conditions were consistent across study groups.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.			
Domain 4: Test Organis	ms						
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and appropriate for the study type.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.			
Domain 5: Outcome Ass	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	Sampling methods were reported and appropriate.			
Domain 6: Confounding	/Variable Control						
	Metric 13:	Confounding Variables	Medium	Uncertainty was not reported in measurements but the omission is unlikely to have a substantial impact on the study results			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.			
Domain 7. Data Present	ation and Analysis						
Domain 7. Data Presenta	Metric 15:	Data Reporting	High	Extraction and percent recoveries were not reported but their omissions are unlikely to have a substantial impact on the study results.			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Kinetic calculations were clearly described and appropriate.			
Domain 8: Other							
Domain 6. Other	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.			
<b>Overall Qualit</b>	ty Determina	ation	High				
		Contir	nued on next j	page			

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		continued from previous page	
Study Citation:	Huang, M. Z., Ma, Y. W., Wang, Y., Wan, J. Q.,	Zhang, H. P. (2010). The fate of di-n-but	tyl phthalate in a laboratory-scale anaerobic/anoxic/oxic wastewater
OECD Harmonized	Biodegradation in Sediment	1(20).7707-7772.	
Template: HERO ID:	1323136		
		EVALUATION	
Domain	Metric	Rating	Comments

Study Citation: OECD Harmonized	Jianlong, W., Ping, L., Yi, Q. (1996). Biodegradation of phthalic acid esters by acclimated activated sludge. Environment International 22(6):737-741. Biodegradation in Sediment				
HERO ID:	2743049				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, T	Type,	None; screening test; Experimental; other: Degradation of DBP in activated sludge			
Guideline Solvent, Reactivity, Storage	e, Stability	NR; NR; NR			
Radiolabel, Source, State, P	Purity	NR; Beijing chemical company; NR; Commercial grade			
Oxygen and Inoculum		aerobic; activated sludge, adapted: Concentration of sludge was 6g/L mixed liquor suspended solid.			
Duration, Parameter, System, and Sampling Frequency Results Sample Time, Compartment, Sludge		8 days; test mat.; Sludge (from a coke-plant wastewater treatment plant) was acclimated to the medium containing DBP (10-100mg/L). A 2.0 L reactor was used.; Samples were collected at 0, 50, 95, 145, and 190 hours (approximately). Not reported; One compartment containing basic medium (10-100 mg/L or DBP, Dimethyl phthalate, and dioctyl phthalate; KH2PO4 and NaCl: 1.0g/L; MgSO4 7H20, CaCL2; 0.1g/L; FeCl3: 0.01g/L; Not reported; Not reported; Not reported; Not reported			
Compartment, CEC, and pH	ł				
Control Dark, Control, and	Blank	Not Reported; Not reported			
Concentration		$\geq 10 - \leq 100 \text{ mg/L}$			
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter		Gas chromatography-flame ionization detection (Hewlett Packard); Not reported; 7			
Results Remarks		Not reported			
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results		45.6 hours; Not reported; Di-n-octyl phthalate, dimethyl phthalate; Di-n-octyl phthalate half-life: 498.6 hours; Dimethyl phthalate half-life: 21.0 hours			
Results Details		k=0.0152 h^-1Degradation fit a first order model (ln C=a + k1(t)) better than a zero-order (C - b + k0(t)			
Mean Total Recovery Results and Results Per Re-		Not reported; Not reported			
covery Results Value, Direct Quantum Yield Results, and Transformation Products		90% degradation within 8 days; Not Reported; Not Reported			

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.
	Metric 2:	Test Substance Purity	High	The test substance purity was reported and appropriate.
Domain 2: Test Design				
	Metric 3:	Study Controls	Low	Controls were not reported which may have an impact on the study results.
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were not reported but the omis- sions are unlikely to have a substantial impact on the study results.

Domain 3: Test Conditions

		contin	ued from previous	page			
Study Citation: OECD Harmonized	Jianlong, W., Ping Biodegradation in	Jianlong, W., Ping, L., Yi, Q. (1996). Biodegradation of phthalic acid esters by acclimated activated sludge. Environment International 22(6):737-741. Biodegradation in Sediment					
Template:	Diodogradation	beament					
HERO ID:	2743049						
			EVALUATION				
Domain		Metric	Rating	Comments			
	Metric 5:	Test Method Suitability	Medium	The test substance was tested at concentrations close to its aqueous solubility, but this is unlikely to have a substantial impact on the study results.			
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.			
	Metric 7:	Testing Consistency	Low	The number of study groups was not reported so testing consistency could not be evalu- ated.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.			
Demain 4: Test Oreania							
Domain 4: Test Organis	Metric 9:	Outcome Assessment Methodology	Low	The inoculum was activated sludge from a sewage treatment plant that was pre-adapted to the test substance.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate and addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	Low	Some of the details regarding the sampling methods were not reported and sampling frequency was low.			
Domain 6. Confoundin	- Wariahla Control						
Domain of Comounding	Metric 13:	Confounding Variables	Low	Sources of variability and uncertainty were not reported in the results which may have an impact on the study results.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.			
Domain 7: Data Pro-	tation and Anal						
Domain 7: Data Presen	Metric 15:	Data Reporting	High	Some details regarding the analytical method were not reported but the omissions are unlikely to have a substantial impact on the study results.			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Kinetic calculations were described and addressed the dataset.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable as compared to the reference substances.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
Overall Quali	ty Determin	ation	Medium				

Study Citation:	Johnson, B. T., He	Johnson, B. T., Heitkamp, M. A., Jones, J. R. (1983). Environmental and chemical factors influencing the biodegradation of phthalic acid esters in				
OECD Harmonized	freshwater sedimer Biodegradation in	freshwater sediments with attachments. Biodegradation in Sediment				
Template: HERO ID:	1325551					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, EndPoint, T	Гуре,	None; screening test; Experimental; other: Aerobic biodegradation study in sediment				
Guideline Solvent Beastivity Storage	Stability	ND · ND · ND				
Radiolabel Source State F	, Stability	NR, NR, NR, NR				
Oxygen and Inoculum	unty	aerobic: natural water / sediment: freshwater: Little Divie Lake an agricultural watershed 16 km east of Columbia Miscouri. Sediment collected				
Oxygen and moedium		form the littoral zone.				
Duration, Parameter, Syster	n, and	14 days; 14CO2 evolved; sealed flask, incubated; semi-weekly				
Sampling Frequency						
Compartment Water	ompartment, Sludge	14 days; sediment and water; Little Dixie Lake sediment, pre-exposed to test substance for 28 days; Little Dixie Lake water; Not reported; Not				
Compartment, Water	ł	reported				
Control Dark, Control, and	Blank	yes; Not applicable; Peptone and glucose controls, untreated and carrier-solvent treated sediments				
Concentration		82 ug/L				
Analytical Method, Analyt	ical Details, and Re-	Beckman LS-230 liquid scintillation counter; Not Reported; 2				
sults Per Degredation Paran	neter					
Results Remarks		primary biodegradation				
Halflife, Standard Deviation Results, Reference		Not reported; $\pm 2.1$ ; Not reported; Not reported				
Substance Results, and Reference Substance						
Results Details		Not reported				
Mean Total Recovery Results and Results Per Re-		Not applicable: Not applicable				
covery						
Results Value, Direct Qua and Transformation Produc	antum Yield Results, ts	84.6% in 14 days; Not Reported; Not reported				

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Subst	ance			
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.
	Metric 2:	Test Substance Purity	High	The test substance purity, radiolabel location and source were reported.
Domain 2: Test Desig	m			
Domain 2. Test Desig	Matria 2.	Study Controls	Uich	This matuic mat the suitaris for high confidence of supported for this type of study
	Metric 5.	Study Controls	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.

#### ... continued from previous page **Study Citation:** Johnson, B. T., Heitkamp, M. A., Jones, J. R. (1983). Environmental and chemical factors influencing the biodegradation of phthalic acid esters in freshwater sediments with attachments. **OECD Harmonized Biodegradation in Sediment** Template: **HERO ID:** 1325551 **EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability High This metric met the criteria for high confidence as expected for this type of study. Metric 6: **Testing Conditions** High This metric met the criteria for high confidence as expected for this type of study. Metric 7: Testing Consistency High Test conditions were consistent across samples or study groups. Metric 8: System Type and Design High This metric met the criteria for high confidence as expected for this type of study. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The inoculum source and characteristics were reported. Metric 10: Sampling Methods N/A The metric is not applicable to this study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology addressed and reported the intended outcome of interest. Test Substance Purity Metric 12: Medium Some sampling details were not reported but their omission was not likely to impact the study results. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables High No confounding variables between study groups were noted. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium Some data were not reported such as percent recovery, but the omissions were not likely to impact the study results. Metric 16: Statistical Methods and Medium Some calculation details were not reported but their omission was not likely to impact the study results. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of High The study results were reasonable. Results QSAR Models Metric 18: N/A The metric is not applicable to this study type. **Overall Quality Determination** High

Study Citation:   Johnson, B. T., Heitkamp, M. A., Jones, J. R. (1984). Environmental and chemical factors influencing the biodegradation of phthalic-ac freshwater sediments. Environmental Pollution Series B: Chemical and Physical 8(2):101-118.     OECD Harmonized   Biodegradation in Sediment						
Template:	Diodegradation	blodegradation in Sediment				
HERO ID:	679999					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Di-n-butyl phthalate				
Confidentiality, EndPoint, T	ſype,	None; other; Experimental; other: Biodegradation in Freshwater Sediments under static (aerobic) and flow through conditions (aerobic)				
Solvent, Reactivity, Storage	e, Stability	Acetone; NR; NR; NR				
Radiolabel, Source, State, P	Purity	carbonyl-[14C] labelled di-n-butyl phthalate; specific activity 1.53 mCi/mM; Mallinckrodt Co., St Louis, Missouri; NR; >99% by gas-liquid and thin-layer chromatography				
Oxygen and Inoculum		aerobic; natural water / sediment: freshwater: Sediment and water taken from Little Dixie Lake, located in an agricultural watershed east of Columbia. Missouri: sediments were pre-exposed for 28 days prior to incubation period of study				
Duration, Parameter, System Sampling Frequency	n, and	28 days; radiochem. meas.; Erlenmeyer flask (static) or reaction beaker (flow-through) sealed with rubber stopper; periodically				
Results Sample Time, Co Compartment, Water	ompartment, Sludge	days 3, 7, 21, and 28; labelled CO2 was trapped; total organic carbon 8.0±0.7%; Not reported; Not reported; sediment pH 7.6±0.2				
Control Dark, CeC, and pr	1 Blank	ves: Not reported: controls consisted of untreated sediments and solvent (acetone) treated sediments				
Concentration		0.082 - 82 ug/L				
Analytical Method, Analytic	ical Details, and Re-	liquid scintillation counter; Not reported; 6				
Results Remarks	neter	Primary biodegradation at 8.2 mg/L; 72.6+4.0%/14days, at 0.82 mg/L; 70.1+2.6%/14days, at 0.082 mg/L; 70.9+2.0%/14days				
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results		Not reported; $\pm$ SD; Not reported; Not reported				
Results Details		Not reported				
Mean Total Recovery Results and Results Per Re- covery Results Value, Direct Quantum Yield Results, and Transformation Products		Not reported; Note: methanogenesis in anaerobic sediments may result in losses of CO2, this was noted but not accounted for in the results; results given do don't appear to distinguish between the aerobic static and flow-though methods. Primary biodegradation (82 µg/L) under aerobic conditions: 84.6±2.1%/14days; Not Reported; Not reported				

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substand	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	Low	Study controls were not well defined. Abiotic controls were not included.	
	Metric 4:	Test Substance Stability	Medium	Limited detail regarding this metric.	
Continued on next page					

PUBLIC RELEASE DRAFT May 2025 Biodegradation in Sediment

HERO ID: 679999 Table: 1 of 2

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Biodegradation in Sedi

		contin	ued from pre	vious page				
Study Citation:	Johnson, B. T., H freshwater sedime	Johnson, B. T., Heitkamp, M. A., Jones, J. R. (1984). Environmental and chemical factors influencing the biodegradation of phthalic-acid esters in freshwater sediments. Environmental Pollution Series B: Chemical and Physical 8(2):101-118.						
OECD Harmonized	Biodegradation in	Biodegradation in Sediment						
Template:								
HERO ID:	679999							
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 2. Test Conditie								
Domain 5: Test Conditio	Metric 5:	Test Method Suitability	Medium	The test methods were suitspla				
	Metric 5:	Testing Conditions	High	The test methods were suitable.				
	Metric 7:	Testing Consistency	High	Testing conditions were reported.				
	Metric 8:	System Type and Design	High	The system type and design were appropriate				
	Metrie 6.	System Type and Design	Ingn	The system type and design were appropriate.				
Domain 4: Test Organis	ms							
	Metric 9:	Outcome Assessment Methodology	Low	Limited detail on microbial activity. Soil was pre-exposed to the test material.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	sessment	Track Carbonna - Idansi ta	TT: -1-					
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.				
	Metric 12:	Test Substance Purity	Low	Sampling methods were not reported.				
Domain 6: Confounding	v/Variable Control							
	Metric 13:	Confounding Variables	Low	Abiotic loss was not accounted for or discussed.				
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to this type of study.				
		Exposure						
Domain 7: Data Present	ation and Analysis							
Domain 7. Data Present	Metric 15:	Data Reporting	Low	Limited analytical details mass balance and recovery not reported; clear results based				
	Weute 15.	Data Reporting	Low	on flow-though and static conditions not apparent. Primary degradation was reported; ultimate degradation was not clear.				
	Metric 16:	Statistical Methods and	High	Statistical methods were appropriate.				
		Kinetic Calculations						
Domain 8: Other								
Domain 6. Other	Metric 17:	Verification or Plausibility of	Low	Limited data reporting and lack of appropriate controls are serious flaws.				
	N	Results						
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Qualif	ty Determin	ation	Low					
	y Determin	unon						

\* Related References: Cited in ECHA

Study Citation: OECD Harmonized	Johnson, B. T., Heitkamp, M. A., Jones, J. R. (1984). Environmental and chemical factors influencing the biodegradation of phthalic-acid esters in freshwater sediments. Environmental Pollution Series B: Chemical and Physical 8(2):101-118. Biodegradation in Sediment				
Template: HERO ID:	679999				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, T Guideline	ype,	None; ready biodegradability; Experimental; other: Biodegradation in freshwater sediment from Little Dixie Lake, Missouri.			
Solvent, Reactivity, Storage	, Stability	Acetone carrier solvent; NR; NR; NR			
Radiolabel, Source, State, P	urity	Carbonyl-14C (1.53 mCi mM-1); Mallinckrodt Co., St. Louis, Missouri; NR; >99% by gas-liquid and thin-layer chromatography			
Oxygen and Inoculum		aerobic; natural water / sediment: freshwater: Sediment and water were collected from Little Dixie Lake (Columbio, MO).			
Duration, Parameter, System	n, and	28 days; radiochem. meas.; 250mL flask with 100mL water and sediment (9:1 wt/wt).; Days 3, 7, 14, 21, 28			
Results Sample Time, Compartment, Sludge Compartment, Water		Not reported; Not reported; Not reported; Not reported; 7.6 $\pm$ 0.4			
Control Dark, Control, and	Blank	yes; Not reported; Not reported			
Concentration		82 µg/L			
Analytical Method, Analyt sults Per Degredation Paran	Iethod, Analytical Details, and Re- Static and flow-through respirometers were used with Liquid Scintillation counting; Beckman LS-230 LSC; 6 redation Parameter				
Results Remarks		After 7 days at 5, 12, 22, and 28°C, 16, 56, 73, and 86% biodegradation of DBP occurred.			
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results		Not reported; See Value field; Not reported; Not Reported			
Results Details		Not reported			
Mean Total Recovery Results and Results Per Re- covery		Not reported; Not reported			
Results Value, Direct Quantum Yield Results, and Transformation Products		14 days primary biodegradation % (Mean±SD): 84.6±2.1; Not Reported; Not reported			

			EVALUATIO	1
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.
	Metric 2:	Test Substance Purity	High	The test substance purity was reported and appropriate.
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Controls were not reported; however, the omissions are unlikely to have a substantial impact on the study results.
	Metric 4:	Test Substance Stability	Medium	Some details regarding the test substance storage conditions were not reported; however, the omissions are unlikely to have a substantial impact on the study results.

Domain 3: Test Conditions

# Biodegradation in Sediment

		contin	ued from prev	vious page				
Study Citation:	Johnson, B. T., I freshwater sedim	Johnson, B. T., Heitkamp, M. A., Jones, J. R. (1984). Environmental and chemical factors influencing the biodegradation of phthalic-acid esters in Freshwater sediments. Environmental Pollution Series B: Chemical and Physical 8(2):101-118.						
OECD Harmonized	Biodegradation in	Biodegradation in Sediment						
Template:								
HERO ID:	679999							
		1	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance and the test substance was tested below its aqueous solubility.				
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.				
	Metric 7:	Testing Consistency	High	There were no reported deviations in the testing conditions between the study groups.				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.				
Domain 4: Test Organis	sms							
C C	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was described and appropriate.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.				
Domain 5: Outcome As	ssessment Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate and addressed the intended				
				outcome of interest.				
	Metric 12:	Test Substance Purity	High	The sampling methods and frequency were appropriate.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	High	Uncertainty was reported and unlikely to impact the outcome assessment.				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.				
		Exposure						
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	High	The analytical method was suitable for the detection of the test substance.				
	Metric 16:	Statistical Methods and	Medium	A statistical analysis was not reported but the omission is unlikely to have a substantial				
		Kinetic Calculations		impact on the study results.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Perults	High	The study results are reasonable.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.				
Overall Quali	ty Determin	ation	High					

Study Citation:	Johnson, B. T., Lu	ohnson, B. T., Lulves, W. (1975). Biodegradation of di-n-butyl phthalate and di-2-ethylhexyl phthalate in freshwater hydrosoil. Journal of the Fisheries					
<b>OECD Harmonized</b>	Biodegradation in S	Sediment					
Template: HERO ID:	1333192						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Di-n-butyl phthalate					
Confidentiality, EndPoint, T	ype,	None; other; Experimental; other: Biodegradation of DBP by hydrosoil taken from pond.					
Solvent Reactivity Storage	Stability	Acetone: NR: NR: NR					
Radiolabel, Source, State, Pu	urity	14-C; Mallinckrodt Company supplied carbon labelled DBP. Standards were supplied by Monsanto Company.; NR; Radiolabeled DBP was >99%					
		according to autoradiography of TLC					
Oxygen and Inoculum		aerobic/anaerobic; natural sediment: freshwater: Hydrosoil was collected using a core sampler at a 1m pond depth. The sampler collected a 5cm deep sample.					
Duration, Parameter, System	n, and	30 days; CO2 evolution; Flask contained 10g wet weight sediment and 20mL pond water and were dosed with 100µL of acetone containing 14-C					
Sampling Frequency	mananta ant Cludes	DBP. Aerobic and anaerobic incubation was performed.; Days 1, 5, 7, 14, and 30 Not reported. So timent and need water in some compositional to Net reported. Not reported. Net reported					
Compartment, Water	Sindge	Not reported; Sediment and pond water in same compartment.; Not reported; Not reported; Not reported; Not reported					
Compartment, CEC, and pH	]						
Control Dark, Control, and H	Blank	no; 250mg/L sodium azide was added to some samples.; Acetone control and autoclaved (15lb pressure and 121°C for 20 min) samples.					
Concentration		1 mg/L					
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter		Thin layer chromatography - autoradiography; Ether extract spotted on 0.2mm precoated silica gel TLC plate (Brinkman, EM Reagents). Quan- tification was done by scraping silica gel into a scintillation vial and counting with a fluorescent indicator.; 7 Sterile (autoclaved and NaN3 dosed) controls had 100% recovery of DBP after 30 days					
Halflife Standard Deviation Results Reference		Not reported: Not reported: Not reported					
Substance Results, and Reference Substance							
Compartment Results							
Results Details Aerobic biodegradation occurred much faster that		Aerobic biodegradation occurred much faster than anaerobic.					
Mean Total Recovery Results	s and Results Per Re-	85±5%; Not reported					
covery							
Results Value, Direct Quan	ntum Yield Results,	% recovery of radioactivity from hydrosoil (vs. control) under aerobic conditions after 1, 5, 7, 14, and 30 days, respectively: 95, 3, 5, 8, 3.					
and transformation Products	S	Anaerobic (same days): 100, 69, 39, 39, 2.; Not Reported; n-butyl prinalate and prinalic acid were the only identifiable transformation products using TLC standards. 3 unidentifiable spots were also seen.					

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.		
	Metric 2:	Test Substance Purity	High	The test substance purity was >99%.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	Appropriate controls were used in the study.		
Continued on next page						

		continu	ed from pre	vious page				
Study Citation:	Johnson, B. T., I Research Board	Johnson, B. T., Lulves, W. (1975). Biodegradation of di-n-butyl phthalate and di-2-ethylhexyl phthalate in freshwater hydrosoil. Journal of the Fisheries Research Board of Canada 32(3):333-340.						
OECD Harmonized	Biodegradation in Sediment							
Template:								
HERO ID:	1333192							
		E	VALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported and appropriate.				
Domain 2: Tast Conditi	076							
Domain 5. Test Conditi	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance				
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate.				
	Metric 7:	Testing Consistency	High	The testing conditions across sample groups were consistent.				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.				
Domain 4: Test Organis	sms							
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and appropriate for the study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.				
Domain 5. Outcome As	accoment							
Domain 5: Outcome As	Metric 11:	Tast Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest				
	Metric 12:	Test Substance Purity	High	The compling methods and frequency were appropriate				
	Wiettie 12.	Test Substance I unity	Ingn	The sampling methods and nequency were appropriate.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	High	Uncertainty in the measurements was reported and reported values were adjusted appro- priately.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.				
Domain /: Data Present	tation and Analysis	Data Paparting	Uigh	Although an older analytical mothed was used the data remeting was arrest in the data				
	Metric 15:	Data Reporting	High	Although an older analytical method was used, the data reporting was appropriate and sufficient evidence was provided to confirm biodegradation was the process causing removal of the target substance.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The statistical methods were appropriate.				
Domain 8: Other								
Domain 0. Outor	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.				
		Results	U	•				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.				
<b>Overall Quali</b>	ty Determir	nation	High					

\* Related References: Cited in HSDB and ECHA

Study Citation:	Kao, P. H., Lee, F. Y., Hseu, Z. Y. (2005). Sorption and biodegradation of phthalic acid esters in freshwater sediments. Journal of Environmental Science					
	and Health, Part A: Toxic/Hazardous Substances & Environmental Engineering 40(1):103-115.					
OECD Harmonized	Biodegradation in Sediment					
Template:						
HERO ID:	681974					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, EndPoint, Typ Guideline	pe,	None; other; Experimental; other: Anerobic biodegradation in river sediment				
Solvent, Reactivity, Storage, S	Stability	NR; NR; NR				
Radiolabel, Source, State, Pur	rity	NR; Sigma Company; NR; 99%				
Oxygen and Inoculum		anaerobic; natural sediment: freshwater: 5 g of 0-15 cm surface sediment samples collected from Fong-Shan River in Taiwan				
Duration, Parameter, System,	and	30 d; test mat.; Centrifuge tube; Every 5 days				
Sampling Frequency						
Results Sample Time, Con	npartment, Sludge	1, 5, 10, 15, 20, 25, and 30 d; Solid phase; native freshwater sediment; distilled water; 15.3 cmol / kg; 7.8				
Compartment, water						
Control Dark, Control, and Bl	lank	Not Reported: Not reported: Included				
Concentration		Not Reported				
Analytical Method. Analytica	al Details, and Re-	Gas chromatography-mass spectroscopy: MDL 0.39 mg/kg: 7				
sults Per Degredation Parame	ter					
Results Remarks		24% / 30d in unsterilized sediment sample, 3% / 30 d in sterilized sediment, representing abiotic transformation				
Halflife, Standard Deviation Results, Reference		Not reported; Not reported; Not applicable; Not Reported				
Substance Results, and Reference Substance						
Compartment Results						
Results Details		Approximate values from figure: 1%/1d, 5%/5d, 10%/10d, 14%/15d, 18%/20d, 21%/25d, 24%/30d				
Mean Total Recovery Results	and Results Per Re-	9/.5±0.1%; NOT Reported				
Results Value, Direct Quant	tum Yield Results	24%: Not Reported: Not applicable				
and Transformation Products	tini field feedulo,					

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.		
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance was reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	A sterilized sediment sample was tested concurrently.		
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported.		
Domain 3: Test Conditions						

#### ... continued from previous page Kao, P. H., Lee, F. Y., Hseu, Z. Y. (2005). Sorption and biodegradation of phthalic acid esters in freshwater sediments. Journal of Environmental Science **Study Citation:** and Health, Part A: Toxic/Hazardous Substances & Environmental Engineering 40(1):103-115. **OECD Harmonized** Biodegradation in Sediment **Template:** 681974 **HERO ID: EVALUATION** Domain Metric Rating Comments Metric 5: Test Method Suitability High The test method was suitable for the test substance. Metric 6: Testing Conditions High Sediment characteristics were reported and biodegradation conditions were appropriate for the test method. Metric 7: Testing Consistency High Test conditions were consistent across study groups. Metric 8: System Type and Design Medium There were some omissions in system type and design; however, the omissions were not likely to have a substantial impact on study results. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The test inoculum source was reported and the inoculum is appropriate. Metric 10: Sampling Methods N/A The metric is not applicable to this study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology addressed or reported the intended outcome of interest. Metric 12: Test Substance Purity High The study used appropriate sample collection and analytical methods. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables High All reported variability or uncertainty was not likely to influence the outcome assessment. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting High Test material concentrations, extraction efficiency and detection limits were reported. Metric 16: Statistical Methods and High Statistical methods were appropriate for the datasets. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of High The study results were reasonable. Results Metric 18: OSAR Models N/A The metric is not applicable to this study type. **Overall Quality Determination** High

Study Citation: OECD Harmonized Template:	, S. V., Moore, M. M., Ikonomou, M. G., Gobas, F. A. P.,C (2012). Relationship between biodegradation and sorption of phthalate esters es in natural sediments. Environmental Toxicology and Chemistry 31(8):1730-1737. Sediment		
HERO ID:	1339546		
		EXTRACTION	
Parameter		Data	
CASDN and Test Material			
Confidentiality EndPoint T	vne	84-74-2, DI-II-Dutyl phillatate None: ready biodegradability: Experimental: other: Biodegradation of DnBP in marine sediment	
Guideline	<i>.............</i>		
Solvent, Reactivity, Storage	, Stability	Acetonitrile (Spectro grade distilled); NR; NR; NR	
Radiolabel, Source, State, P	Purity	NR; Sigma-Aldrich; NR; NR	
Oxygen and Inoculum		aerobic; natural water / sediment: treshwater: The top 0.5-1.0cm of sediment from False Creek (urban marine inlet) was collected and pooled. Overlying water was also collected	
Duration, Parameter, System, and Sampling Frequency Results Sample Time, Compartment, Sludge Compartment, Water		Incubation lasted 144 days for test samples and 96 days for controls.; test mat.; 125mL glass jars with foil lined lids. Headspace was exchanged twice per week by shaking contents at 120rpm for 5 minutes with an open lid.; Days 0, 0.5, 1, 2, 4, 8, 12, 24, 48, 96, and 144. Not reported; 30g spiked sediment and 10mL of water; Not reported; Not reported; Not reported; $8.0\pm0.1$	
Control Dark, Control, and Blank		yes; Sediment was autoclaved and spiked with 300μL of mercuric chloride. The same treatment was done for water samples.; Blanks were prepared in triplicate without sediment. 10 μg/g	
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter Results Remarks Halflife, Standard Deviation Results, Reference		Low resolution gas chromatography-mass spectrometry; Monoesters were analyzed using liquid chromatography electrospray-ionization mass spectrometry.; 7 Not Reported t(1/2), days: 46: 0.015; Not reported; Not reported	
Substance Results, and F Compartment Results Results Details	Reference Substance	Concentration decreased during first 21 days: no significant decline was observed afterward. Sterilized controls showed no microbial activity.	
Mean Total Recovery Result	ts and Results Per Re-	$86\pm8\%$ ; Not reported	
Results Value, Direct Quantum Yield Results, and Transformation Products		rate constant, k (day^-1): 0.015; Not Reported; Not reported	

EVALUATION							
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.			
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported but the omission is unlikely to have a substan- tial impact on the study results.			
Domain 2: Test Design							
	Metric 3:	Study Controls	High	Sterilized controls and method blanks were both used.			
Continued on next page							
PUBLIC RELEASE DRAFT May 2025 Biodegradation in Sediment

HERO ID: 1339546 Table: 1 of 1

		continu	ed from prev	vious page				
Study Citation:	Kickham, P., Otto and their metaboli	Kickham, P., Otton, S. V., Moore, M. M., Ikonomou, M. G., Gobas, F. A. P., C (2012). Relationship between biodegradation and sorption of phthalate esters and their metabolites in natural sediments. Environmental Toxicology and Chemistry 31(8):1730-1737.						
<b>OECD Harmonized</b>	Biodegradation in Sediment							
Template:								
HERO ID:	1339546							
		EVALUATION						
Domain		Metric	Rating	Comments				
	Metric 4:	Test Substance Stability	High	The test substance preparation, homogeneity, and storage conditions were reported and appropriate.				
Domain 3: Test Condition	ons							
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance and the target chemical was tested below its aqueous solubility.				
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.				
	Metric 7:	Testing Consistency	High	There were no reported differences between the replicates or study groups.				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.				
Domain 4: Test Organis	ms							
U	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was described and appropriate for the study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	The sampling methods were described and appropriate.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	High	Uncertainty was reported and does not influence the study results.				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.				
		Laposuit						
Domain 7: Data Present	ation and Analysis							
	Metric 15:	Data Reporting	High	The analytical method was appropriate and sensitive enough to monitor the target chem- ical concentration and the extraction efficiency was reported.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The kinetic calculations and statistical methods were appropriate.				
		Kinetie Calculations						
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The results are reasonable and consistent with those obtained for other similar chemicals				
		Results	27/4	in the study.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
<b>Overall Qualit</b>	ty Determin	ation	High					
	-		5					

Study Citation:	itation: Lertsirisopon, R., Soda, S., Sei, K., Ike, M., Fujita, M. (2006). Biodegradability of four phthalic acid esters under anaerobic condition assessent natural sediment. Journal of Environmental Sciences 18(4):793-796.					
OECD Harmonized	Biodegradation in Sediment					
HERO ID:	675274					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl Phthalate				
Confidentiality, EndPoint, T	ype,	None; other; Experimental; other: Non-guideline anaerobic biodegradation in natural sediment microcosms				
Solvent, Reactivity, Storage	, Stability	Acetone; NR; NR				
Radiolabel, Source, State, P	Purity	NR; Kishida Chemical, Osaka; NR; Analytical grade				
Oxygen and Inoculum		anaerobic; natural sediment: freshwater: Sediment: Piano Pond, 15.7°C, pH 6.47 solid content 106.6 g/L dw. Mineral salt medium: 356 mg K2HPO4, 272 mg KH2PO4, 530 mg NH4Cl, 10 mg MgCl2 6H20, 75 mg CaCl2, 20 mg FeCl2 4H20, 1.2 g NaHCO3, and 0.1mL of trace metal solution in 1 L DI water				
Duration, Parameter, System, and Sampling Frequency		Not reported; test mat.; 25mL glass bottle containing sediment, PAE solution and 20mL salt medium.; From figures: 14 samples taken over the course of 80-85 days. 3 taken during the first 10 days.				
Results Sample Time, Compartment, Sludge Compartment, Water		Not reported; One compartment; Not reported; Not reported; 7.2				
Control Dark, Control, and	Blank	yes; Not reported; Not reported				
Concentration		Not Reported				
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter		High Performance Liquid Chromatography; CCPE solvent delivery pump with PX-8010 solvent controller and UV-8010 spectrophotometric detector. TSK ODS 80-TM; 7				
Results Remarks		Not reported				
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results		1.6 days; Not reported; Not reported; Not reported				
Results Details		Half lives calculated using $t(1/2)=ln2/k$				
Mean Total Recovery Result covery	ts and Results Per Re-	Not reported; Not reported				
covery Results Value, Direct Quantum Yield Results, and Transformation Products		Not reported; Not Reported; Not reported				

			EVALUATION	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.		
	Metric 2:	Test Substance Purity	High	Analytical grade BBP was used in the study.		
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Control groups were not reported; however, their omission is not likely to have a sub- stantial impact on the study results.		
Continued on next page						

		contin	ued from prev	vious page				
Study Citation:	Lertsirisopon, R., natural sediment.	Lertsirisopon, R., Soda, S., Sei, K., Ike, M., Fujita, M. (2006). Biodegradability of four phthalic acid esters under anaerobic condition assessed using natural sediment. Journal of Environmental Sciences 18(4):793-796.						
OECD Harmonized	Biodegradation in Sediment							
Template:	(75074							
HERO ID:	6/52/4							
	EVALUATION							
Domain		Metric	Rating	Comments				
	Metric 4:	Test Substance Stability	High	The test substance storage conditions and preparation methods were reported and suit- able.				
Domain 3: Test Conditi	ons							
	Metric 5:	Test Method Suitability	High	The initial concentration of the test substance was not reported but was set below its solubility limit.				
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate for the study.				
	Metric 7:	Testing Consistency	High	There were no reported differences in conditions among the test groups.				
	Metric 8:	System Type and Design	High	Equilibrium was established and the system was capable of maintaining substance con- centration.				
Domain 4: Test Organis	sms							
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source and characteristics were reported.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	ssessment							
	Metric 11:	Test Substance Identity	Hıgh	The outcome assessment methodology addressed or reported the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	The exact sampling frequencies were not reported but could be estimated from a figure. The half-life was reported by the study.				
Domain 6: Confoundin	g/Variable Control							
Domain o. Comoundad	Metric 13	Confounding Variables	High	No confounding variables were present				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7: Data Presen	tation and Analysis							
	Metric 15:	Data Reporting	Low	The test substance concentrations and extraction recoveries were not reported which may have impacted the study results.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Kinetic calculations were reported and addressed the dataset.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.				
		Results						
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Quali	ty Determina	ation	High					

Study Citation: Lettsirisopon, R., Soda, S., Sei, K., Ike, M., Fujita, M. (2006). Biodegradability of four phthalic acid esters under anaerobic connatural sediment. Journal of Environmental Sciences 18(4):793-796.				
OECD Harmonized	Biodegradation in	Sediment		
HERO ID:	675274			
		EXTRACTION		
Parameter		Data		
CASRN and Test Material		84-74-2; Dibutyl Phthalate		
Confidentiality, EndPoint, Type,		None; other; Experimental; other: Non-guideline anaerobic biodegradation in natural sediment microcosms		
Solvent, Reactivity, Storage,	Stability	Acetone; NR; NR; NR		
Radiolabel, Source, State, Pu	ırity	NR; Kishida Chemical, Osaka; NR; Analytical grade		
Oxygen and Inoculum		anaerobic; natural sediment: freshwater: Sediment: Ue Pond, 16.3°C, pH 6.95 solid content 52.4 g/L dw. Mineral salt medium: 356 mg K2HPO4, 272 mg KH2PO4, 530 mg NH4Cl, 10 mg MgCl2 6H20, 75 mg CaCl2, 20 mg FeCl2 4H20, 1.2 g NaHCO3, and 0.1mL of trace metal solution in 1 L DI water.		
Duration, Parameter, System, and Sampling Frequency		Not reported; test mat.; 25mL glass bottle containing sediment, PAE solution and 20mL salt medium.; From figures: 14 samples taken over the course of 80-85 days. 3 taken during the first 10 days.		
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH		Not reported; One compartment; Not reported; Not reported; 7.2		
Control Dark, Control, and B	Blank	yes; Not reported; Not reported		
Concentration		Not Reported		
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter		High Performance Liquid Chromatography; CCPE solvent delivery pump with PX-8010 solvent controller and UV-8010 spectrophotometric detector. TSK ODS 80-TM; 7		
Results Remarks		Not reported		
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results		1.2 days; Not reported; Not reported; Not reported		
Results Details		Half lives calculated using $t(1/2)=ln2/k$		
Mean Total Recovery Results covery	and Results Per Re-	Not reported; Not reported		
Results Value, Direct Quan and Transformation Products	tum Yield Results,	Not reported; Not Reported; Not reported		

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substance	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.	
	Metric 2:	Test Substance Purity	High	Analytical grade BBP was used in the study.	
Domain 2: Test Design					
	Metric 3:	Study Controls	Medium	Control groups were not reported; however, their omission is not likely to have a sub- stantial impact on the study results.	
	Metric 4:	Test Substance Stability	High	The test substance storage conditions and preparation methods were reported and suit- able.	

Continued on next page ...

## ... continued from previous page **Study Citation:** Lertsirisopon, R., Soda, S., Sei, K., Ike, M., Fujita, M. (2006). Biodegradability of four phthalic acid esters under anaerobic condition assessed using natural sediment. Journal of Environmental Sciences 18(4):793-796. **OECD Harmonized Biodegradation in Sediment Template: HERO ID:** 675274 **EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability High The initial concentration of the test substance was not reported but was set below its solubility limit. Metric 6: **Testing Conditions** High Testing conditions were reported and appropriate for the study. Metric 7: Testing Consistency High There were no reported differences in conditions among the test groups. System Type and Design Metric 8: High Equilibrium was established and the system was capable of maintaining substance concentration. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The inoculum source and characteristics were reported. Metric 10: Sampling Methods N/A The metric is not applicable to this study type. Domain 5: Outcome Assessment Test Substance Identity Metric 11: High The outcome assessment methodology addressed or reported the intended outcome of interest. Metric 12: Test Substance Purity High The exact sampling frequencies were not reported but could be estimated from a figure. The half-life was reported by the study. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables High No confounding variables were present. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Low The test substance concentrations and extraction recoveries were not reported which may have impacted the study results. Metric 16: Statistical Methods and High Kinetic calculations were reported and addressed the dataset. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of High The study results were reasonable. Results Metric 18: OSAR Models N/A The metric is not applicable to this study type. **Overall Quality Determination** High

Study Citation:	Lertsirisopon, R.,	Soda, S., Sei, K., Ike, M., Fujita, M. (2006). Biodegradability of four phthalic acid esters under anaerobic condition assessed using					
	natural sediment. J	natural sediment. Journal of Environmental Sciences 18(4):793-796.					
OECD Harmonized	Biodegradation in Sediment						
Template:	(25224						
HERO ID:	675274						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl Phthalate					
Confidentiality, EndPoint, 7	Гуре,	None; other; Experimental; other: Non-guideline anaerobic biodegradation in natural sediment microcosms					
Solvent Reactivity Storage	e. Stability	Acetone: NR· NR· NR					
Radiolabel, Source, State, F	Purity	NR: Kishida Chemical Osaka: NR: Analytical grade					
Oxygen and Inoculum		anaerobic: natural sediment: freshwater: Sediment: Zuion Pond. 15.2°C. pH 6.61 solid content 82.2 g/L dw. Mineral salt medium: 356 mg					
<i>,,,,,,,,,,,,,</i>		K2HPO4, 272 mg KH2PO4, 530 mg NH4Cl, 10 mg MgCl2 6H20, 75 mg CaCl2, 20 mg FeCl2 4H20, 1.2 g NaHCO3, and 0.1mL of trace metal					
		solution in 1 L DI water.					
Duration, Parameter, Syster	m, and	Not reported; test mat.; 25mL glass bottle containing sediment, PAE solution and 20mL salt medium.; From figures: 14 samples taken over the					
Sampling Frequency	omnortmont Sludgo	course of 80-85 days. 3 taken during the first 10 days.					
Compartment Water	ompartment, Studge	Not reported, One compartment, Not reported, Not reported, 7.2					
Compartment, CEC, and pl	Н						
Control Dark, Control, and	Blank	yes; Not reported; Not reported					
Concentration		Not Reported					
Analytical Method, Analyt	tical Details, and Re-	High Performance Liquid Chromatography; CCPE solvent delivery pump with PX-8010 solvent controller and UV-8010 spectrophotometric					
sults Per Degredation Parar	neter	detector. TSK ODS 80-TM; 7					
Results Remarks		Not reported					
Halflife, Standard Deviation Results, Reference		1.5 days; Not reported; Not reported; Not reported					
Substance Results, and I	Reference Substance						
Compartment Results		Half lives calculated using $t(1/2) = \ln 2/k$					
Mean Total Recovery Resul	ts and Results Per Re-	Not reported. Not reported					
covery	as and results i of Re-						
Results Value, Direct Qua	antum Yield Results,	Not reported; Not Reported; Not reported					
and Transformation Produc	ts						

			EVALUATION	N
Domain		Metric	Rating	Comments
Domain 1: Test Substance	e			
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.
	Metric 2:	Test Substance Purity	High	Analytical grade BBP was used in the study.
Domain 2: Test Design	Metric 3.	Study Controls	Medium	Control groups were not reported however, their omission is not likely to have a sub-
	medie 5.	Study Controls	mourum	stantial impact on the study results.
	Metric 4:	Test Substance Stability	High	The test substance storage conditions and preparation methods were reported and suit- able.

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## ... continued from previous page **Study Citation:** Lertsirisopon, R., Soda, S., Sei, K., Ike, M., Fujita, M. (2006). Biodegradability of four phthalic acid esters under anaerobic condition assessed using natural sediment. Journal of Environmental Sciences 18(4):793-796. **OECD Harmonized Biodegradation in Sediment Template: HERO ID:** 675274 **EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability High The initial concentration of the test substance was not reported but was set below its solubility limit. Metric 6: **Testing Conditions** High Testing conditions were reported and appropriate for the study. High Metric 7: Testing Consistency There were no reported differences in conditions among the test groups. System Type and Design Metric 8: High Equilibrium was established and the system was capable of maintaining substance concentration. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The inoculum source and characteristics were reported. Metric 10: Sampling Methods N/A The metric is not applicable to this study type. Domain 5: Outcome Assessment Test Substance Identity Metric 11: High The outcome assessment methodology addressed or reported the intended outcome of interest. Metric 12: Test Substance Purity High The exact sampling frequencies were not reported but could be estimated from a figure. The half-life was reported by the study. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables High No confounding variables were present. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Low The test substance concentrations and extraction recoveries were not reported which may have impacted the study results. Metric 16: Statistical Methods and High Kinetic calculations were reported and addressed the dataset. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of High The study results were reasonable. Results Metric 18: OSAR Models N/A The metric is not applicable to this study type. **Overall Quality Determination** High

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Study Citation: Li, Y., Gao, J., Meng, F., Chi, J. (2015). Enhanced biodegradation of phthalate acid esters in marine sediments by benthic diatom Cylindrothece					
OFCD Harmonized Bi	cience of the Total Environment 508:251-257.				
Template.		Seament			
HERO ID: 28	804033				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2: Dibutyl phthalate			
Confidentiality, EndPoint, Type, Guideline	,	None; other; Experimental; other: Biodegradation study in ocean sediment			
Solvent, Reactivity, Storage, Stal	bility	acetone; NR; NR			
Radiolabel, Source, State, Purity	4	NR; Sigma-Aldrich; NR; 99%			
Oxygen and Inoculum		aerobic/anaerobic; natural sediment: marine: Sediments from intertidal flats of Bohai Bay, Tianjin and artificial seawater			
Duration, Parameter, System, an Sampling Frequency	nd	8 days; test mat.; glass beakers were placed in an intelligent illumination incubator under a 16:8 light:dark cycle; Periodically; 1, 2, 4, 6, and 8 day sampling			
Results Sample Time, Compartment, Sludge Compartment, Water		Triplicate beakers were collected as samples on day 1, 2, 4, 6, and 8; sediment bottom and sediment surface; Surface and bottom sediment ratios of aerobic to anaerobic bacteria throughout the study ranged from 1.09-3.65; ratio of fungal to bacteria ranged from 0.021-0.041; Artificial seawater; Not reported: 7.9			
Control Dark, Control, and Blan Concentration	ık	no; Not reported; sterilized controls included; elimination rate constants were much smaller than those in unsterilized tests $6.25\pm0.38$ ug/L			
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter		Agilent 6890N gas chromatograph with fused-silica capillary column with flame ionization detector; Described in supplementary material (not publicly available); 7			
Results Remarks		Elimination in sediments was mainly by microbial degradation.			
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results		Half-life=2.7 days (sediment bottom) and 3.6 days (sediment surface)(based on half life=ln(2)/k); R squared=0.9309 (surface) 0.7363 (bottom); Not reported; Not reported			
Results Details		Elimination rate constant=0.256 (sediment surface) and 0.194 (sediment bottom)			
Mean Total Recovery Results and covery	d Results Per Re-	Not reported; Not reported			
Results Value, Direct Quantum Yield Results, and Transformation Products		Not reported; Not Reported; Not reported			

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Substand	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.
	Metric 2:	Test Substance Purity	High	The test substance purity and source were reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.

Domain 3: Test Conditions

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Study Citation: OECD Harmonized Template: HERO ID: Domain	Li, Y., Gao, J., Mer Science of the Tota Biodegradation in 2804033 Metric 5: Metric 5: Metric 6: Metric 7: Metric 8:	ng, F., Chi, J. (2015). Enhanced biodegrad al Environment 508:251-257. Sediment <u>Metric</u> Test Method Suitability Testing Conditions Testing Consistency System Type and Design	lation of phtha EVALUATIO Rating High High High High High	Alate acid esters in marine sediments by benthic diatom Cylindrotheca closterium.  N Comments This metric met the criteria for high confidence as expected for this type of study. This metric met the criteria for high confidence as expected for this type of study. Test conditions were consistent across samples or study groups. This metric met the criteria for high confidence as expected for this type of study.
OECD Harmonized Template: HERO ID: Domain	Science of the Tota Biodegradation in 2804033 Metric 5: Metric 5: Metric 6: Metric 7: Metric 8:	al Environment 508:251-257. Sediment <u>Metric</u> Test Method Suitability Testing Conditions Testing Consistency System Type and Design	EVALUATIO Rating High High High High High	N Comments This metric met the criteria for high confidence as expected for this type of study. This metric met the criteria for high confidence as expected for this type of study. Test conditions were consistent across samples or study groups. This metric met the criteria for high confidence as expected for this type of study.
HERO ID:	2804033 Metric 5: Metric 6: Metric 7: Metric 8:	E Metric Test Method Suitability Testing Conditions Testing Consistency System Type and Design	EVALUATIO Rating High High High High High	N Comments This metric met the criteria for high confidence as expected for this type of study. This metric met the criteria for high confidence as expected for this type of study. Test conditions were consistent across samples or study groups. This metric met the criteria for high confidence as expected for this type of study.
Domain	Metric 5: Metric 6: Metric 7: Metric 8:	E Metric Test Method Suitability Testing Conditions Testing Consistency System Type and Design	EVALUATIO Rating High High High High	N Comments This metric met the criteria for high confidence as expected for this type of study. This metric met the criteria for high confidence as expected for this type of study. Test conditions were consistent across samples or study groups. This metric met the criteria for high confidence as expected for this type of study.
Domain	Metric 5: Metric 6: Metric 7: Metric 8:	Metric Test Method Suitability Testing Conditions Testing Consistency System Type and Design	Rating High High High High	Comments This metric met the criteria for high confidence as expected for this type of study. This metric met the criteria for high confidence as expected for this type of study. Test conditions were consistent across samples or study groups. This metric met the criteria for high confidence as expected for this type of study.
	Metric 5: Metric 6: Metric 7: Metric 8:	Test Method Suitability Testing Conditions Testing Consistency System Type and Design	High High High High	This metric met the criteria for high confidence as expected for this type of study. This metric met the criteria for high confidence as expected for this type of study. Test conditions were consistent across samples or study groups. This metric met the criteria for high confidence as expected for this type of study.
	Metric 6: Metric 7: Metric 8:	Testing Conditions Testing Consistency System Type and Design	High High High	This metric met the criteria for high confidence as expected for this type of study. Test conditions were consistent across samples or study groups. This metric met the criteria for high confidence as expected for this type of study.
	Metric 7: Metric 8:	Testing Consistency System Type and Design	High High	Test conditions were consistent across samples or study groups. This metric met the criteria for high confidence as expected for this type of study.
	Metric 8: <sup>15</sup> Metric 9:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.
	ns Metric 9:			
Domain 4: Test Organism	Metric 9:			
Domain I. Test organish		Outcome Assessment Methodology	High	The inoculum source and characteristics were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Asso	essment			
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed and reported the intended outcome of interest.
	Metric 12:	Test Substance Purity	Medium	Some sampling details were not reported but their omission was not likely to impact the study results.
Domain 6: Confounding/	Variable Control			
	Metric 13:	Confounding Variables	High	No confounding variables between study groups were noted.
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.
		Exposure		
Domain 7: Data Presenta	tion and Analysis			
	Metric 15:	Data Reporting	Medium	Some data were not reported, such as percent recovery, but the omissions were not likely to impact the study results.
	Metric 16:	Statistical Methods and	Medium	Some calculation details were not reported but their omission was not likely to impact
		Kinetic Calculations		the study results.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quality</b>	y Determina	ation	High	

Study Citation:	Michigan State Ur	hiversity, (1981). Final report to battelle columbus laboratories and EPA-OTS, subcontract no. T-6419 (7197)-033, 100179 - 093081.			
•	Development of te	st for determining anaerobic biodegradation potential.			
OECD Harmonized	Biodegradation in	Sediment			
Template:	121(222				
HERO ID:	1310233				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material	_	84-74-2; Dibutyl phthalate			
Confidentiality, EndPoint, '	Type,	None; ready biodegradability; Experimental; other: Biodegradation of phthalic acid in anaerobic sludge from two STPs.			
Solvent, Reactivity, Storage	e, Stability	Acetone; NR; NR; NR			
Radiolabel, Source, State, I	Purity	NR; NR; NR			
Oxygen and Inoculum		anaerobic; activated sludge, adapted: Secondary anaerobic sewage sludge from two plants with significant industrial input.			
Duration, Parameter, Syster	m, and	4 weeks for 10% sludge experiments; 9 weeks for whole sludge.; CH4 evolution; Digester bottles with 10% sludge were incubated for 4 weeks			
Sampling Frequency		with 20 ppm of the test substance. Whole sludge experiments had incubations of 9-10 weeks.; Not reported			
Results Sample Time, C	Compartment, Sludge	Not reported; Not reported; Not reported; Not reported; 7			
Compartment, Water	Н				
Control Dark, Control, and	Blank	Not Reported; Controls were used.; Not reported			
Concentration		20 ppm			
Analytical Method, Analyt	tical Details, and Re-	GC-FID with 2m Tenax-SC column.; Biodegradation was measured as CH4 evolution in 10% sludge and parent compound disappearance in whole			
sults Per Degredation Parar	meter	sludge. LOD was 0.5 ppm.; 1			
Results Remarks		DBP disappeared after 3 weeks in Jackson sludge and only 20% remained after 4 weeks in Adrian sludge.			
Halflife, Standard Deviation Results, Reference		Not reported; Not reported; Not reported; Not reported			
Compartment Results	Reference Substance				
Results Details		Total DBP degradation measured by substrate disappearance in whole sludge was 90 and 100% in Adrian and Jackson sludges, respectively.			
Mean Total Recovery Resul	lts and Results Per Re-	Adrian sludge: 102%; Jackson sludge: 97%; Not reported			
covery					
Results Value, Direct Qua and Transformation Produc	antum Yield Results,	% Degradation after 4 weeks in Adrian sludge: 32; Jackson sludge: 85.; Not Reported; Not Reported			

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.	
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported but the omission is unlikely to have a substan- tial impact on the study results.	
Domain 2: Test Design					
	Metric 3:	Study Controls	High	Appropriate blanks were used to measure background levels and correct concentration measurements.	
Continued on next page					

		contin	ued from pre	vious page				
Study Citation:	Michigan State U Development of t	Michigan State University, (1981). Final report to battelle columbus laboratories and EPA-OTS, subcontract no. T-6419 (7197)-033, 100179 - 093081. Development of test for determining anaerobic biodegradation potential.						
OECD Harmonized	Biodegradation in Sediment							
Template:								
HERO ID:	1316233							
		J	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 4:	Test Substance Stability	Medium	Some details regarding the test substance preparation were not reported but the omis- sions are unlikely to have an impact on the study results.				
Domain 3: Test Condit	tions							
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.				
	Metric 7:	Testing Consistency	High	There were no reported changes to the testing conditions across the sample groups.				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.				
Domain 4: Test Organi	isms							
Domain 1. Test organ	Metric 9.	Outcome Assessment Methodology	High	The inoculum type was described and appropriate				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome A	ssessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.				
	Metric 12:	Test Substance Purity	Medium	Some of the sampling details were not reported but the omissions are unlikely to have a substantial impact on the study results.				
Domain 6: Confoundir	ng/Variable Control							
	Metric 13:	Confounding Variables	N/A	Uncertainty was not reported in the results but the omission is unlikely to have a sub- stantial impact on the study results.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.				
Domain 7: Data Preser	ntation and Analysis							
	Metric 15:	Data Reporting	Medium	Target chemical concentrations and extraction efficiencies were not reported but the omissions are unlikely to have a substantial impact on the study results.				
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis was not reported and data is not available to perform an independent analysis.				
Domain & Other								
Domain 8: Other	Metric 17:	Verification or Plausibility of	High	The study results are plausible				
	wiente 17.	Results	Ingil	The study results are plausione.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
<b>Overall Qual</b>	ity Determin	nation	High					

\* Related References: The data corresponding to this entry is also reported under HERO ID 6320824.

Study Citation: OECD Harmonized Template:	O'Connor, O. A., I Toxicology and Ch Biodegradation in	'Connor, O. A., Rivera, M. D., Young, L. Y. (1989). Toxicity and biodegradation of phthalic acid esters under methanogenic conditions. Environmental oxicology and Chemistry 8(7):569-576. iodegradation in Sediment			
HERO ID:	1316118				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; DBP			
Confidentiality, EndPoint, T Guideline	ſype,	None; inherent biodegradability; Experimental; other: Biochemical methane potential assessed by a modified Hungate technique			
Solvent, Reactivity, Storage	, Stability	NR; NR; NR			
Radiolabel, Source, State, F	Purity	NR; Fluka; NR; >99%			
Oxygen and Inoculum		anaerobic; activated sludge, domestic (adaptation not specified): Secondary sludge from Suffern Municipal Wastewater Treatment Facility and			
Duration, Parameter, Syster	n, and	140 d; test mat.; 160 mL serum bottles with butyl rubber stopper and aluminum crimp; Not reported			
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH		60 d; Not Reported; Secondary sludge; Mineral medium in deionized water; Not applicable; Not reported			
Control Dark, Control, and	Blank	yes; Toxicity test conducted; Yes			
Concentration		20 - 200 mg/L			
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter Results Remarks		Fischer-Hamilton Model 1200 gas partitioner with thermal conductivity detector; Shimadzu 2400 UV-Vis spectrophotometer; 0.35 mL volume of gas head space collected with 1.0 or 0.5 mL gas-tight syringe; UV absorbance scans 190 - 360 nm; 9 Percent total gas evolution of 20, 100, and 200 mg/L test substance, based on conversion stoichiometry: C16H22O4 + 8.5 H2O -> 6.25 CO2 +			
Halflife, Standard Deviatio Substance Results, and I Compartment Results	n Results, Reference Reference Substance	9.75 CH4 Not reported; Not reported; Sterile control; 0%0.00±0.00 methane mmol; 0.00±0.00 total gas mmol; 1.15 residual substrate mmol (initial: 200 mg/L)			
Results Details		Total gas: $0.27\pm0.10$ , $0.68\pm0.07$ , and $0.99\pm0.05$ mmolTheoretical gas: $0.115$ , $0.576$ , and $1.152$ mmolMethane yield: $0.09\pm0.001$ , $0.35\pm0.004$ , and $0.60\pm0.04$ mmolTheoretical methane yield: $0.070$ , $0.351$ , and $0.702$ mmolResidual substrate: $0$ , $0$ , and $0$ mmol			
Mean Total Recovery Result covery	ts and Results Per Re-	Not reported; Not reported			
Results Value, Direct Qua and Transformation Produc	ntum Yield Results, ts	100, 100, and 86%; Not Reported; Not reported			

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substand	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.		
Domain 2: Test Design	Domain 2: Test Design					
	Metric 3:	Study Controls	High	A blank group was included and tested valid.		
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported and appropriate.		
Continued on next page						

	continued from previous page							
Study Citation:	O'Connor, O. A., Toxicology and Cl	Rivera, M. D., Young, L. Y. (1989). Tox hemistry 8(7):569-576.	icity and biode	gradation of phthalic acid esters under methanogenic conditions. Environmental				
OECD Harmonized	Biodegradation in	Biodegradation in Sediment						
Template:								
HERO ID:	1316118							
		]	EVALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 3: Test Condition	ons							
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	High	Anaerobic conditions identified, conditions were appropriate.				
	Metric 7:	Testing Consistency	High	Test conditions were consistent across study groups and samples.				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.				
Domain 4: Test Organis	ms							
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and is used for similar study types.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	Medium	Sampling times were not clearly reported and biodegradation rate could not be deter- mined.				
	Metric 12:	Test Substance Purity	High	The sampling methods were reported and appropriate.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	High	Variability was accounted for in statistical analysis.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7: Data Present	ation and Analysis							
	Metric 15:	Data Reporting	High	Analytical methods were suitable, sufficient evidence was presented to confirm the parent was disappearing via degradation.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were appropriate.				
Domain 8: Other	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.				
<b>Overall Quali</b>	ty Determina	ation	High					

Study Citation: OECD Harmonized	Painter, S. E., Jone Biodegradation in S	s, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015. Sediment			
HERO ID:	5492430				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Dibutyl phthalate			
Confidentiality, EndPoint, Ty	pe,	None; other; Experimental; other: Anaerobic biotransformation in freshwater lake sediment			
Guideline Solvent, Reactivity, Storage, 5	Stability	NR: NR: NR			
Radiolabel, Source, State, Pu	rity	NR; Chem Services (West Chester, PA); NR; 98-99%			
Oxygen and Inoculum	,	anaerobic; sewage, predominantly domestic, non-adapted: Freshwater lake sediment (top 5 cm) from Swift Creek, Lake Blackshear			
Duration, Parameter, System, and Sampling Frequency Results Sample Time, Compartment, Sludge Compartment. Water		61 d; test mat.; 200 mL sterile medium was added to an anaerobic chamber with inoculum (10% w/v or v/v). 5mL aliquots were added to centrifuge tubes and aliquots of PAE solution were added.; at day: 0, 15, 35, 61, 365 35 d; Not reported; Not reported; Not reported; Not reported; 7			
Compartment, CEC, and pH					
Control Dark, Control, and B	lank	Not Reported; Toxicity experiments using pure culture P. aeruginosa, B. subtilis, and E. coli suggests PAEs did not significantly affect growth or activity at concentrations used in this study.; Sterile inoculated control: 4% degraded by day 61			
Concentration		20 - 200 μmol/L			
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter Results Remarks		PAE's were spiked and 3x extracted with HPLC grade hexane (performed in triplicate). Partitioning to sediments were examined by centrifugation and separate hexane extraction. Extracts examined by GC (Hewlett Packard 5890A) with flame ionization detector.; Not reported; 7 DBP degraded rapidly in freshwater sediment. Additional experiments indicated that adsorption of PAE's to sediment was rapid: >50% in initial samples and 77% of DBP was associated with the sediment phase.			
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results		Not reported; Not reported; Not reported; 96% remaining after 61d. Sterile control			
Results Details		75% of DBP disappeared after 15 days.			
Mean Total Recovery Results covery	and Results Per Re-	Extraction efficiency for DBP (20-200 $\mu$ M) ranged from 83 ±8% to 91 ±2.5%.; Not reported			
Results Value, Direct Quantum Yield Results, and Transformation Products		0% (100% bioconversion); % remaining test material (DBP) after /n days (n total 365); Not Reported; Not reported			
		EVALUATION			

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	Domain 1: Test Substance					
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.		
	Metric 2:	Test Substance Purity	High	The test substance purity was reported and appropriate.		
Domain 2: Test Design						
	Metric 3:	Study Controls	Low	The study used appropriate controls.		
	Metric 4:	Test Substance Stability	Medium	The test substance storage conditions and preparation were reported and appropriate.		

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		continu	ed from previous	page			
Study Citation: OECD Harmonized	Painter, S. E., Jon Biodegradation in	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015. Biodegradation in Sediment					
Template:							
HERO ID:	5492430						
		E	VALUATION				
Domain		Metric	Rating	Comments			
Domain 3: Test Conditi	ons						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	Medium	Testing conditions were reported and appropriate.			
	Metric 7:	Testing Consistency	Medium	The testing conditions were consistent across the study groups.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.			
Domain 4: Test Organis	sms		<b>TT</b> 1				
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source and type were reported.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	Low	The outcome assessment methodology addressed the intended outcome of interest			
	Metric 12:	Test Substance Purity	Medium	The sampling methods were reported and appropriate.			
		5					
Domain 6: Confounding	g/Variable Control						
·	Metric 13:	Confounding Variables	Medium	Uncertainty was not reported for all of the concentration measurements but was for the extraction efficiencies.			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.			
		Exposure					
Domain 7: Data Present	tation and Analysis						
Domain 7. Data Present	Metric 15:	Data Reporting	Low	The data reporting was appropriate			
	Metric 16:	Statistical Methods and	Medium	Statistical analysis was not reported but the data is available for an independent analysis			
	Wetter 10.	Kinetic Calculations	Wiedium	Statistical analysis was not reported but the data is available for an independent analysis.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.			
	Metric 18.	Results OSAR Models	N/A	The metric is not applicable to the study type			
	wiente 10.	Zour models	11/74				
<b>Overall Quali</b>	ty Determin	ation	Medium				

\* Related References: Cited in HSDB

Study Citation: OECD Harmonized Template:	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015. Biodegradation in Sediment				
HERO ID:	5492430				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material	_	84-74-2; Dibutyl phthalate			
Confidentiality, EndPoint, T	lype,	None; other; Experimental; other: Anaerobic biotransformation in salt marsh sediment			
Solvent, Reactivity, Storage	, Stability	NR; NR; NR			
Radiolabel, Source, State, F	Purity	NR; Chem Services (West Chester, PA); NR; 98-99%			
Oxygen and Inoculum		anaerobic; natural water: brackish: Salt marsh sediment (upper 5-10 cm) from the intermediate to short Spartina alterniflora zone of Airport marsh on Sapelo Island, GA. The salinity of the marsh was approx. 20 ppt.			
Duration, Parameter, System, and Sampling Frequency		36 d; test mat.; 200mL sterile medium was added to an anaerobic chamber with inoculum (10% w/v or v/v). 5mL aliquots were added to centrifuge tubes and aliquots of PAE solution were added.; at day: 0, 15, 36			
Results Sample Time, C	ompartment, Sludge	36 d; Not reported; Not reported; Not reported; 7.0			
Compartment, Water	_				
Compartment, CEC, and pl	l Dlault	Nat Departed, Taviaity averaginante using such autum D companyas, D autilia and E cali suggests DAEs did not significantly offect enough as			
Control Dark, Control, and	Blank	activity at concentrations used in this study.; Sterile inoculated control (results not reported)			
Concentration		100 µmol/L			
Analytical Method, Analyt sults Per Degredation Paran Results Remarks	ical Details, and Re- neter	PAE's were spiked and 3x extracted with HPLC grade hexane (performed in triplicate). Partitioning to sediments were examined by centrifugation and separate hexane extraction. Extracts examined by GC (Hewlett Packard 5890A) with flame ionization detector.; Not reported; 7 DBP degraded rapidly in salt marsh sediment. Additional experiments indicated that adsorption of PAE's to sediment was rapid: >50% in initial samples and 71% of DBP was associated with the sediment phase.			
Halflife, Standard Deviatio Substance Results, and I Compartment Results	n Results, Reference Reference Substance	Not reported; Not reported; Not reported			
Results Details		100% of DBP disappeared after 22 days.			
Mean Total Recovery Result covery	ts and Results Per Re-	Extraction efficiency for DBP (100 $\mu$ M): 74 $\pm$ 9%.; Not reported			
Results Value, Direct Qua and Transformation Produc	intum Yield Results, ts	0% (100% bioconversion); % remaining test material (DBP) after /n days (n total 365); Not Reported; Not reported			

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ice			
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.
	Metric 2:	Test Substance Purity	High	The test substance purity was reported and appropriate.
Domain 2: Test Design	Metric 3: Metric 4:	Study Controls Test Substance Stability	Low Medium	The study used appropriate controls. The test substance storage conditions and preparation were reported and appropriate.
Domain 3: Test Conditi	ons Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
Continued on next page				

		continu	ed from previou	s page			
Study Citation: OECD Harmonized	Painter, S. E., Jor Biodegradation in	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015. Biodegradation in Sediment					
HERO ID:	5492430						
		Ŧ	VALUATION				
Domain		Metric	Rating	Comments			
	Metric 6:	Testing Conditions	Medium	Testing conditions were reported and appropriate.			
	Metric 7:	Testing Consistency	Medium	The testing conditions were consistent across the study groups.			
	Metric 8:	System Type and Design	High	The metric is not applicable to the study type.			
Domain 4: Test Organis	sms						
2 official of 1000 of game	Metric 9:	Outcome Assessment Methodology	High	The inoculum source and type were reported.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.			
Domain 5: Outcome As	Metric 11:	Test Substance Identity	Low	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	Medium	The sampling methods were reported and appropriate.			
Domain 6: Confounding	g/Variable Control						
·	Metric 13:	Confounding Variables	Medium	Uncertainty was not reported for all of the concentration measurements but was for the extraction efficiencies.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.			
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	Low	The data reporting was appropriate.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical analysis was not reported but the data is available for an independent analysis.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.			
<b>Overall Quali</b>	ty Determin	ation	Medium				

Study Citation:	Parker, W. J., Mont	Parker, W. J., Monteith, H. D., Melcer, H. (1994). Estimation of anaerobic biodegradation rates for toxic organic compounds in municipal sludge digestion.				
OECD Harmonized	Biodegradation in	Water Research 28(8):1779-1789. Biodegradation in Sediment				
Template:	1216112					
	1310112					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Di-n-butyl phthalate				
Confidentiality, EndPoint, T	Гуре,	None; other; Experimental; other: Removal efficiency in pilot scale anaerobic digester				
Guideline	Stability	Mathanal, ND, ND				
Radiolabel Source State F	, Stability	Naturalioi, NR, NR, NR				
Oxygen and Inoculum	unty	anaerohic: activated sludge domestic (adaptation not specified): Primary sludge and waste activated sludge in a 2.1 ratio				
Duration. Parameter. Syster	n. and	197 d pre-operation, 80 d dosing with test substance, 21 monitoring; test mat.; two stage pilot digester; every 2 wk (first 60 d of operation), every				
Sampling Frequency	,	3-4d (next 20 d of operation), every 7 d (final 21 d of operation)				
Results Sample Time, C	ompartment, Sludge	Not reported; Sludge and water; Non-dosed and dosed influent sludge; Influent, effluent; Not reported; 6.8 (6.7 - 7.1)				
Compartment, Water	T					
Control Dark Control and	n Blank	Not Reported: Not reported				
Concentration	Diunk	13500 mg/L				
Analytical Method, Analyt	ical Details, and Re-	GC/MS in selective ion mode; Sludge measurements extracted with DCM; 7				
sults Per Degredation Paran	neter					
Results Remarks		Overall removal efficiency. Primary digester removal 93.3% Secondary digester removal 81.9% Secondary supernatant residual 0.9% Secondary				
Halflife Standard Deviatio	n Deculto Deference	sludge residual 0.3%Kp: 14.5Kp calculated by log (100*Kp)=1.14 + 0.58*log Kow				
Substance Results, and I	Reference Substance	Not reported, Not reported, Not reported				
Compartment Results						
Results Details		Biodegradation rate coefficient (mixed second order in biomass and soluble contamination concentration): 7.23 L/g day (95% confidence interval 5.66 - 8.80 L/g day)				
Mean Total Recovery Resul	ts and Results Per Re-	Not reported; Not reported				
covery	ntum Viald Dag-14-	09.90% Not Demosted Not somewheat				
and Transformation Produc	ts	98.8%; Not Reported; Not reported				

			EVALUATION	N
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	Medium	The source and purity of the test substance were not reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Blank or toxicity controls were not explicitly included.
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported and appropriate for the study.
			Continued on next p	age

		contin	ued from pre	vious page
Study Citation:	Parker, W. J., Mon Water Research 28	nteith, H. D., Melcer, H. (1994). Estimatio 8(8):1779-1789.	on of anaerobic	biodegradation rates for toxic organic compounds in municipal sludge digestion.
OECD Harmonized	Biodegradation in	Sediment		
Template:				
HERO ID:	1316112			
		1	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 3: Test Condition	ons			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Most of the relevant testing conditions were reported (anaerobic conditions, pH, temper- ature).
	Metric 7:	Testing Consistency	High	Test conditions were consistent across study groups.
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.
Domain 4: Test Organis	ms			
	Metric 9:	Outcome Assessment Methodology	High	Inoculum source was reported and is routinely used for similar study types.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	sessment		TT: 1	
	Metric 11:	lest Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and addressed the outcomes of interest.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	High	Variability was accounted for by appropriate statistical techniques.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Present	ation and Analysis			
	Metric 15:	Data Reporting	Medium	Extraction efficiency and recovery was discussed but specific values may have been reported elsewhere.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Kinetic calculations were described and appropriate.
Domain 8: Other	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.
		Results	0	
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
<b>Overall Quali</b>	ty Determina	ation	High	

\* Related References: Cited in HSDB

Study Citation: OECD Harmonized	Peng, X., Li, X. (2 Biodegradation in	012). Compound-specific isotope analysis for aerobic biodegradation of phthalate acid esters. Talanta 97:445-449. Sediment	
Template: HERO ID:	1315304		
		EXTRACTION	
Parameter		Data	
CASRN and Test Material		84-74-2; Dibutyl phthalate	
Confidentiality, EndPoint, Ty Guideline	ype,	None; other; Experimental; other	
Solvent, Reactivity, Storage,	, Stability	NR; NR; NR	
Radiolabel, Source, State, Pu	urity	NR; Shanghai Chemical Reagent Co. (China); NR; 99.0%	
Oxygen and Inoculum		aerobic; natural sediment: marine: Surface sediment was sieved with 0.5mm mesh. Organic matter content: 5.8±0.15%.	
Duration, Parameter, System Sampling Frequency	n, and	74 days; test mat.; Sediment plugs placed in 5L reservoir with seawater.; Seven sampling time points over 74 days appear in Figure 3	
Results Sample Time, Co Compartment, Water Compartment, CEC, and pH	ompartment, Sludge	Not reported; Marine sediment and seawater continuously purged with CO2/air (2/98); Not reported; Not reported; Not reported; 7.63	
Control Dark, Control, and H	Blank	yes; Not reported; Autoclaved controls (120°C for 20 min) were used.	
Concentration		20 µg/g dry sediment	
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter		GC-FID; Not reported; 7	
Results Remarks		Not reported	
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results		14.6 days; RSD of DBP recovery: 5.6%; Not reported; Not reported	
Results Details Ra		Rate constant: 0.0472, r^2=0.985. ln c=3.204 - 0.0472t	
Mean Total Recovery Results covery	s and Results Per Re-	88.70%; Average analytical recovery: 88.70%	
Results Value, Direct Quantum Yield Results, and Transformation Products		>50% after 12 days, >85% after 74 days. Percent remaining vs time presented in figure 3; Not Reported; Not Reported	

			EVALUATIO	N
Domain	main Metric Rating		Comments	
Domain 1: Test Substan	ice			
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.
	Metric 2:	Test Substance Purity	High	The test substance purity was reported.
Domain 2: Test Design	Metric 3: Metric 4:	Study Controls Test Substance Stability	High High	Autoclaved sterile controls were used.
	Meure 4.	Test Substance Stability	nıgıı	The test substance preparation, storage, and nonlogeneity were reported and appropriate.
Domain 3: Test Conditi	ons			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
			Continued on next ]	page

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		continu	ed from pre	vious page			
Study Citation: OECD Harmonized Template:	Peng, X., Li, X. (2 Biodegradation in	eng, X., Li, X. (2012). Compound-specific isotope analysis for aerobic biodegradation of phthalate acid esters. Talanta 97:445-449. iodegradation in Sediment					
HERO ID:	1315304	1315304					
		EVALUATION					
Domain		Metric	Rating	Comments			
	Metric 6:	Testing Conditions	High	Test conditions were reported and appropriate.			
	Metric 7:	Testing Consistency	High	Testing conditions were consistent across sample groups.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.			
Domain 4: Test Organis	sms						
-	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and appropriate for the study type.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	The sampling methods were reported and appropriate.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	High	Uncertainty in the extraction and analytical methods were reported.			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.			
		Exposure					
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	High	Data reporting was appropriate and the results of the autoclaved controls confirmed no significant abiotic losses took place.			
	Metric 16:	Statistical Methods and	High	Kinetic calculations and statistical analysis were reported and appropriate.			
		Kinetic Calculations					
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.			
Overall Quali	ty Determin	ation	High				

Study Citation:	Petrasek, A. C., K	Petrasek, A. C., Kugelman, I. J., Austern, B. M., Pressley, T. A., Winslow, L. A., Wise, R. H. (1983). Fate of toxic organic compounds in wastewater				
OECD Harmonized	Biodegradation in	Sediment	rederation 55(10):12	.80-1290.		
HERO ID:	1316084					
			EXTRACTIO	N		
Parameter		Data				
CASRN and Test Material		84-74-2; Di-n-butylphthalate				
Confidentiality, EndPoint, T	ype,	None; other; Experimental; other: Pil	ot scale WWTP remov	val efficiency		
Guideline Solvent Reactivity Storage	Stability	NR · NR · NR · NR				
Radiolabel Source State F	hrity	NR: NR: NR: NR				
Oxygen and Inoculum	unty	aerobic: other: Raw wastewater				
Duration, Parameter, Syster	n, and	312 days: test mat: Pilot scale treatment process with parallel control and spiked systems. Primary influent was processed through a sewer				
Sampling Frequency		simulator, an aerated grit chamber, a primary clarifier, and a conventional plug-flow activated sludge process.; Eight 24-h composite samples were				
Paculte Sample Time C	omportment Sludge	collected. Not reported: Not reported: Not reported: Not reported: Not reported				
Compartment, Water	Sinpartinent, Studge	Not reported, Not reported, Not reported, Not reported, Not reported				
Compartment, CEC, and pH	I					
Control Dark, Control, and	Blank	Not Reported; Not reported; A blank control experiment was operated in parallel				
Concentration		43.8 µg/L				
Analytical Method, Analyt	ical Details, and Re-	GC-MS; Not reported; 7				
sults Per Degredation Paran	neter	Not reported				
Holflife Standard Deviatio	n Deculto Deference	Not reported: Average standard error of mean concentrations (all chemicals): Influent: 31.3%: primary effluent: 28.0%: Not reported: Not reported				
Substance Results, and I	Reference Substance	Not reported, Average standard error of mean concentrations (an chemicals). Innuent. 51.5%, primary erruent. 20.0%, Not reported, Not reported				
Compartment Results						
Results Details		88% of activated sludge effluent samp	ples contained DBP. C	oncentration range was 1.3-7.1µg/L		
Mean Total Recovery Results and Results Per Re-		Not reported; Influent samples: 67.5±10.2%; primary effluent: 73.4±13.2%				
covery Results Value Direct Quantum Viold Results		Total treatment semanal (1, 04, Not Demonstrad, Not semanted				
and Transformation Produc	intuini Tielu Kesuits,	Total treatment removal %. 94, Not P	reported, Not reported			
			EVALUATIO	Ň		
Domain		Metric	Rating	Comments		
Domain 1: Test Substand	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.		
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported but its omission is unlikely to have a substan- tial impact on the study results		

			Continued on next	page	
	Metric 3:	Study Controls	High	A blank control was used.	
Domain 2: Test Design					

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HERO ID: 1316084 Table: 1 of 1

		continu	ed from prev	vious page		
Study Citation:	Petrasek, A. C., I	Kugelman, I. J., Austern, B. M., Pressley,	T. A., Winsle	ow, L. A., Wise, R. H. (1983). Fate of toxic organic compounds in wastewater		
	treatment plants.	Journal of Water Pollution Control Federat	tion 55(10):12	86-1296.		
OECD Harmonized	Biodegradation in	Biodegradation in Sediment				
HERO ID:	1316084					
		EVALUATION				
Domain		Metric Rating Comments				
	Metric 4:	Test Substance Stability	Medium	Some details regarding the test substance preparation and storage conditions were not reported but their omission is unlikely to have a substantial impact on the study results.		
Domain 3 <sup>.</sup> Test Conditio	ons					
Domain of Test Contain	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	Medium	Some test conditions were not reported but their omission is unlikely to impact the study results.		
	Metric 7:	Testing Consistency	High	Testing conditions were consistent across sample groups.		
	Metric 8:	System Type and Design	High	The system type was appropriate.		
Domain 4: Test Organis	ms					
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and appropriate.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.		
Domain 5: Outcome As	sessment					
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the outcome of interest.		
	Metric 12:	Test Substance Purity	High	The sampling methods were reported and appropriate.		
Domain 6: Confounding	v/Variable Control					
Domain of Combunding	Metric 13:	Confounding Variables	High	Variabilities in the measurements were reported and addressed in the data reporting.		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.		
Domain 7: Data Present	ation and Analysis					
	Metric 15:	Data Reporting	High	The data reporting was appropriate.		
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The statistical analysis was adequately described.		
Domain 8: Other						
Zomun ö. Öllör	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.		
<b>Overall Qualit</b>	ty Determin	ation	High			

Study Citation: Roy F. Weston Inc low level collector		, (1980). Characterization and fate of the discharge of priority pollutants from the Rohm and Haas Philadelphia plant into the Delaware of the Philadelphia sewer.				
<b>OECD Harmonized</b>	Biodegradation in	Sediment				
Template:						
HERO ID:	1333014					
		EXTRACTION				
Parameter		Data				
CASEN and Test Material		84-74-2: Di-n-butydobtbalate				
Confidentiality EndPoint	Type	None: other: Experimental: other: WWTP removal efficiency				
Guideline	Type,	Tone, ouer, Experimental, ouer. WW11 Temoval encency				
Solvent, Reactivity, Storag	e, Stability	NR; NR; NR				
Radiolabel, Source, State,	Purity	NR; NR; NR				
Oxygen and Inoculum		aerobic; mixture of sewage, soil and natural water: Not reported				
Duration, Parameter, Syste	em, and	Sampling was done in April and December; test mat.; Samples were collected from influent, effluent out of biodisc system, and sludge from storage				
Sampling Frequency		tanks.; Samples were taken in duplicate.				
Results Sample Time, C	Compartment, Sludge	24 or 72 hour composite samples were collected.; Not reported; Not reported; Not reported; Not reported; Not reported				
Compartment CEC and p	н					
Control Dark, Control, and	l Blank	Not Reported; Not reported; Sample blanks from the normal sampling program were taken.				
Concentration		> 3.3 - < 496 µg/L				
Analytical Method, Analy	tical Details, and Re-	GC-MS; Not reported; 7				
sults Per Degredation Para	meter					
Results Remarks		Phthalate contamination was introduced from solvents, glassware, rubber or plastic material.				
Halflife, Standard Deviation Results, Reference		Not reported; Not reported; Not reported; Not reported				
Substance Results, and	Reference Substance					
Compartment Results		Not reported				
Mean Tetal Decausers Decore	lta and Dagulta Dar D -	Not reported. Because is a $f > 60\%$ were channed for most chamicals				
covery	nts and Kesuits Per Re-	not reported; recoveries of >00% were observed for most chemicals.				
Results Value, Direct Ou	antum Yield Results.	Influent/effluent removal % in April and December sampling: 100: Not Reported: Not reported				
and Transformation Products		······································				

			EVALUATION	N
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.
	Metric 2:	Test Substance Purity	Medium	The purity of the analytical standards used were not reported but their omission was unlikely to impact the study results.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Blank controls were used to determine background contamination in the sampling method.
			Continued on next p	age

		contin	ued from pre	vious page		
Study Citation:	Roy F. Weston Inc low level collector	Roy F. Weston Inc, (1980). Characterization and fate of the discharge of priority pollutants from the Rohm and Haas Philadelphia plant into the Delaware low level collector of the Philadelphia sewer.				
OECD Harmonized	Biodegradation in	Sediment				
Template:	1222014					
HERO ID:	1555014					
		1	EVALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 4:	Test Substance Stability	High	Some details regarding the test substance preparation and storage conditions were omit- ted but are unlikely to have a substantial impact on the study results.		
Domain 3: Test Conditi	ons					
	Metric 5:	Test Method Suitability	Low	The test method introduced contamination that may impact the study results.		
	Metric 6:	Testing Conditions	Medium	There were omissions in the testing conditions but they are unlikely to have a substantial impact on the study results.		
	Metric 7:	Testing Consistency	Medium	Differences in the testing conditions between the sample groups were not clearly re- ported but were unlikely to have a substantial impact on the study results.		
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.		
Domain 4: Test Organis	sms					
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and appropriate for the study type.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.		
Domain 5: Outcome As	sessment					
Domain 5. Outcome 743	Metric 11	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest		
	Metric 12:	Test Substance Purity	High	The sampling methods were appropriate for the study type.		
			ingi			
Domain 6: Confoundin	g/Variable Control					
	Metric 13:	Confounding Variables	Low	Phthalate contamination was introduced during the sample processing that likely had a substantial impact on the study results.		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.		
Domain 7. Data Presen	tation and Analysis					
Duu 1105011	Metric 15:	Data Reporting	Medium	Compound specific percent recoveries for influent and effluent samples and detection limits were not reported.		
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical analysis was not reported.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.		
		Results	G	-		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.		
<b>Overall Quali</b>	ty Determina	ation	High			

Study Citation:	Tan, B. L., Hawker, D. W., Muller, J. F., Leusch, F. D., Tremblay, L. A., Chapman, H. F. (2007). Modelling of the fate of selected endocrine disruptors in a municipal wastewater teatment plant in South Fast Owencloud Australia. Chamacathere 60(4):444-654				
<b>OECD Harmonized</b>	Biodegradation in	sediment plant in South East Queensland, Australia. Chemosphere 69(4):644-654.			
Template:	U				
HERO ID:	675442				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2: Dibutyl phthalate			
Confidentiality, EndPoint, 7 Guideline	Гуре,	None; other; QSAR; other: WWTP removal			
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR			
Radiolabel, Source, State, F	Purity	NR; NR; NR			
Oxygen and Inoculum		aerobic; activated sludge (adaptation not specified): model based on activated sludge WWTP in South East Queensland, Australia, which receives			
Duration, Parameter, Syster	n, and	a mixture of domestic and industrial influent Not reported; test mat.; Not reported; Not reported			
Results Sample Time, C Compartment, Water	ompartment, Sludge	Not reported; sludge and water; anaerobic and aerobic bioreactors, settling tank, return activated sludge; influent, effluent; Not reported; Not reported			
Control Dark, Control, and	Blank	Not reported; Not reported; Not reported			
Concentration		Not Reported			
Analytical Method, Analyt	ical Details, and Re-	gas chromatography-mass spectrometry; extracted from samples with solid phase extraction; 7			
Results Remarks	lieter	These measured concentrations were reported from Tan et al. 2007 and used in this source to develop a QSAR model for WWTP removal			
Halflife, Standard Deviatio Substance Results, and I Compartment Results	n Results, Reference Reference Substance	Not Reported; Not reported; Not reported			
Results Details		influent: 201 ng/L (water); 948 ng/g (solids)anaerobic bioreactor: 24.5 ng/L (water); 36.6 ng/g (solids/sludge)aerobic bioreactor: 16.4 ng/L (water); 55.4 ng/g (solids)final settling tank: 31.8 ng/L (water)return activated sludge: 15.1 ng/L (water); 149 ng/g (solids/sludge)effluent: 34.4 ng/L (water)point of discharge: 102 ng/L1 km down stream: 46.4 ng/L			
Mean Total Recovery Resul covery	ts and Results Per Re-	Not reported			
Results Value, Direct Qua and Transformation Produc	antum Yield Results, ts	Estimated 92.9% biotransformation, 1.1% sorption to sludge; Not Reported; Not reported			

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substance					
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2:	Test Substance Purity	N/A	The metric is not applicable to this study type.	
Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.	
Continued on next page					

PUBLIC RELEASE DRAFT May 2025 Biodegradation in Sediment

HERO ID: 675442 Table: 1 of 1

		continu	ed from pre	vious page			
Study Citation:	Tan, B. L., Hawke municipal wastew	Tan, B. L., Hawker, D. W., Muller, J. F., Leusch, F. D., Tremblay, L. A., Chapman, H. F. (2007). Modelling of the fate of selected endocrine disruptors in a municipal wastewater treatment plant in South East Queensland, Australia. Chemosphere 69(4):644-654.					
<b>OECD Harmonized</b>	Biodegradation in Sediment						
Template:							
HERO ID:	675442						
		E	VALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.			
Domain 2. Test Conditi	-						
Domain 5: Test Condition	Metric 5:	Test Method Suitability	$N/\Delta$	The metric is not applicable to this study type			
	Metric 6:	Testing Conditions	N/A	The metric is not applicable to this study type.			
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to this study type.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.			
Domain 4: Test Organis	ms						
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Demain 5. Outerment							
Domain 5: Outcome As	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(c) of			
	Methe 11.	Test Substance Identity	Ingn	interest.			
	Metric 12:	Test Substance Purity	N/A	The metric is not applicable to this study type.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	N/A	The metric is not applicable to this study type.			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.			
		Exposure					
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	N/A	The metric is not applicable to this study type.			
	Metric 16:	Statistical Methods and	N/A	The metric is not applicable to this study type.			
		Kinetic Calculations					
Domain 8: Other							
Domain 8. Other	Metric 17:	Verification or Plausibility of	High	The study results were reasonable			
	mente 17.	Results	mgn	The study results were reasonable.			
	Metric 18:	QSAR Models	High	The QSAR model had a defined, unambiguous endpoint and the model performance was known.			
Overall Qualit	ty Determin	ation	High				
	•		0				

Study Citation:	Yuan, S. Y., Liu, C., Liao, C. S., Chang, B. V. (2002). Occurrence and microbial degradation of phthalate esters in Taiwan river sediments. Chemosphere 49(10):1295-1299				
OECD Harmonized	Biodegradation in S	Sediment			
Template: HERO ID:	5541359				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; DBP			
Confidentiality, EndPoint, T	ype,	None; other; Experimental; other: Not reported; biodegradation kinetics in Taiwanese river sediment			
Guideline Solvent Reactivity Storage	Stability	NR· NR· NR			
Radiolabel, Source, State, P	urity	NR: Chem Service (West Chester, PA): NR: 99.0%			
Oxygen and Inoculum	5	aerobic; natural sediment: freshwater: Top 10 cm layer sediment samples collected from the Zhonggang, Keya, Erren, Gaoping, Donggang, and			
		Danshui Rivers, Taiwan, from January - August 2000			
Duration, Parameter, System	n, and	Not reported; formulation; 125 mL serum bottles with 45 mL medium, 5 g river sediment, and 5 ug/g mixture of phthalic acid esters; Not reported			
Results Sample Time Co	ompartment Sludge	Not reported: Sediment: Natural river sediment: Not reported: Not reported: Not reported			
Compartment, Water	Shipartinent, Studge	Not reported, Sediment, Natural Iver Sediment, Not reported, Not reported			
Compartment, CEC, and pH	I				
Control Dark, Control, and	Blank	Not Reported; Not reported; Not reported			
Concentration		5 ug/g			
Analytical Method, Analyti sults Per Degredation Param	ical Details, and Re- neter	GC/MS, analytes separated on DB-5 capillary column, 0.25 um film thickness, 0.25 m i.d., 30 m length; detection limit 100 ug/L; Sediment extracted 3x by rotating shaker with hexane; Not Reported			
Results Remarks		Range half-life: 0.5 - 10.1 daysAverage background test substance sediment concentration (range): 6.3 ug/g (0.3 - 30.3 ug/g)Danshui River sed.			
		half-life: 0.6 dDanshui River sed. background conc.: 0.5 ug/gZhonggang River sed. half-life: 5.4 dZhonggang River sed. background conc.: 10.2			
		ug/gindustrial discharge into the Danshui River has occurred for longer than the Zhonggang River, faster degradation may be due to microbial			
Halflife, Standard Deviation	n Results, Reference	2.9 d; Not Reported; Not reported; Not reported			
Substance Results, and Reference Substance					
Compartment Results					
Results Details		First order kinetics: $S=S_0^*\exp(-k^*t)$ , t0.5=0.693/k			
Mean Total Recovery Result	s and Results Per Re-	96.5%; Not reported			
Results Value, Direct Qua and Transformation Product	ntum Yield Results,	Not Reported; Not Reported; Not Reported			

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substand	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.		
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	Medium	Controls were not explicitly included.		
	Continued on next page					

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#### ... continued from previous page **Study Citation:** Yuan, S. Y., Liu, C., Liao, C. S., Chang, B. V. (2002). Occurrence and microbial degradation of phthalate esters in Taiwan river sediments. Chemosphere 49(10):1295-1299. **OECD Harmonized** Biodegradation in Sediment **Template: HERO ID:** 5541359 **EVALUATION** Domain Metric Rating Comments Metric 4: Test Substance Stability Medium Test substance preparation and storage conditions were not reported. Domain 3: Test Conditions Metric 5: Test Method Suitability High The test method is suitable for the test substance. Metric 6: **Testing Conditions** Low Minimal test conditions were reported, omissions include sediment characteristics, pH, temperature, incubation time, and sample frequency. Metric 7: Testing Consistency High Test set up was consistent across study groups. System Type and Design Metric 8: N/A Not applicable. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The inoculum sources were reported and are commonly used for similar studies. Metric 10: Sampling Methods N/A Not applicable. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology was appropriate for determining degradation kinetics. Metric 12: Test Substance Purity Medium Sample preparation was described and appropriate, frequency was not reported. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables Medium Many study details were omitted. Metric 14: Health Outcomes Unrelated to N/A Not applicable. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting High The analytical method was reported; limits of detection and extraction efficiency were reported. Raw data was not reported. Metric 16: Statistical Methods and High Kinetic calculations were described and applied appropriately. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of Medium The results were reasonable based on the method however many key study details were not reported, which reduces the reliability of this study. Results Metric 18: OSAR Models N/A Not applicable. **Overall Quality Determination** High

Study Citation: Yuar	Yuan, S. Y., Liu, C., Liao, C. S., Chang, B. V. (2002). Occurrence and microbial degradation of phthalate esters in Taiwan river sediments. Chemosphere						
AP(1 OFCD Harmonized Pied	0):1295-1299.	Sadimant					
Template:		Sediment					
HERO ID: 5541	359						
	EXTRACTION						
Parameter		Data					
CASRN and Test Material		84-74-2; DBP None: other: Experimental: other: Not	reported: biodegrads	lation kinatios in Taiwanasa rivar sadimant			
Guideline		None, other, Experimental, other. Not	Teporteu, biodegrada	iation kineties in Taiwarese river sedmicht			
Solvent, Reactivity, Storage, Stabil	lity	NR; NR; NR; NR					
Radiolabel, Source, State, Purity		NR; Chem Service (West Chester, PA)	; NR; 99.0%				
Oxygen and Inoculum		anaerobic; natural sediment: freshwate	er: Top 10 cm layer so	sediment samples collected from the Zhonggang, Keya, Erren, Gaoping, Donggang, and			
Duration, Parameter, System, and		Not reported; formulation; 125 mL ser	um bottles with 45 m	mL medium, 5 g river sediment, and 5 ug/g mixture of phthalic acid esters; Not reported			
Results Sample Time, Compart Compartment, Water	ment, Sludge	Not reported; Sediment; Natural river sediment; Not reported; Not reported; Not reported					
Compartment, CEC, and pH		NUE INTERIO	at Danautadi Naturanautadi Naturanautad				
Control Dark, Control, and Blank		Not Reported; Not reported; Not repor	ted				
Concentration	taila and Da	S ug/g					
sults Per Degredation Parameter	talls, and Ke-	extracted 3x by rotating shaker with hexane: Not Reported					
Results Remarks		Range half-life: 11.7 - 18.9 daysAverage background test substance sediment concentration (range): 6.3 ug/g (0.3 - 30.3 ug/g)Danshui River sed.					
		half-life: 5.1 dDanshui River sed. background conc.: 0.5 ug/gZhonggang River sed. half-life: 12.7 dZhonggang River sed. background conc.: 10.2 ug/gIndustrial discharge into the Danshui River has occurred for longer than the Zhonggang River, faster degradation may be due to microbial adaptation.					
Halflife, Standard Deviation Resu	lts, Reference	14.4 d; Not Reported; Not reported; Not reported					
Substance Results, and Referen	ice Substance						
Compartment Results							
Results Details		First order kinetics: $S=S_0 \exp(-k^*t)$ ,	t0.5=0.693/k				
viean 10tal Recovery Results and R	cesults Per Ke-	90.5%; Not reported					
Results Value, Direct Quantum and Transformation Products	Value, Direct Quantum Yield Results, Not Reported; Not Reported; Not Reported sformation Products						
			EVALUATIO	)N			
Domain		Metric	Rating	Comments			
Domain 1: Test Substance							
Metr	ric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.			
Metr	ric 2:	Test Substance Purity	High	The test substance source and purity were reported.			
Domain 2: Test Design							

 Metric 3:
 Study Controls
 Medium
 Controls were not explicitly included.

 Metric 4:
 Test Substance Stability
 Medium
 Test substance preparation and storage conditions were not reported.

Continued on next page ...

#### ... continued from previous page **Study Citation:** Yuan, S. Y., Liu, C., Liao, C. S., Chang, B. V. (2002). Occurrence and microbial degradation of phthalate esters in Taiwan river sediments. Chemosphere 49(10):1295-1299. **OECD Harmonized** Biodegradation in Sediment **Template: HERO ID:** 5541359 **EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability High The test method is suitable for the test substance. Metric 6: **Testing Conditions** Low Minimal test conditions were reported, omissions include sediment characteristics, pH, temperature, incubation time, and sample frequency. Metric 7: Testing Consistency High Test set up was consistent across study groups. Metric 8: System Type and Design N/A Not applicable. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The inoculum sources were reported and are commonly used for similar studies. Metric 10: Sampling Methods N/A Not applicable. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology was appropriate for determining degradation kinetics. Test Substance Purity Metric 12: Medium Sample preparation was described and appropriate, frequency was not reported. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables Medium Many study details were omitted. Metric 14: Health Outcomes Unrelated to N/A Not applicable. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting High The analytical method was reported; limits of detection and extraction efficiency were reported. Raw data was not reported. Metric 16: Statistical Methods and High Kinetic calculations were described and applied appropriately. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of Medium The results were reasonable based on the method however many key study details were not reported, which reduces the reliability of this study. Results Metric 18: QSAR Models N/A Not applicable. **Overall Quality Determination** High

Study Citation:	Yuan, S., Huang, I., Chang, B. (2010). Biodegradation of dibutyl phthalate and di-(2-ethylhexyl) phthalate and microbial community changes in mangrove sediment. Journal of Hazardous Materials 184(1-3):826-831.				
OECD Harmonized	Biodegradation in Sediment				
Template:					
HERO ID:	697286				
_		EXTRACTION			
Parameter		Data			
CACDN d Tract Material					
CASKIN and Test Material	<b>E</b> ura o	84-74-2; Dibulyi prinalate			
Guideline	Type,	None; ready blodegradability; Experimental; other: Blodegradation in contaminated river sediment			
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR			
Radiolabel, Source, State, F	Purity	NR; Chem Services, West Chester, PA; NR; 99%			
Oxygen and Inoculum		aerobic; natural sediment: Inorganic medium (mg/L): K2HPO4, 65.3; KH2PO4, 25.5; Na2HPO4 12H20, 25.5; Na2HPO4 12H2O, 133.8; NH4Cl, 5.1; CaCl2, 82.5; MgSO4 7H2O, 67.5; FeCl3 6H2O, 0.75g.			
Duration, Parameter, Syster	m, and	Not reported; test mat.; 125mL serum bottle with 45 mL medium, 5g sediment, and 250ug/g of DEHP/DBP (125ug/g each); Not reported			
Sampling Frequency					
Results Sample Time, C	ompartment, Sludge	Not reported; Not reported; Not reported; Not reported; 6.5-7.6			
Compartment, water	4				
Control Dark, Control, and	Blank	ves: Autoclaved samples were used as sterile control.: Not reported			
Concentration		125 µg/L			
Analytical Method, Analyt	tical Details, and Re-	Gas-chromatograph with electron capture detector.; Detection limit was 1.0 µg/L.; 7			
sults Per Degredation Paran	neter				
Results Remarks		Not reported			
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance		Sites A-E, respectively (d): 2.0, 1.6, 2.6, 2.9, 2.4; NR. Correlation coefficient: 0.89-0.98; Not reported; Not reported			
Results Details		Not reported			
Mean Total Recovery Resul	ts and Results Per Re-	95.5%; Not reported			
covery					
Results Value, Direct Qua and Transformation Produc	antum Yield Results, ts	K value (1/d) from sites A-E, respectively: 0.35, 0.43, 0.27, 0.24, 0.29; Not Reported; Not reported			

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The substance was identified using common nomenclature.	
	Metric 2:	Test Substance Purity	High	The test substances purity was 99.0%.	
Domain 2: Test Design	Metric 3: Metric 4:	Study Controls Test Substance Stability	High High	Appropriate sterile controls were used. The test substance preparation and storage conditions were reported and appropriate.	

Continued on next page ...

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#### **Study Citation:** Yuan, S., Huang, I., Chang, B. (2010). Biodegradation of dibutyl phthalate and di-(2-ethylhexyl) phthalate and microbial community changes in mangrove sediment. Journal of Hazardous Materials 184(1-3):826-831. **OECD Harmonized Biodegradation in Sediment Template: HERO ID:** 697286 **EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability High The test method was suitable for the test substance. Metric 6: **Testing Conditions** High Testing conditions were reported and appropriate. Metric 7: Testing Consistency High Differences in the samples from each site were clearly described. Metric 8: System Type and Design High This metric met the criteria for high confidence as expected for this type of study. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High The inoculum source and characteristics were reported. Metric 10: Sampling Methods N/A The metric is not applicable to this study type. Domain 5: Outcome Assessment Test Substance Identity Metric 11: High The outcome assessment methodology addressed the outcome of interest. Metric 12: Test Substance Purity Medium Some sampling conditions were not reported but their omission was not likely to impact the study results. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables High No confounding variables between study groups were noted. Metric 14: Health Outcomes Unrelated to N/A This metric is not applicable to the study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting High The percent recovery was reported and the detection limits were appropriate. Metric 16: Statistical Methods and High Sufficient statistical analysis was reported. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of High The study results were reasonable. Results QSAR Models N/A Metric 18: This metric is not applicable to the study type. **Overall Quality Determination** High

Study Citation:	Zhou Hong-bo, Lin Xiangjiang River s	Zhou Hong-bo, Lin Feng, Hu Pei-lei, Jing De-cai, Ren Hong-qiang, Zhao Jing, Qiu Guan-zhou (2009). Aerobic biodegradation of di-n-butyl phthalate by Xiangjiang River sediment and microflora analysis. Journal of Central South University of Technology 16(6):948-953.						
<b>OECD Harmonized</b>	Biodegradation in	Biodegradation in Sediment						
Template:	c							
HERO ID:	1341868							
			EXTRACTION					
Parameter		Data						
CASRN and Test Material		84-74-2; Di-n-butyl phthalate						
Confidentiality, EndPoint, T Guideline	Гуре,	None; other; Experimental; other: Aer	None; other; Experimental; other: Aerobic biodegradation in sediment					
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR; NR						
Radiolabel, Source, State, I	Purity	NR; Hunan Huihong Chemicals Corporation China; NR; 99.5% Notes: Sanitizer 160; %C 73.06						
Oxygen and Inoculum		aerobic; natural sediment: Xiangjiang River sediment						
Duration, Parameter, Syster	n, and	5 days; test mat.; Flask and rotary shaker; daily						
Sampling Frequency								
Results Sample Time, C	ompartment, Sludge	every 24 hrs; Not reported; Not reported; Not reported; Not reported; Not reported						
Compartment, Water	т							
Control Dark Control and	n Blank	Not Reported: Not reported: Not reported						
Concentration	Dialik	100 mg/L						
Analytical Method Analyt	ical Details and Re-	HPLC and GC/MS: UV – Vis detector set at 228 nm; 7						
sults Per Degredation Parar	neter							
Results Remarks		Not reported						
Halflife, Standard Deviatio	n Results, Reference	Not reported; Not reported; Not report	for reported; Not reported; Not reported; Not reported					
Substance Results, and	Reference Substance		•					
Compartment Results								
Results Details Not reported								
Mean Total Recovery Resul	ts and Results Per Re-	Not reported; Not reported						
covery Regulta Value Direct Out	untum Viald Deculto	1000 /72hm Not Departed, mana hut	1 metholate and 0 actodecomois acid					
and Transformation Produc	ts	100%/12nrs; Not keportea; mono-buty	n phinarate and 9-octadecenoic acid					
			EVALUATION					
Domain		Metric	Dating	Comments				

Domain		Metric	Rating	Comments
Domain 1: Test Substa	ance			
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.
	Metric 2:	Test Substance Purity	Medium	The test substance source was reported; purity was not reported.
Domain 2: Test Design	n Metric 3:	Study Controls	Uninformative	No controls were reported.
	Metric 3:	Study Controls	Uninformative	No controls were reported.
	Metric 4	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.

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PUBLIC RELEASE DRAFT May 2025 Biodegradation in Sediment

Dibutyl Phthalate

# HERO ID: 1341868 Table: 1 of 1

		co	ntinued from previous page	9			
Study Citation:	Zhou Hong-bo, Xiangjiang Riv	Zhou Hong-bo, Lin Feng, Hu Pei-lei, Jing De-cai, Ren Hong-qiang, Zhao Jing, Qiu Guan-zhou (2009). Aerobic biodegradation of di-n-butyl phthalate by Xiangjiang River sediment and microflora analysis. Journal of Central South University of Technology 16(6):948-953.					
OECD Harmonized	Biodegradation	Biodegradation in Sediment					
Template:							
HERO ID:	1341868						
			EVALUATION				
Domain		Metric	Rating	Comments			
	Metric 5:	Test Method Suitability	High	This metric met the criteria for high confidence as expected for this type of study.			
	Metric 6:	Testing Conditions	Medium	Limited details regarding this metric met.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.			
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.			
Domain 4: Test Organi	isms						
C	Metric 9:	Outcome Assessment Methodology	High	This metric met the criteria for high confidence as expected for this type of study.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome A	ssessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed and reported the intended outcome of interest.			
	Metric 12:	Test Substance Purity	Medium	Some sampling details were not reported but their omission was not likely to impact the study results.			
Domain 6: Confoundi	ng/Variable Control	1					
	Metric 13:	Confounding Variables	High	No confounding variables between study groups were noted.			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.			
		Exposure					
Domain 7: Data Preser	ntation and Analysi	is					
	Metric 15:	Data Reporting	Low	Some data were not reported such as mass balance, percent recovery and MDL.			
	Metric 16:	Statistical Methods and	Medium	Some calculation details were not reported but their omission was not likely to impact			
		Kinetic Calculations		the study results.			
Domain 8: Other							
Domain 0. Outor	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.			
	Metric 18:	Results OSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Qual</b>	ity Determi	ination	Uninformative				

Study Citation:	Buyuksonmez, F.,	Buyuksonmez, F., Sekeroglu, S. (2005). Presence of pharmaceuticals and personal care products (PPCPs) in biosolids and their degradation during composting. Journal of Residuals Science and Technology 2(1):31-40.				
<b>OECD Harmonized</b>	Biodegredation in S	Soil				
Template:						
HERO ID:	2882641					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, EndPoint, 7	Гуре,	None; Not reported; Experimental; other: Non-Guideline biodegradation				
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR				
Radiolabel, Source, State, F	Purity	NR; Acros; NR; 99%				
Oxygen, pH, and CEC	·	aerobic; Not reported; Not reported				
Test Type, Test Temperature	e, and Test Details	laboratory; 20-65°C; Biosolids from a municipal WWTP were amended with straw and composted for up to 45 days using a laboratory-scale				
		composting system				
Soil Type, Clay Silts and Organic Carbon, and Bulk Density		other; Not reported; Not reported				
Soil Classification, Microb	ial Biomass, and Hu-	Not reported; Not reported: Not reported				
midity						
Duration, Parameter, Syster	m, and	45 days; Not reported; Composting simulation reactor; Not reported				
Control and Blank		Not reported: Not reported				
Concentration		1000 other				
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter		GC-MS with SIM detector; Not reported; Removal DBP (%)				
Results Remarks		Not reported				
Results Value, Standard De ple Time Results, Reference and Reference Substance C	viation Results, Sam- ce Substance Results, ompartment Results	>87; Not reported; Not reported; Not reported				
Results Details	-	Not reported				
Mean Total Recovery Resul covery	ts and Results Per Re-	Not reported; Not reported				

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substa	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.
Domain 2: Test Design	1			
	Metric 3:	Study Controls	Uninformative	Control experiments were not included.
	Metric 4:	Test Substance Stability	Low	The test substance stock solution preparation were not reported.
			Continued on next page	

Page **288** of **720**
PUBLIC RELEASE DRAFT May 2025 Biodegredation in Soil

HERO ID: 2882641 Table: 1 of 1

## ... continued from previous page **Study Citation:** Buyuksonmez, F., Sekeroglu, S. (2005). Presence of pharmaceuticals and personal care products (PPCPs) in biosolids and their degradation during composting. Journal of Residuals Science and Technology 2(1):31-40. **OECD Harmonized** Biodegredation in Soil **Template: HERO ID:** 2882641 **EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability High Test method details were limited. Metric 6: **Testing Conditions** Low Testing condition details were limited. Testing Consistency Metric 7: High No inconsistencies were reported or identified. Metric 8: System Type and Design Medium System design was reported. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High Non-standard inoculum was used. Metric 10: Sampling Methods N/A The metric is not applicable to this study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity Uninformative The outcome assessment wasn't described in detail; precise degradation for target chemical was not reported. Metric 12: Test Substance Purity Low Sampling methods were not reported. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables High No confounding variables were noted. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium Analytical details not reported; there was insufficient evidence presented to confirm that parent compound disappearance was not likely due to some other process. Metric 16: Statistical Methods and Low Statistical method was not reported. Kinetic Calculations Domain 8: Other Verification or Plausibility of Metric 17: Low Due to limited information, evaluation of the reasonableness of the study results was not possible. Results Metric 18: **OSAR** Models N/A The metric is not applicable to this study type. **Overall Quality Determination** Uninformative

Study Citation: OECD HarmonizedChang, B., Lu, Y., Yuan, S., Tsao, T., Wang, M. (2009). Biodegradation of phthalate esters in compost-amended soil. Chemosphere 74(6):873-877 Biodegredation in SoilTerme Later				
HERO ID: 697764				
		EXTRACTION		
Parameter		Data		
CASRN and Test Material		Not Reported; Not Reported		
Confidentiality, EndPoint, T	Type,	None; screening test; experimental; other: batch		
Guideline Solvent Reactivity Storage Stability		hexane: NR: NR		
Radiolabel, Source, State, Purity		None: Chem Service (West Chester, PA, USA); NR: 99.0% analytical standard grade Notes: DBP		
Oxygen, pH, and CEC		aerobic; 7; 11.4 cmol/kg		
Test Type, Test Temperature	e, and Test Details	laboratory; 30 deg C; 50 mg/kg DBP and 50 mg/kg DEHP; soil compost ratios 1:0, 1:0.1, 1:0.2, 1:0.5, 1:1, 0:1		
Soil Type, Clay Silts and Organic Carbon, and Bulk Density		sandy clay loam; 23.0% clay, 60.5% silt, 16.5% sand, 13.5 g/kg organic carbon; not reported		
Soil Classification, Microbial Biomass, and Hu- midity		Taoyuan Agricultural Research and Extension Station; 8.2E6 CFU/g bacterial count soil; 1.6E5 CFU/g bacterial count for compost: soil: not reported; compost 43.4% water content		
Duration, Parameter, System, and Sampling Frequency		20 days; test mat.; glass bottles containing medium, soil, mixture of DBP and DEHP, compost (mushroom-degraded paddy straw); periodically		
Control and Blank		not reported; sterile controls		
Concentration		50 mg/kg		
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter		GC-ECD; detection limit 1.0 ug/L; test substance		
Results Remarks		the addition of compost increased the microbial counts and enhanced PAE degradation.		
Results Value, Standard Deviation Results, Sam- ple Time Results, Reference Substance Results, and Reference Substance Compartment Results Results Details		rate constants: 0.25/d, 0.32/d, 0.37/d, 0.46/d, 0.27/d, 0.41/d; half-life: 2.8 d, 2.2 d, 1.9 d, 1.5 d, 2.6 d, 1.7 d at soil:compost 1:0, 1:0.1, 1:0.2, 1:0.5, 1:1, 0:1, respectively; correlation coefficient: 0.96, 0.95, 0.92, 0.96, 0.92, 0.91 at soil:compost 1:0, 1:0.1, 1:0.2, 1:0.5, 1:1, 0:1, respectively; 20 d; not applicable; not applicable first-order kinetics; p < 0.05		
Mean Total Recovery Result covery	ts and Results Per Re-	96%; 91% DBP remained in sterile soil		

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Subs	stance			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.
Domain 2: Test Desi	gn			
	Metric 3:	Study Controls	High	Controls were included.
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.

		contir	nued from prev	vious page
Study Citation: OECD Harmonized	Chang, B., Lu, Y., Biodegredation in	Yuan, S., Tsao, T., Wang, M. (2009). Bi Soil	odegradation o	f phthalate esters in compost-amended soil. Chemosphere 74(6):873-877.
HERO ID:	697764			
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 3: Test Condition	ons		0	
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent.
	Metric 8:	System Type and Design	Medium	The system type and design were capable of appropriately maintaining substance con- centrations.
Domain 4: Test Organis	ms			
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and routinely used for similar study types and appro- priate for the study method or route.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	sessment		TT: 1	
	Metric 11:	Test Substance Identity	Hıgh	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed.
Domain 6: Confounding	v/Variable Control			
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques were considered and accounted for in data evaluation.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Present	ation and Analysis			
20mani 7. Data i rescht	Metric 15:	Data Reporting	High	The target chemical and transformation product concentrations, extraction efficiency, percent recovery, or mass balance were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset(s).
Domain 8: Other				
Domain 6. Outer	Metric 17:	Verification or Plausibility of	High	Reported values were expected.
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.
Overall Qualit	ty Determin	ation	High	

Study Citation: OECD HarmonizedChang, B., Lu, Y., Yuan, S., Tsao, T., Wang, M. (2009). Biodegradation of phthalate esters in compost-amended soil. Chemosphere 74(6):873-877. Biodegredation in SoilTense LargeBiodegredation in Soil					
HERO ID: 697764					
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		Not Reported; Not Reported			
Confidentiality, EndPoint, Type,		None; screening test; experimental; other: batch			
Guideline Solvent Beactivity Storage Stability		hexane: NR: NR			
Radiolabel Source State Purity		None: Chem Service (West Chester, PA, USA); NR: 99.0% analytical standard grade Notes: DBP			
Oxygen, pH, and CEC		aerobic; 7: 11.4 cmol/kg			
Test Type, Test Temperature	e, and Test Details	laboratory; 30 deg C; 50 mg/kg DBP and 50 mg/kg DEHP; soil:compost ratios 1:0, 1:0.1, 1:0.2, 1:0.5, 1:1, 0:1			
Soil Type, Clay Silts and Organic Carbon, and		sandy clay loam; 23.0% clay, 60.5% silt, 16.5% sand, 13.5 g/kg organic carbon; not reported			
Bulk Density Soil Classification Microbial Biomass and Hu		Therman Anticultural Descents and Entersion Station, 9.0EC CEU/2 heretaid access with 0.0EC CEU/2 heretaid access for access to add			
midity		radydan Agneultura Research and Extension Station, 8.250 CF0/g bacterial count son, 2.255 CF0/g bacterial count for compost: son: not reported; compost 54.3% water content			
Duration, Parameter, System, and		20 days; test mat.; glass bottles containing medium, soil, mixture of DBP and DEHP, compost (animal manure); periodically			
Sampling Frequency					
Control and Blank		not reported; sterile controls			
Concentration		SU mg/kg			
sults Per Degredation Parameter		OC-ECD, detection minit 1.0 ug/L, test substance			
Results Remarks		the addition of compost increased the microbial counts and enhanced PAE degradation.			
Results Value, Standard Deviation Results, Sam-		rate constants: 0.25/d, 0.22/d, 0.25/d, 0.32/d, 0.23/d, 0.29/d; half-life: 2.8 d, 3.2 d, 2.8 d, 2.2 d, 3.0 d, 2.4 d at soil:compost 1:0, 1:0.1, 1:0.2, 1:0.5,			
ple Time Results, Reference Substance Results,		1:1, 0:1, respectively; correlation coefficient: 0.96, 0.95, 0.96, 0.93, 0.96, 0.94 at soil:compost 1:0, 1:0.1, 1:0.2, 1:0.5, 1:1, 0:1, respectively; 20 d;			
Results Details	Smpartment Results	first-order kinetics: $p < 0.05$			
Mean Total Recovery Result	ts and Results Per Re-	96%; 91% DBP remained in sterile soil			
covery					

			EVALUATION	N	
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.	
Domain 2: Test Design	Metric 3:	Study Controls	High	Controls were included.	
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.	
Domain 3: Test Conditions Metric 5: Test Method Suitability High The test method was suitable for the test substance.					
			Continued on next p	bage	

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Study Citation: OECD Harmonized Template:       Chang, B., Lu, Y., Yuan, S., Tsao, T., Wang, M. (2009). Biodegradation of phthalate esters in compost-amended soil. Chemosphere 74(6):873-877. Biodegredation in Soil         Domain       Metric       Rating       Comments         Metric 6:       Testing Conditions       High       Testing conditions were monitored, reported, and appropriate for the method. Metric 7:       Testing Conditions       High       Test conditions were consistent.         Metric 8:       System Type and Design       Medium       The system type and design were capable of appropriately maintaining substance co- centrations.         Domain 4:       Test Organisms       Metric 0:       Sampling Methods       N/A         Metric 10:       Sampling Methods       N/A       The eutore assessment methodology addressed or reported the intended outcome( interest.         Domain 5:       Outcome Assessment       High       The outcome assessment methodology addressed or reported the intended outcome( interest.         Metric 12:       Test Substance Identity       High       The outcome assessment methodology addressed or reported the intended outcome( interest.         Domain 6:       Confounding/Variable Control Metric 13:       Confounding Variables       High         Metric 14:       Health Outcomes Unrelated to       N/A       The metric is not applicable to this study type.			contin	ued from pre	vious page				
HERO ID:       697764         HERO ID:       697764         Domain       Metric       Rating       Comments         Metric 6:       Testing Conditions       High       Testing conditions were monitored, reported, and appropriate for the method.         Metric 7:       Testing Consistency       High       Test conditions were consistent.         Metric 8:       System Type and Design       Medium       The system type and design were capable of appropriately maintaining substance cocentrations.         Domain 4:       Test Organisms       Metric 9:       Outcome Assessment Methodology       High         Metric 10:       Sampling Methods       N/A       The moculum source was reported and routinely used for similar study types and appriate for the study method or route.         Domain 5:       Outcome Assessment       Methodology       High         Metric 11:       Test Substance Identity       High       The outcome assessment methodology addressed or reported the intended outcome(s) interest.         Metric 12:       Test Substance Purity       High       The outcome assessment methodology addressed or reported the intended outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being an lyzed.         Domain 6:       Confounding/Variable Control       Metric 13:       Confounding Variables         Metric 14:       Health Outcomes Unrelated	Study Citation: OECD Harmonized	Chang, B., Lu, Y. Biodegredation ir	, Yuan, S., Tsao, T., Wang, M. (2009). Bio n Soil	odegradation o	of phthalate esters in compost-amended soil. Chemosphere 74(6):873-877.				
Domain         Metric         Rating         Comments           Metric 6:         Testing Conditions         High         Testing conditions were monitored, reported, and appropriate for the method.           Metric 7:         Testing Consistency         High         Test conditions were consistent.           Metric 8:         System Type and Design         High         Test conditions were consistent.           Metric 9:         Outcome Assessment Methodology         High         The inoculum source was reported and routinely used for similar study types and appriate for the study method or route.           Metric 10:         Sampling Methods         N/A         The inoculum source was reported and routinely used for similar study types and appriate for the study method or route.           Domain 5: Outcome Assessment         Metric 10:         Sampling Methods         N/A           Metric 11:         Test Substance Identity         High         The outcome assessment methodology addressed or reported the intended outcome(sinterest.           Metric 12:         Test Substance Identity         High         The study reported the use of sampling methods that address the outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being and lyzed.           Domain 6: Confounding/Variable Control         Metric 13:         Confounding Variables         High           Metric 14:         Health Outcomes Unrelated to         N/	HERO ID:	697764							
DomainMetricRatingCommentsMetric 6: Metric 7: Metric 8:Testing ConditionsHigh Fest conditions were consistent. HighTest conditions were consistent. HighTest conditions were consistent. The system type and design were capable of appropriately maintaining substance co centrations.Domain 4: Test Organisms Metric 9:Outcome Assessment Methodology Metric 10:High Sampling MethodsThe inoculum source was reported and routinely used for similar study types and ap priate for the study method or route.Domain 5: Outcome Assessment Metric 11:Test Substance IdentityHigh The outcome assessment methodology addressed or reported the intended outcome( interest.Domain 6: Confounding/Variable Control Metric 13:Test Substance PurityHigh HighDomain 6: Confounding/Variable Control Metric 14:Confounding VariablesSources of variability and uncertainty in the measurements, and statistical technique were considered and accounted for in data evaluation.		EVALUATION							
Metric 6:       Testing Conditions       High       Testing conditions were monitored, reported, and appropriate for the method.         Metric 7:       Testing Consistency       High       Test conditions were consistent.         Metric 8:       System Type and Design       Medium       The system type and design were capable of appropriately maintaining substance co centrations.         Domain 4: Test Organisms       Metric 9:       Outcome Assessment Methodology       High       The inoculum source was reported and routinely used for similar study types and ap priate for the study method or route.         Metric 10:       Sampling Methods       N/A       The metric is not applicable to this study type.         Domain 5:       Outcome Assessment       High       The outcome assessment methodology addressed or reported the intended outcome(sinterest.)         Metric 12:       Test Substance Identity       High       The study reported the use of sampling methods that address the outcome(s) of interest.         Domain 6:       Confounding/Variable Control       Metric 13:       Confounding Variables       High         Metric 14:       Health Outcomes Unrelated to       N/A       The metric is not applicable to this study type.	Domain		Metric	Rating	Comments				
Metric 7: Metric 8:       Testing Consistency System Type and Design       High Medium       Test conditions were consistent.         Domain 4: Test Organisms Metric 9:       Outcome Assessment Methodology Metric 10:       High Sampling Methods       The inoculum source was reported and routinely used for similar study types and appriate for the study method or route.         Domain 5: Outcome Assessment       N/A       The metric is not applicable to this study type.         Domain 5: Outcome Assessment       High Metric 11:       Test Substance Identity       High Metric 12:         Domain 6: Confounding/Variable Control Metric 13:       Confounding Variables       High Metric 14:       Sources of variability and uncertainty in the measurements, and statistical technique were considered and accounted for in data evaluation.		Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.				
Metric 8:       System Type and Design       Medium       The system type and design were capable of appropriately maintaining substance concentrations.         Domain 4: Test Organisms       Metric 9:       Outcome Assessment Methodology       High       The inoculum source was reported and routinely used for similar study types and appriate for the study method or route.         Metric 10:       Sampling Methods       N/A       The metric is not applicable to this study type.         Domain 5:       Outcome Assessment       High       The outcome assessment methodology addressed or reported the intended outcome(ninterest.         Metric 12:       Test Substance Identity       High       The study reported the use of sampling methods that address the outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being and Lyzed.         Domain 6:       Confounding/Variable Control       High         Metric 13:       Confounding Variables       High         Metric 14:       Health Outcomes Unrelated to       N/A		Metric 7:	Testing Consistency	High	Test conditions were consistent.				
Domain 4: Test Organisms       Metric 9:       Outcome Assessment Methodology       High       The inoculum source was reported and routinely used for similar study types and ap priate for the study method or route.         Metric 10:       Sampling Methods       N/A       The metric is not applicable to this study type.         Domain 5: Outcome Assessment       Metric 11:       Test Substance Identity       High       The outcome assessment methodology addressed or reported the intended outcome(s) interest.         Metric 12:       Test Substance Purity       High       The study reported the use of sampling methods that address the outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being an lyzed.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       High         Metric 14:       Health Outcomes Unrelated to       N/A       The metric is not applicable to this study type.		Metric 8:	System Type and Design	Medium	The system type and design were capable of appropriately maintaining substance con- centrations.				
Metric 9:       Outcome Assessment Methodology       High       The inoculum source was reported and routinely used for similar study types and appriate for the study method or route.         Metric 10:       Sampling Methods       N/A       The metric is not applicable to this study type.         Domain 5: Outcome Assessment       Metric 11:       Test Substance Identity       High       The outcome assessment methodology addressed or reported the intended outcome(sinterest.         Metric 12:       Test Substance Purity       High       The study reported the use of sampling methods that address the outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being and lyzed.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       High         Metric 14:       Health Outcomes Unrelated to       N/A       The metric is not applicable to this study type.	Domain 4: Test Organis	ms							
Metric 10:       Sampling Methods       N/A       The metric is not applicable to this study type.         Domain 5: Outcome Assessment       Metric 11:       Test Substance Identity       High       The outcome assessment methodology addressed or reported the intended outcome(s) interest.         Metric 12:       Test Substance Purity       High       The study reported the use of sampling methods that address the outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being and lyzed.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       High       Sources of variability and uncertainty in the measurements, and statistical technique were considered and accounted for in data evaluation.         Metric 14:       Health Outcomes Unrelated to       N/A       The metric is not applicable to this study type.		Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and routinely used for similar study types and appro- priate for the study method or route.				
Domain 5: Outcome Assessment       Metric 11:       Test Substance Identity       High       The outcome assessment methodology addressed or reported the intended outcome(s) interest.         Metric 12:       Test Substance Purity       High       The study reported the use of sampling methods that address the outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being ana lyzed.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       High       Sources of variability and uncertainty in the measurements, and statistical technique were considered and accounted for in data evaluation.         Metric 14:       Health Outcomes Unrelated to       N/A       The metric is not applicable to this study type.		Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5. Outcome Assessment       Metric 11:       Test Substance Identity       High       The outcome assessment methodology addressed or reported the intended outcome(s) interest.         Metric 12:       Test Substance Purity       High       The study reported the use of sampling methods that address the outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being and lyzed.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       High         Metric 14:       Health Outcomes Unrelated to       N/A       The metric is not applicable to this study type.	Domain 5: Outcome As	sassmant							
Metric 12:       Test Substance Purity       High       The study reported the use of sampling methods that address the outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being and lyzed.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       High       Sources of variability and uncertainty in the measurements, and statistical technique were considered and accounted for in data evaluation.         Metric 14:       Health Outcomes Unrelated to       N/A       The metric is not applicable to this study type.	Domain J. Outcome As	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.				
Domain 6: Confounding/Variable Control Metric 13: Confounding Variables High Sources of variability and uncertainty in the measurements, and statistical technique were considered and accounted for in data evaluation. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to this study type.		Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed.				
Metric 13: Confounding Variables High Sources of variability and uncertainty in the measurements, and statistical technique were considered and accounted for in data evaluation. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to this study type.	Domain 6: Confounding	v/Variable Control							
Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to this study type.		Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques were considered and accounted for in data evaluation.				
Exposure		Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7: Data Presentation and Analysis	Domain 7: Data Present	ation and Analysis							
Metric 15: Data Reporting High The target chemical and transformation product concentrations, extraction efficiency percent recovery, or mass balance were reported.		Metric 15:	Data Reporting	High	The target chemical and transformation product concentrations, extraction efficiency, percent recovery, or mass balance were reported.				
Metric 16:       Statistical Methods and Kinetic Calculations       High dataset(s).       Statistical methods or kinetic calculations were clearly described and address the dataset(s).		Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset(s).				
Domain 8: Other	Domain 8 <sup>,</sup> Other								
Metric 17: Verification or Plausibility of High Reported values were expected.		Metric 17:	Verification or Plausibility of	High	Reported values were expected.				
Metric 18: QSAR Models N/A The metric is not applicable to this study type.		Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Quality Determination High	<b>Overall Quali</b>	ty Determin	ation	High					

Study Citation: OECD Harmonized	Chang, B., Lu, Y., Biodegredation in	ng, B., Lu, Y., Yuan, S., Tsao, T., Wang, M. (2009). Biodegradation of phthalate esters in compost-amended soil. Chemosphere 74(6):873-877. degredation in Soil				
Template: HERO ID:	697764					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		Not Reported; Not Reported				
Confidentiality, EndPoint, 7 Guideline	Гуре,	None; screening test; experimental; other: batch				
Solvent, Reactivity, Storage, Stability		hexane; NR; NR				
Radiolabel, Source, State, I	Purity	None; Chem Service (West Chester, PA, USA); NR; 99.0% analytical standard grade Notes: DBP				
Oxygen, pH, and CEC		aerobic; 4-9; 11.4 cmol/kg				
Test Type, Test Temperature, and Test Details		laboratory; 30 deg C; 50 mg/kg DBP and 50 mg/kg DEHP				
Soil Type, Clay Silts and Organic Carbon, and Bulk Density		sandy clay loam; 23.0% clay, 60.5% silt, 16.5% sand, 13.5 g/kg organic carbon; not reported				
Soil Classification, Microb midity	ial Biomass, and Hu-	Taoyuan Agricultural Research and Extension Station; 8.2E6 CFU/g bacterial count: not reported				
Duration, Parameter, System, and Sampling Frequency		20 days; test mat.; glass bottles containing medium, soil and mixture of DBP and DEHP; periodically				
Control and Blank		not reported; sterile controls				
Concentration		50 mg/kg				
Analytical Method, Analys sults Per Degredation Para	tical Details, and Re- neter	GC-ECD; detection limit 1.0 ug/L; test substance				
Results Remarks		complete degradation in 9 days at pH 7 and 30 deg C				
Results Value, Standard Deviation Results, Sam- ple Time Results, Reference Substance Results, and Referencs Substance Compartment Results		rate constants: 0.12/d, 0.25/d, 0.15/d; half-life: 5.8 d, 2.8 d, 4.6 d at pH 4, 7, 9, respectively; correlation coefficient: 0.97, 0.96, 0.95 at pH 4, 7, 9 respectively; 20 d; not applicable; not applicable				
Results Details	-	first-order kinetics; p <0.05				
Mean Total Recovery Resul covery	ts and Results Per Re-	96%; 91% DBP remained in sterile soil				

			EVALUATION	N Contraction of the second	
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.	
Domain 2: Test Design	Metric 3:	Study Controls	High	Controls were included.	
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.	
Domain 3: Test Conditions Metric 5: Test Method Suitability High The test method was suitable for the test substance.					
			Continued on next p	age	

Study Citation: OECD Harmonized Template:       Chang, B., Lu, Y., Yuan, S., Tsao, T., Wang, M. (2009). Biodegradation of phthalate esters in compost-amended soil. Chemosphere 74(6):873-877. Biodegredation in Soil         Domain       Metric       Rating       Comments         Metric 6:       Testing Conditions       High       Testing conditions were monitored, reported, and appropriate for the method. Metric 7:       Testing Conditions       High       Test conditions were consistent.         Metric 8:       System Type and Design       Medium       The system type and design were capable of appropriately maintaining substance co- centrations.         Domain 4:       Test Organisms       Metric 0:       Sampling Methods       N/A         Metric 10:       Sampling Methods       N/A       The eutore assessment methodology addressed or reported the intended outcome( interest.         Domain 5:       Outcome Assessment       High       The outcome assessment methodology addressed or reported the intended outcome( interest.         Metric 12:       Test Substance Identity       High       The outcome assessment methodology addressed or reported the intended outcome( interest.         Domain 6:       Confounding/Variable Control Metric 13:       Confounding Variables       High         Metric 14:       Health Outcomes Unrelated to       N/A       The metric is not applicable to this study type.			contin	ued from pre	vious page				
HERO ID:       697764         HERO ID:       697764         Domain       Metric       Rating       Comments         Metric 6:       Testing Conditions       High       Testing conditions were monitored, reported, and appropriate for the method.         Metric 7:       Testing Consistency       High       Test conditions were consistent.         Metric 8:       System Type and Design       Medium       The system type and design were capable of appropriately maintaining substance cocentrations.         Domain 4:       Test Organisms       Metric 9:       Outcome Assessment Methodology       High         Metric 10:       Sampling Methods       N/A       The moculum source was reported and routinely used for similar study types and appriate for the study method or route.         Domain 5:       Outcome Assessment       Methodology       High         Metric 11:       Test Substance Identity       High       The outcome assessment methodology addressed or reported the intended outcome(s) interest.         Metric 12:       Test Substance Purity       High       The outcome assessment methodology addressed or reported the intended outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being an lyzed.         Domain 6:       Confounding/Variable Control       Metric 13:       Confounding Variables         Metric 14:       Health Outcomes Unrelated	Study Citation: OECD Harmonized	Chang, B., Lu, Y. Biodegredation ir	, Yuan, S., Tsao, T., Wang, M. (2009). Bio n Soil	odegradation o	of phthalate esters in compost-amended soil. Chemosphere 74(6):873-877.				
Domain         Metric         Rating         Comments           Metric 6:         Testing Conditions         High         Testing conditions were monitored, reported, and appropriate for the method.           Metric 7:         Testing Consistency         High         Test conditions were consistent.           Metric 8:         System Type and Design         High         Test conditions were consistent.           Metric 9:         Outcome Assessment Methodology         High         The inoculum source was reported and routinely used for similar study types and appriate for the study method or route.           Metric 10:         Sampling Methods         N/A         The inoculum source was reported and routinely used for similar study types and appriate for the study method or route.           Domain 5: Outcome Assessment         Metric 10:         Sampling Methods         N/A           Metric 11:         Test Substance Identity         High         The outcome assessment methodology addressed or reported the intended outcome(sinterest.           Metric 12:         Test Substance Identity         High         The study reported the use of sampling methods that address the outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being and lyzed.           Domain 6: Confounding/Variable Control         Metric 13:         Confounding Variables         High           Metric 14:         Health Outcomes Unrelated to         N/	HERO ID:	697764							
DomainMetricRatingCommentsMetric 6: Metric 7: Metric 8:Testing ConditionsHigh Fest conditions were consistent. HighTest conditions were consistent. HighTest conditions were consistent. The system type and design were capable of appropriately maintaining substance co centrations.Domain 4: Test Organisms Metric 9:Outcome Assessment Methodology Metric 10:High Sampling MethodsThe inoculum source was reported and routinely used for similar study types and ap priate for the study method or route.Domain 5: Outcome Assessment Metric 11:Test Substance IdentityHigh The outcome assessment methodology addressed or reported the intended outcome( interest.Domain 6: Confounding/Variable Control Metric 13:Test Substance PurityHigh HighDomain 6: Confounding/Variable Control Metric 14:Confounding VariablesSources of variability and uncertainty in the measurements, and statistical technique were considered and accounted for in data evaluation.		EVALUATION							
Metric 6:       Testing Conditions       High       Testing conditions were monitored, reported, and appropriate for the method.         Metric 7:       Testing Consistency       High       Test conditions were consistent.         Metric 8:       System Type and Design       Medium       The system type and design were capable of appropriately maintaining substance co centrations.         Domain 4: Test Organisms       Metric 9:       Outcome Assessment Methodology       High       The inoculum source was reported and routinely used for similar study types and ap priate for the study method or route.         Metric 10:       Sampling Methods       N/A       The metric is not applicable to this study type.         Domain 5:       Outcome Assessment       High       The outcome assessment methodology addressed or reported the intended outcome(sinterest.)         Metric 12:       Test Substance Identity       High       The study reported the use of sampling methods that address the outcome(s) of interest.         Domain 6:       Confounding/Variable Control       Metric 13:       Confounding Variables       High         Metric 14:       Health Outcomes Unrelated to       N/A       The metric is not applicable to this study type.	Domain		Metric	Rating	Comments				
Metric 7: Metric 8:       Testing Consistency System Type and Design       High Medium       Test conditions were consistent.         Domain 4: Test Organisms Metric 9:       Outcome Assessment Methodology Metric 10:       High Sampling Methods       The inoculum source was reported and routinely used for similar study types and appriate for the study method or route.         Domain 5: Outcome Assessment       N/A       The metric is not applicable to this study type.         Domain 5: Outcome Assessment       High Metric 11:       Test Substance Identity       High Metric 12:         Domain 6: Confounding/Variable Control Metric 13:       Confounding Variables       High Metric 14:       Sources of variability and uncertainty in the measurements, and statistical technique were considered and accounted for in data evaluation.		Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.				
Metric 8:       System Type and Design       Medium       The system type and design were capable of appropriately maintaining substance concentrations.         Domain 4: Test Organisms       Metric 9:       Outcome Assessment Methodology       High       The inoculum source was reported and routinely used for similar study types and appriate for the study method or route.         Metric 10:       Sampling Methods       N/A       The metric is not applicable to this study type.         Domain 5:       Outcome Assessment       High       The outcome assessment methodology addressed or reported the intended outcome(ninterest.         Metric 12:       Test Substance Identity       High       The study reported the use of sampling methods that address the outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being and Lyzed.         Domain 6:       Confounding/Variable Control       High         Metric 13:       Confounding Variables       High         Metric 14:       Health Outcomes Unrelated to       N/A		Metric 7:	Testing Consistency	High	Test conditions were consistent.				
Domain 4: Test Organisms       Metric 9:       Outcome Assessment Methodology       High       The inoculum source was reported and routinely used for similar study types and ap priate for the study method or route.         Metric 10:       Sampling Methods       N/A       The metric is not applicable to this study type.         Domain 5: Outcome Assessment       Metric 11:       Test Substance Identity       High       The outcome assessment methodology addressed or reported the intended outcome(s) interest.         Metric 12:       Test Substance Purity       High       The study reported the use of sampling methods that address the outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being an lyzed.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       High         Metric 14:       Health Outcomes Unrelated to       N/A       The metric is not applicable to this study type.		Metric 8:	System Type and Design	Medium	The system type and design were capable of appropriately maintaining substance con- centrations.				
Metric 9:       Outcome Assessment Methodology       High       The inoculum source was reported and routinely used for similar study types and appriate for the study method or route.         Metric 10:       Sampling Methods       N/A       The metric is not applicable to this study type.         Domain 5: Outcome Assessment       Metric 11:       Test Substance Identity       High       The outcome assessment methodology addressed or reported the intended outcome(sinterest.         Metric 12:       Test Substance Purity       High       The study reported the use of sampling methods that address the outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being and lyzed.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       High         Metric 14:       Health Outcomes Unrelated to       N/A       The metric is not applicable to this study type.	Domain 4: Test Organis	ms							
Metric 10:       Sampling Methods       N/A       The metric is not applicable to this study type.         Domain 5: Outcome Assessment       Metric 11:       Test Substance Identity       High       The outcome assessment methodology addressed or reported the intended outcome(s) interest.         Metric 12:       Test Substance Purity       High       The study reported the use of sampling methods that address the outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being and lyzed.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       High       Sources of variability and uncertainty in the measurements, and statistical technique were considered and accounted for in data evaluation.         Metric 14:       Health Outcomes Unrelated to       N/A       The metric is not applicable to this study type.		Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and routinely used for similar study types and appro- priate for the study method or route.				
Domain 5: Outcome Assessment       Metric 11:       Test Substance Identity       High       The outcome assessment methodology addressed or reported the intended outcome(s) interest.         Metric 12:       Test Substance Purity       High       The study reported the use of sampling methods that address the outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being ana lyzed.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       High       Sources of variability and uncertainty in the measurements, and statistical technique were considered and accounted for in data evaluation.         Metric 14:       Health Outcomes Unrelated to       N/A       The metric is not applicable to this study type.		Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5. Outcome Assessment       Metric 11:       Test Substance Identity       High       The outcome assessment methodology addressed or reported the intended outcome(s) interest.         Metric 12:       Test Substance Purity       High       The study reported the use of sampling methods that address the outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being and lyzed.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       High         Metric 14:       Health Outcomes Unrelated to       N/A       The metric is not applicable to this study type.	Domain 5: Outcome As	sassmant							
Metric 12:       Test Substance Purity       High       The study reported the use of sampling methods that address the outcome(s) of inter and used widely accepted methods/approaches for the chemical and media being and lyzed.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       High       Sources of variability and uncertainty in the measurements, and statistical technique were considered and accounted for in data evaluation.         Metric 14:       Health Outcomes Unrelated to       N/A       The metric is not applicable to this study type.	Domain J. Outcome As	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.				
Domain 6: Confounding/Variable Control Metric 13: Confounding Variables High Sources of variability and uncertainty in the measurements, and statistical technique were considered and accounted for in data evaluation. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to this study type.		Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed.				
Metric 13: Confounding Variables High Sources of variability and uncertainty in the measurements, and statistical technique were considered and accounted for in data evaluation. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to this study type.	Domain 6: Confounding	v/Variable Control							
Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to this study type.		Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques were considered and accounted for in data evaluation.				
Exposure		Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7: Data Presentation and Analysis	Domain 7: Data Present	ation and Analysis							
Metric 15: Data Reporting High The target chemical and transformation product concentrations, extraction efficiency percent recovery, or mass balance were reported.		Metric 15:	Data Reporting	High	The target chemical and transformation product concentrations, extraction efficiency, percent recovery, or mass balance were reported.				
Metric 16:       Statistical Methods and Kinetic Calculations       High dataset(s).       Statistical methods or kinetic calculations were clearly described and address the dataset(s).		Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset(s).				
Domain 8: Other	Domain 8 <sup>,</sup> Other								
Metric 17: Verification or Plausibility of High Reported values were expected.		Metric 17:	Verification or Plausibility of	High	Reported values were expected.				
Metric 18: QSAR Models N/A The metric is not applicable to this study type.		Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Quality Determination High	<b>Overall Quali</b>	ty Determin	ation	High					

Study Citation: OECD Harmonized Template:	Chang, B., Lu, Y., Yuan, S., Tsao, T., Wang, M. (2009). Biodegradation of phthalate esters in compost-amended soil. Chemosphere 74(6):873-877. Biodegredation in Soil				
HERO ID:	697764				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		Not Reported; Not Reported			
Confidentiality, EndPoint, T	ype,	None; screening test; experimental; other: batch			
Guideline Solvent, Reactivity, Storage, Stability		hexane; NR; NR; NR			
Radiolabel, Source, State, Purity		None; Chem Service (West Chester, PA, USA); NR; 99.0% analytical standard grade Notes: DBP			
Oxygen, pH, and CEC		aerobic; 7; 11.4 cmol/kg			
Test Type, Test Temperature, and Test Details		laboratory; 30 deg C; Not Reported			
Soil Type, Clay Silts and Organic Carbon, and Bulk Density		sandy clay loam; 23.0% clay, 60.5% silt, 16.5% sand, 13.5 g/kg organic carbon; not reported			
Soil Classification, Microbial Biomass, and Hu- midity		Taoyuan Agricultural Research and Extension Station; 8.2E6 CFU/g bacterial count: not reported			
Duration, Parameter, System, and Sampling Frequency		20 days; test mat.; glass bottles containing medium, soil and DBP; periodically			
Control and Blank		not reported; sterile controls			
Concentration		50 - 200 mg/kg			
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter		GC-ECD; detection limit 1.0 ug/L; test substance			
Results Remarks		complete degradation in 9 days at pH 7 and 30 deg C			
Results Value, Standard Deviation Results, Sam-		rate constants: 0.39/d, 0.18/d, 0.13/d; half-life: 1.8 d, 3.9 d, 5.3 d at 50, 100, 200 mg/kg, respectively; correlation coefficient: 0.94, 0.97, 0.93 at			
ple Time Results, Reference Substance Results, and Reference Substance Compartment Results		50, 100, 200 mg/kg, respectively; 20 d; not applicable; not applicable			
Results Details	I	first-order kinetics; $p < 0.05$			
Mean Total Recovery Result covery	s and Results Per Re-	96%; 91% DBP remained in sterile soil			
		EVALUATION			

			EVALUATIO	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Controls were included.
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
Domain 3: Test Condition	ons			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
			Continued on next p	Dage

		contin	ued from pre	vious page
Study Citation: OECD Harmonized	Chang, B., Lu, Y. Biodegredation in	, Yuan, S., Tsao, T., Wang, M. (2009). Bio Soil	odegradation o	f phthalate esters in compost-amended soil. Chemosphere 74(6):873-877.
HERO ID:	697764			
			EVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent.
	Metric 8:	System Type and Design	Medium	The system type and design were capable of appropriately maintaining substance con- centrations.
Domain 4: Test Organis	sms			
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and routinely used for similar study types and appro- priate for the study method or route.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Damain 5: Outra				
Domain 5: Outcome As	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques were considered and accounted for in data evaluation.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Present	tation and Analysis			
	Metric 15:	Data Reporting	High	The target chemical and transformation product concentrations, extraction efficiency, percent recovery, or mass balance were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset(s).
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	High	Reported values were expected.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quali	ty Determin	ation	High	

Study Citation: OECD Harmonized	Chao, W. L., Lin, Biodegredation in	C. M., Shiung, I. I., Kuo, Y. L. (2006). Soil	Degradation of di-butyl-phth	alate by soil bacteria. Chemosphere 63(8):1377-1383.				
HERO ID:	1323231	1323231						
			EXTRACTION					
Parameter		Data						
CASRN and Test Material		Not Reported: Not Reported						
Confidentiality, EndPoint, 7	Type.	None: screening test: Not Reported: other	: degradation using isolate phtha	alate ester-degrading bacteria				
Guideline Solvent, Reactivity, Storage	e. Stability	NR: NR: NR: NR	88 F					
Radiolabel, Source, State, F	Purity	None: Aldrich Chemical Co., Inc., WI: lig	uid: NR Notes: DBP					
Oxygen, pH, and CEC		aerobic; not reported; 8.25 cmol/kg	1					
Test Type, Test Temperatur	e, and Test Details	laboratory; 30 deg C; run with 12 isolated	bacteria from soil.					
Soil Type, Clay Silts and Organic Carbon, and		clay loam; 36% clay, 8.4 g/kg organic carbon; not reported						
Soil Classification, Microb	ial Biomass, and Hu-	Agricultural Research Institute, Wufeng,	Taichung, Taiwan.; Not Reported	d: not reported				
Duration, Parameter, Syster	m, and	7 d; test mat.; flasks, loosely sealed; day	, 2, 3					
Control and Blank		not applicable: sterile: autoclayed DBP-a	mended basal salts solution					
Concentration		100 ppm						
Analytical Method, Analyt	tical Details, and Re-	GC-FID; detection limit 200 ug/L; test m	at.					
sults Per Degredation Paran	neter							
Results Remarks		degradation was reported for isolated pure	e strains of bacteria.					
ple Time Results, Reference and Reference Substance C	ce Substance Results, Sam-	Reported; not applicable; not applicable	50% in 3 days for medium grou	up, 32-90% degradation in 3 days for slow group; Not Reported; Not				
Results Details	ompartment results	Not Reported						
Mean Total Recovery Resul covery	ts and Results Per Re-	98.1+/-1.0%; 98.7±1.5, 99.6±1.4, 97.4±	1.4 ppm at day 1, 2, 3, respective	ely				
			EVALUATION					
Domain		Metric	Rating	Comments				
Domain 1: Test Substand	ce							
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.				
	Metric 2:	Test Substance Purity	High	The source or purity of the test substance was reported.				

Domain 2: Test Design	Metric 3:	Study Controls	Uninformative	The study did not include or report crucial control groups that consequently made the study unusable.
			Continued on next page	

		co	ontinued from previous page	2
Study Citation: OECD Harmonized	Chao, W. L., Lin Biodegredation i	n, C. M., Shiung, I. I., Kuo, Y. L. (2006). De in Soil	gradation of di-butyl-phthala	te by soil bacteria. Chemosphere 63(8):1377-1383.
HERO ID:	1323231			
			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
Domain 3. Test Condit	ions			
Domain 5. Test Condit	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent.
	Metric 8:	System Type and Design	N/A	This metric is not applicable to the study type.
Domain 4: Test Organi	sms Matric 0:	Outcome Assessment Methodology	Low	The inequium was isolated pure bestaria
	Metric 10:	Sampling Methods	N/A	The motiful was isolated pure bacteria.
	Methe 10.	Sampling Methods	IN/A	This metric is not appreade to the study type.
Domain 5: Outcome A	ssessment			
	Metric 11:	Test Substance Identity	Low	Deficiencies in the outcome assessment methodology of the assessment or reporting were likely to have a substantial impact on results.
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed.
Domain & Confoundin	a (Variable Control			
Domain 6: Comoundin	Metric 13:	Confounding Variables	NI/A	This matrix is not applicable to the study type
	Metric 14:	Health Outcomes Unrelated to	N/A N/A	This metric is not applicable to the study type.
	Meule 14.	Exposure	11//1	This netre is not appreade to the study type.
Domain /: Data Preser	Matria 15	Data Romanting	Madium	
	Metric 15:	Data Reporting	Meatum	percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.
	Metric 16:	Statistical Methods and	High	Statistical methods or kinetic calculations were clearly described and address the
		Kinetic Calculations		dataset(s).
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.
	Metric 18:	Results QSAR Models	N/A	This metric is not applicable to the study type.
Overall Quali	ity Determin	nation	Uninformative	

Study Citation:	Cheng, J., Liu, Y.,	Cheng, J., Liu, Y., Wan, Q., Yuan, L., Yu, X. (2018). Degradation of dibutyl phthalate in two contrasting agricultural soils and its long-term effects on soil microbial community. Science of the Total Environment 640-641 (Elsevier):821-829				
OECD Harmonized	Biodegredation in S	bdegredation in Soil				
Template: HERO ID:	4829375	329375				
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, EndPoint, T	lype,	None; other; Experimental; other: Degradation in soils at different temperatures and soil moisture content				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	Purity	NR; analytical grade from Aladdin Industrial Corporation (Shanghai, China); standards from Dr. Ehrenstorfer GmbH (Augsburg, Germany); NR; analytical grade, 99.9% Notes: NR				
Oxygen, pH, and CEC		aerobic; Aquic cambisols pH 8.33; Udic ferrosols pH 5.15; Not reported				
Test Type, Test Temperature, and Test Details		laboratory; 5, 15, 25, and 35C; Stock solutions in acetone sprayed on soil surface to give final concentrations of 2, 10, 20 mg/kg; Aquic cambisols from Fangqio, Henan Province, China; Udic ferrosols from Yingtan, Jiangxi Province, China				
Soil Type, Clay Silts and Organic Carbon, and Bulk Density		other; Aquic cambisols 19.3% OM; Udic ferrosols 8.39% OM; Not reported				
Soil Classification, Microbial Biomass, and Hu- midity		Aquic cambisols; Udic ferrosols; Aquic cambisols 211 mg/kg; Udic ferrosols 53.6 mg/kg: average: 50% WHC				
Duration, Parameter, Syster Sampling Frequency	n, and	60d; test mat.; Glass beakers; Samples were periodically collected displayed in figures				
Control and Blank		Not reported; Sterilized (autoclaved) soil controls included; control treatment (0 mg/kg) was sprayed with 20 mL of pure acetone.				
Concentration		$\geq 2$ - less than or equal to 20 mg/kg				
Analytical Method, Analyt sults Per Degredation Paran	ical Details, and Re-	GC-MS (Agilent 7890B gas chromatograph coupled to a 7000D mass spectrometer); details and MDLs in SI; Half-life at 25C, 50% WHC and 20 mg/kg				
Results Remarks		metabolite identified: monobutyl phthalate; degradation of DBP in the two soils showed a bi-phasic pattern in which the soil DBP concentrations decreased slowly after an initial rapid decline and were maintained at a certain level until the end of the incubation				
Results Value, Standard Deviation Results, Sam- ple Time Results, Reference Substance Results, and Reference Substance Compartment Results		$0.338\pm0.003$ days in Aquic cambisols and $1.20\pm0.05$ days in Udic ferrosols; see details on results; p < 0.05; 60 days; Not reported; Not reported				
Results Details		Under variable temperature conditions half-lives ranged from $0.286\pm0.018-1.41\pm0.04$ days in Aquic cambisols; $0.870\pm0.012-4.60\pm0.13$ days in Udic ferrosols; Under variable moisture conditions half-lives ranged from $0.315\pm0.010-0.653\pm0.008$ days in Aquic cambisols; $0.918\pm0.103-20.4\pm1.1$ days in Udic ferrosols				
Mean Total Recovery Result covery	ts and Results Per Re-	Not reported; Not reported				

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Subs	tance					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.		

Domain 2: Test Design

		contin	nued from prev	vious page
Study Citation:	Cheng, J., Liu, Y., microbial commu	, Wan, Q., Yuan, L., Yu, X. (2018). Degr nity. Science of the Total Environment 6	adation of dibu 40-641(Elsevie	tyl phthalate in two contrasting agricultural soils and its long-term effects on soil r):821-829.
OECD Harmonized	Biodegredation in	Soil		
Template:				
HERO ID:	4829375			
			EVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 3:	Study Controls	High	Controls were included.
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported.
Domain 3: Test Conditi	ons			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Test temperature, pH and soil moisture were reported.
	Metric 7:	Testing Consistency	High	Test condition consistency was appropriate.
	Metric 8:	System Type and Design	Medium	Limited details on glass beaker system.
Domain 4: Test Organis	sms		TT' 1	
	Metric 9:	Outcome Assessment Methodology	High	The soil source and microbial biomass were reported.
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to the study type.
Domain 5: Outcome As	ssessment			
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate.
	Metric 12:	Test Substance Purity	Medium	Sampling methods addressed the outcomes of interest and samples were collected with appropriate frequency. Extraction methods may be reported in greater detail in supplemental information.
Domain 6: Confoundin	g/Variable Control			
2 onian of Confounding	Metric 13:	Confounding Variables	High	No confounding variable identified.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to the study type.
Domain 7: Data Presen	tation and Analysis			
	Metric 15:	Data Reporting	Medium	The analytical method was appropriate; method detail reported in supplemental informa- tion which was not publicly available.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis were not described; kinetic calculations described and SD reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	Medium	The result was reasonable based on the method.
	Metric 18:	Results QSAR Models	N/A	This metric is not applicable to the study type.
Overall Quali	ty Determin	ation	High	

Study Citation: OECD Harmonized	EC/HC, (1994). Ca Biodegredation in	anadian environmental protection ac Soil	t priority substances list	assessment report: Dibutyl phthalate.
Template:				
HERO ID:	1333071			
			EXTRACTION	
Parameter		Data		
CASRN and Test Material		84-74-2; dibutyl phthalate		
Confidentiality, EndPoint, T	ype,	no; other; experimental; other: not repo	orted	
Guideline Solvent Reactivity Storage	Stability	NR · NR · NR · NR		
Radiolabel, Source, State, Pt	urity	NR: NR: NR: NR		
Oxygen, pH, and CEC		aerobic; not reported; not reported		
Test Type, Test Temperature	, and Test Details	not specified; not reported; Not Report	ed	
Soil Type, Clay Silts and C	Organic Carbon, and	Not Reported; not reported; not reported	ed	
Bulk Density	-1 D'amara and Ha		1	
midity	al Biomass, and Hu-	not reported; unacclimated aerobic sol	grab samples: not reported	
Duration, Parameter, System	n, and	not reported; not specified; not reporte	d; not reported	
Sampling Frequency				
Control and Blank		not reported; not reported		
Concentration	aal Dataila and Da	Not Reported		
sults Per Degredation Param	eter	not reported; not reported; nan-me		
Results Remarks		not reported		
Results Value, Standard Dev	viation Results, Sam-	2-23 days; Not Reported; not reported;	not reported; Not Reported	l
ple Time Results, Reference	e Substance Results,			
Results Details	impartment Results	Not Reported		
Mean Total Recovery Result	s and Results Per Re-	Not Reported; Not Reported		
covery				
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substanc	e Matria 1	Track Sechastran II. (*	TT' 1	
	Matria 2:	Test Substance Identity	High	The test substance was identified by name, CASKN and structure.
	metric 2:	rest Substance Purity	Mealum	The test substance purity was not reported; nowever, the omission was not likely to have

		a substantial impact on the study results.
n 2: Test Design		

Domani 2. Test Design	Metric 3:	Study Controls	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.
			Continued on next page.	

		contin	nued from previou	s page	
Study Citation: OECD Harmonized Template:	EC/HC, (1994). Canadian environmental protection act priority substances list assessment report: Dibutyl phthalate. Biodegredation in Soil				
HERO ID:	1333071				
			EVALUATION		
Domain		Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.	
Domain 3: Test Condition	ons				
	Metric 5:	Test Method Suitability	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.	
	Metric 6:	Testing Conditions	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.	
	Metric 7:	Testing Consistency	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.	
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study.	
Domain 4: Test Organis	ms				
	Metric 9:	Outcome Assessment Methodology	Medium	The inoculum was reported with limited details; however, further details may be pro- vided in source cited.	
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study.	
Domain 5: Outcome As	sessment				
Domain 5. Outcome As	Metric 11:	Test Substance Identity	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.	
	Metric 12:	Test Substance Purity	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.	
Domain 6: Confounding	Variable Control				
Domain of Comounding	Metric 13:	Confounding Variables	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.	
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study.	
Domain 7. Data Present	ation and Analysis				
Zoman 7. Data Present	Metric 15:	Data Reporting	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.	
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.	
Damain 9: Otl					
Domain 8: Other	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable as reported in this gray literature source; however, further details may be provided in source cited	
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study.	

		continued from previous page				
Study Citation:	EC/HC, (1994). Canadian environmental protection act priority substances list assessment report: Dibutyl phthalate.					
OECD Harmonized	Biodegredation in Soil	Biodegredation in Soil				
HERO ID:	1333071					
		EVALUATION				
Domain	Metric	Rating	Comments			
<b>Overall Quali</b>	ty Determination	Medium				

<b>C</b> <i>V</i>					
* Related References: cite	s: Howard, P.H., R.S. Boethling,	W.F. Jarvis, W.M. Mevlan, and E.M.	A. Michalenko, "Handboo	ok of Environmental Degradation Rates."	Lewis Publishers Inc.,

Chelsea, MI (1991).

Study Citation: OECD Harmonized	EC/HC, (1994). Canadian environmental protection act priority substances list assessment report: Dibutyl phthalate. Biodegredation in Soil			
HERO ID:	1333071			
		EXTRACTION		
Parameter		Data		
CASRN and Test Material		84-74-2; dibutyl phthalate		
Confidentiality, EndPoint, T	ype,	no; other; experimental; other: not reported		
Guideline Solvent, Reactivity, Storage	, Stability	NR; NR; NR		
Radiolabel, Source, State, P	urity	NR; NR; NR		
Oxygen, pH, and CEC		aerobic; not reported; not reported		
Test Type, Test Temperature	e, and Test Details	not specified; not reported; Not Reported		
Soil Type, Clay Silts and Organic Carbon, and Bulk Density		other; not reported; not reported		
Soil Classification, Microbi midity	al Biomass, and Hu-	loam; sand; not reported: not reported		
Duration, Parameter, System Sampling Frequency	n, and	not reported; not specified; not reported; not reported		
Control and Blank		not reported; not reported		
Concentration		200 - 800 mg/kg		
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter		not reported; not reported; half-life		
Results Remarks		not reported		
Results Value, Standard Dev ple Time Results, Reference and References Substance Co	viation Results, Sam- e Substance Results, ompartment Results	~12 weeks @ 200 mg/kg; >26 weeks @ 800 mg/kg; not reported; not reported; Not Reported		
Results Details		Not Reported		
Mean Total Recovery Result covery	ts and Results Per Re-	Not Reported; Not Reported		

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name, CASRN and structure.
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported; however, the omission was not likely to have a substantial impact on the study results.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.
	Metric 4:	Test Substance Stability	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.
Domain 3: Test Condition	ons			

		continu	ed from previous	s page		
Study Citation: OECD Harmonized	EC/HC, (1994). Canadian environmental protection act priority substances list assessment report: Dibutyl phthalate. Biodegredation in Soil					
HERO ID:	1333071					
		E	VALUATION			
Domain		Metric	Rating	Comments		
	Metric 5:	Test Method Suitability	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.		
	Metric 6:	Testing Conditions	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.		
	Metric 7:	Testing Consistency	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.		
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study.		
Domain 4: Test Organis	sms					
	Metric 9:	Outcome Assessment Methodology	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study.		
Domain 5: Outcome As	ssessment					
	Metric 11:	Test Substance Identity	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.		
	Metric 12:	Test Substance Purity	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.		
Domain 6: Confounding	g/Variable Control					
Domain of Comountain	Metric 13:	Confounding Variables	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study.		
Domain 7: Data Present	tation and Analysis					
	Metric 15:	Data Reporting	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.		
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.		
Domain 8: Other						
Domain of Other	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable as reported in this gray literature source; however, further details may be provided in source cited		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study.		
<b>Overall Quali</b>	ty Determin	ation	Medium			

\* Related References: cites: Overcash, M.R., J.B. Weber, and M.L. Miles, "Behavior of Organic Priority Pollutants in theTerrestrial System: Di-n-butyl Phthalate Ester, Toluene, and 2,4-dinitrophenol," WaterResources Research Institute of the University of North Carolina, Report No. 171(1982). HEROID: 1936495

Study Citation: OECD Harmonized Template: HERO ID:	Englehardt, G., Wallnöfer, P. R., Hutzinger, O. (1975). The microbial metabolism of di-n-butyl phthalate and related dialkyl phthalates. Bulletin of Environmental Contamination and Toxicology 13(3):342-347. Biodegredation in Soil				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		Not Reported; Not Reported			
Confidentiality, EndPoint, T	ype,	None; other; experimental; other: degradation in pure cultures of microorganisms			
Solvent, Reactivity, Storage	. Stability	NR: NR: NR			
Radiolabel, Source, State, P	Purity	None; NR; NR Notes: DBP			
Oxygen, pH, and CEC	,	not specified; 7.2; not reported			
Test Type, Test Temperature	e, and Test Details	laboratory; 30 deg C; Tween 80 added			
Soil Type, Clay Silts and Organic Carbon, and Bulk Density		other; Not Reported; not reported			
Soil Classification, Microbial Biomass, and Hu- midity		not reported; pure cultures isolated from soil (enriched) using Hegeman's mineral base $+ 0.05\%$ yeast extract $+ 1.5\%$ agar $+ 0.1\%$ Tween 80 and 0.2% DBP as the main carbon source.: not reported			
Duration, Parameter, System Sampling Frequency	n, and	1-4 weeks; test mat.; mineral base solution on a gyratory shaker; not reported			
Control and Blank		glucose-grown cells; not reported			
Concentration		Not Reported			
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter		UV; 275 nm; test mat.			
Results Remarks		degraded to form mono-n-butyl phthalate almost quantitatively			
Results Value, Standard Deviation Results, Sam- ple Time Results, Reference Substance Results, and Reference Substance Compartment Results		not reported; not reported; not reported; Not Reported			
Results Details		not reported			
Mean Total Recovery Result covery	ts and Results Per Re-	not reported; not reported			

EVALUATION							
Domain		Metric	Rating	Comments			
Domain 1: Test Substa	ince						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and structure.			
	Metric 2:	Test Substance Purity	Medium	The test substance source or purity were not reported.			
Domain 2: Test Desigr	1						
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.			
Continued on next page							

PUBLIC RELEASE DRAFT May 2025 Biodegredation in Soil

		C	ontinued from previous page	2				
Study Citation:	Englehardt, G., Environmental C	Englehardt, G., Wallnöfer, P. R., Hutzinger, O. (1975). The microbial metabolism of di-n-butyl phthalate and related dialkyl phthalates. Bulletin of Environmental Contamination and Toxicology 13(3):342-347.						
<b>OECD Harmonized</b>	Biodegredation i	Biodegredation in Soil						
Template:								
HERO ID:	1332923							
			EVALUATION					
Domain		Metric	Rating	Comments				
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.				
Domain 3: Test Condit	ions							
	Metric 5:	Test Method Suitability	Low	Concentrations were not reported.				
	Metric 6:	Testing Conditions	Uninformative	Testing conditions were not reported and data provided were insufficient to interpret results.				
	Metric 7:	Testing Consistency	Low	Conditions were not reported.				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.				
Domain 4: Test Organi	sms Matria 0:	Outcome Assessment Mathedale av	Low					
	Metric 10:	Sampling Methods	LOW N/A	The metric is not applicable to this study type				
	Wieurie 10.	Sampling Methods	11/74	The metric is not applicable to this study type.				
Domain 5: Outcome A	ssessment							
	Metric 11:	Test Substance Identity	Low	Deficiencies in the outcome assessment methodology of the assessment or reporting were likely to have a substantial impact on results.				
	Metric 12:	Test Substance Purity	Low	Details regarding sampling methods of the outcome(s) were not fully reported.				
Domain 6: Confoundin	ng/Variable Control	Conformation Maniphles	NT/ A					
	Metric 13:	Uselth Outcomes Userslated to	IN/A	The metric is not applicable to this study type.				
	Metric 14:	Exposure	N/A	The metric is not applicable to this study type.				
Domain 7. Data Preser	ntation and Analysis							
Zomani (, Data 11050	Metric 15:	Data Reporting	Medium	The target chemical and transformation product(s) concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.				
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis or kinetic calculations were not reported.				
Domain & Other								
Domain 8: Other	Metric 17:	Verification or Plausibility of	Low	Due to limited information, evaluation of the reasonableness of the study results was not				
	Meure 17.	Results	LOW	possible.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Quali	ity Determir	nation	Uninformative					

Study Citation:	Fu, M. H., Alexander, M. (1995). Use of surfactants and slurrying to enhance the biodegradation in soil of compounds initially dissolved in nonaqueous-					
OECD Harmonized	phase liquids. Applied Microbiology and Biotechnology 43(3):551-558. Biodegredation in Soil					
Template: HERO ID:	679520					
	017520					
Demonster		EXTRACTION				
Parameter						
CASRN and Test Material		84-74-2; Di-n-butyl phthalate				
Confidentiality, EndPoint, T	Jype,	None; other; Experimental; other: Mineralization of radio-labeled DBP in soil and soil slurries with phenanthrene contaminant.				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	Purity	NR; Aldrich Chemical Company, Milwaukee, WI; Liquid; Reagent grade				
Oxygen, pH, and CEC		aerobic; 7.23; Not reported				
Test Type, Test Temperature	e, and Test Details	laboratory; 30°C; Radiolabeled CO2 was trapped in the side-arms of the biometer flasks.				
Soil Type, Clay Silts and Organic Carbon, and		loam; Not reported; Not reported				
Bulk Density Soil Classification Microbial Biomass and Hu		Lima Loam: 7.5% organic matter: Not reported: 70% based on field canacity				
midity	ar Diomass, and Hu	Linia Louni, 7.5% organie mader, rot reported. 70% based on nod capacity				
Duration, Parameter, System	n, and	43 days; CO2 evolution; DBP was investigated as a NAPL in soil systems. Flask incubated with test substance was shaken; Not reported				
Sampling Frequency Control and Blank		Not reported: Controls included no additional surfactant or NAPI				
Concentration		Not Reported				
Analytical Method, Analyt	ical Details, and Re-	Liquid scintillation counter (model LS 7500; Beckman Instruments); Radiolabeled CO2 was trapped in the side-arms of the biometer flasks with				
sults Per Degredation Parameter		0.5 NaOH. Radioactivity was calculated using liquid scintillation counter.; CO2 evolution				
Results Remarks		Acclimation phase of (0.5 mL) DBP (as the NAPL) in soil with 40 mg/kg of phenanthrene without surfactant was 18 days.				
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results.		2.21%; Not reported; 43 days; 37.7% after 43 days; Test system without co-surfactant system or DBP as the NAPL.				
and Reference Substance Co	ompartment Results					
Results Details		Rate of mineralization=0.02 µg/kg per hour				
Mean Total Recovery Results and Results Per Re- covery		Not Reported; Not Reported				

			<b>EVALUATION</b>	
Domain		Metric	Rating	Comments
Domain 1: Test Substar	ice			
	Metric 1:	Test Substance Identity	High	Test substance was identified appropriately.
	Metric 2:	Test Substance Purity	High	Test substance source and qualitative purity (reagent grade) was reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	Low	A blank without DBP and only phenanthrene co-contaminant was used as comparison to other test system combinations. This was not a blank control in the traditional sense.
	Metric 4:	Test Substance Stability	Medium	Some details regarding DBP preparation and stability were not reported.

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Study Citation:	Fu, M. H., Alexander, M. (1995). Use of surfactants and slurrying to enhance the biodegradation in soil of compounds initially dissolved in nonaqueous- phase liquids. Applied Microbiology and Biotechnology 43(3):551-558.					
OECD Harmonized	Biodegredation in	Soil				
Template:						
HERO ID:	679520					
			EVALUATION			
Domain		Metric	Rating	Comments		
Domain 3: Test Condition	18					
	Metric 5:	Test Method Suitability	Medium	The test method is suitable for determining DBP biodegradation in systems with co- contaminants, and understanding interactions between surfactants and NAPLs in soil.		
	Metric 6:	Testing Conditions	Medium	Some soil conditions were not reported.		
	Metric 7:	Testing Consistency	High	Test conditions appeared to be consistent across different study groups.		
	Metric 8:	System Type and Design	Medium	Equilibrium was not established or reported but this was not likely to have a substan- tial impact on study resultsORthe system type and design (i.e., static, semi-static, and flow-through; sealed, open) were not capable of appropriately maintaining substance concentrations or not described but the deviation was not likely to have a substantial im- pact on study results.		
Domain 4 <sup>.</sup> Test Organism	15					
	Metric 9: Metric 10:	Outcome Assessment Methodology Sampling Methods	High Medium	The inoculum source was reported. Equilibrium was not established or reported but this was not likely to have a substan- tial impact on study resultsORthe system type and design (i.e., static, semi-static, and flow-through; sealed, open) were not capable of appropriately maintaining substance concentrations or not described but the deviation was not likely to have a substantial im- pact on study results.		
Domain 5: Outcome Asse	accment					
Domain J. Outcome Asse	Metric 11.	Test Substance Identity	High	The outcome assessment addressed the intended outcomes of interest		
	Metric 12:	Test Substance Purity	Medium	Sampling methods were not well described, but graphical outputs suggest regular sam- pling through the study duration.		
Domain & Confounding	Variable Control					
Domain 6: Confounding/	Metric 13:	Confounding Variables	Medium	The study reports DBP mineralization in presence of phenanthrene, but no study group addressed DBP biodegradation alone in the test system.		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	this metric is not applicable to this study		
Domain 7: Data Presentat	Metric 15:	Data Reporting	Low	Extraction recoveries were not reported and it's unclear whether other fate processes were adequately controlled.		
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	No statistical analyses were reported.		
Domain 8: Other						
		Conti	nued on next page			

			May 2025			
l Phthalate		Bic	odegredation in Sc	il HERO ID: 679520 Table: 1		
		conti	nued from previou	s page		
Study Citation:	Fu, M. H., Alexander, M. (1995). Use of surfactants and slurrying to enhance the biodegradation in soil of compounds initially dissolved in nonaqueous- phase liquids. Applied Microbiology and Biotechnology 43(3):551-558.					
OECD Harmonized Biodegredation in Soil						
Template:						
HERO ID:	679520					
			EVALUATION			
Domain		Metric	Rating	Comments		
	Metric 17:	Verification or Plausibility of	Low	It's unclear whether DBP in this context is reasonable as the focus was to understand		
		Results		phenanthrene degradation in systems in the presence of NAPLs and surfactants. The au- thors discussed potential reasons why DBP appeared to decreased phenanthrene degra- dation.		
	Metric 18:	OSAR Models	N/A	this metric is not applicable to this study		

PUBLIC RELEASE DRAFT

Study Citation: OECD Harmonized Template:	<ul> <li>Fu, M. H., Alexander, M. (1995). Use of surfactants and slurrying to enhance the biodegradation in soil of compounds initially dissolved in nonaqueous phase liquids. Applied Microbiology and Biotechnology 43(3):551-558.</li> <li>Biodegredation in Soil</li> </ul>				
HERO ID:	679520				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, T	ype,	None; other; Experimental; other: Mineralization of radio-labeled DBP in soil slurries with phenanthrene contaminant.			
Solvent, Reactivity, Storage	, Stability	NR; NR; NR			
Radiolabel, Source, State, P	Purity	NR; Aldrich Chemical Company, Milwaukee, WI; Liquid; Reagent grade			
Oxygen, pH, and CEC		aerobic; 7.23; Not reported			
Test Type, Test Temperature	e, and Test Details	laboratory; 30 C; Radiolabeled CO2 was trapped in the side-arms of the biometer flasks.			
Soil Type, Clay Silts and Organic Carbon, and Bulk Density		loam; Not reported; Not reported			
Soil Classification, Microbial Biomass, and Hu-		Lima Loam; 7.5% organic matter; Not reported: 70% based on field capacity			
Duration, Parameter, Syster Sampling Frequency	n, and	43 days; CO2 evolution; DBP was investigated as a NAPL in soil systems. Flask incubated with test substance was shaken; Not reported			
Control and Blank		Not reported; Controls included no additional surfactant or NAPL			
Concentration		Not Reported			
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter		Liquid scintillation counter (model LS 7500; Beckman Instruments); Radiolabeled CO2 was trapped in the side-arms of the biometer flasks with 0.5 NaOH. Radioactivity was calculated using liquid scintillation counter.; CO2 evolution			
Results Remarks Accl		Acclimation phase of (0.5 mL) DBP (as the NAPL) in soil slurries with 40 mg/kg of phenanthrene without surfactant was 28 days.			
Results Value, Standard De ple Time Results, Reference and Reference Substance Co	viation Results, Sam- e Substance Results, ompartment Results	2.24%; Not reported; 43 days; 52.3% after 43 days; Test system without co-surfactant system or DBP as the NAPL.			
Results Details		Rate of mineralization=0.02 µg/kg per hour			
Mean Total Recovery Result covery	ts and Results Per Re-	Not reported; Not reported			

			EVALUATION			
Domain		Metric	Rating	Comments		
Domain 1: Test Substar	nce					
	Metric 1:	Test Substance Identity	High	Test substance was identified appropriately.		
	Metric 2:	Test Substance Purity	High	Test substance source and qualitative purity (reagent grade) was reported.		
Domain 2: Test Design	Metric 3:	Study Controls	Low	A blank without DBP and only phenanthrene co-contaminant was used as comparison to		
	Metric 4:	Test Substance Stability	Medium	Some details regarding DBP preparation and stability were not reported.		
Domain 3: Test Conditi	ions					
Continued on next page						

## Page 312 of 720

		continu	ed from previous	page			
Study Citation:	Fu, M. H., Alexan phase liquids. App	Fu, M. H., Alexander, M. (1995). Use of surfactants and slurrying to enhance the biodegradation in soil of compounds initially dissolved in nonaqueous- phase liquids. Applied Microbiology and Biotechnology 43(3):551-558.					
OECD Harmonized	Biodegredation in	Biodegredation in Soil					
Template:	(70520						
HERO ID:	679520						
		F	EVALUATION				
Domain		Metric	Rating	Comments			
	Metric 5:	Test Method Suitability	Medium	The test method is suitable for determining DBP biodegradation in systems with co- contaminants, and understanding interactions between surfactants and NAPLs in soil.			
	Metric 6:	Testing Conditions	Medium	Some soil conditions were not reported.			
	Metric 7:	Testing Consistency	High	Test conditions appeared to be consistent across different study groups.			
	Metric 8:	System Type and Design	N/A	this metric is not applicable to this study			
Domain 4. Test Organia	ma						
Domain 4: Test Organis	Metric 0.	Outcome Assessment Methodology	High	The inoculum source was reported			
	Metric 10.	Sampling Methods	N/A	This metric is not applicable to this type of study			
	Medie 10.	Sumpling Methods	10/11				
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment addressed the intended outcomes of interest.			
	Metric 12:	Test Substance Purity	Medium	Sampling methods were not well described, but graphical outputs suggest regular sampling through the study duration.			
Domain 6: Confounding	y/Variable Control	Confounding Variables	Madium	The state and DDD mineralized in in an end of the state state and			
	Mether 15.	Confounding variables	Medium	addressed DBP biodegradation alone in the test system			
	Metric 14:	Health Outcomes Unrelated to	N/A	this metric is not applicable to this study			
		Exposure	1011				
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	Low	Sampling methods were not well described, but graphical outputs suggest regular sam- pling through the study duration.			
	Metric 16:	Statistical Methods and	Medium	No statistical analyses were reported.			
		Kinetic Calculations					
Domain 8: Other							
	Metric 17:	Verification or Plausibility of Results	Low	It's unclear whether DBP in this context is reasonable as the focus was to understand phenanthrene degradation in systems in the presence of NAPLs and surfactants. The au- thors discussed potential reasons why DBP appeared to decreased phenanthrene degra-			
	Matric 19.	OSAP Models	NT/A	dallon. This matrix is not applicable to this type of study			
	Meure 18:	APAU MOREIZ	1 <b>V</b> /A	This meane is not applicable to this type of study.			
<b>Overall Qualit</b>	ty Determina	ation	Medium				

Study Citation:	Inman, J. C., Strack Health, Part B: Pes	Inman, J. C., Strachan, S. D., Sommers, L. E., Nelson, D. W. (1984). The decomposition of phthalate esters in soil. Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes 19(2):245-257.						
OECD Harmonized	Biodegredation in	iodegredation in Soil						
Template: HERO ID:	790683							
		EXTRACTION						
Parameter		Data						
CASRN and Test Material		84-74-2; DBP						
Confidentiality, EndPoint, T	Гуре,	None; other; Experimental; other: Not reported; Ultimate biodegradation in soil						
Solvent, Reactivity, Storage	, Stability	Acetone; NR; NR						
Radiolabel, Source, State, F	urity	14C carboxy-labeled, specific activity 2.85E7 dpm/g; Synthesized from 14C phthalic acid (ICN Chemical and Radioisotope Division); NR; NR						
Oxygen, pH, and CEC		aerobic; 5.3; 23.8 meq/100 g						
Test Type, Test Temperature, and Test Details		laboratory; 23°C; 100 g soil amended with test substance, acetone solvent allowed to evaporate; moisture adjusted with 2 mL soil extract from soil sample and distilled water						
Soil Type, Clay Silts and Organic Carbon, and		silt loam; 14.3% sand, 60.9% silt, 24.8% clay, 1.96% organic carbon; Not reported						
Soil Classification, Microb	ial Biomass, and Hu-	Surface 15 cm Chalmers silt loam (Typic Haplaquoll); Not reported: Soil moisture -0.6 bar tension						
midity Duration Parameter System	n and	200 d: test mat : 1.1. Erlenmeyer flack connected to closed aeration system with CO2-free moist air at 8 mL/min flow rate: CO2 tranned in 25 mL						
Sampling Frequency	n, and	1M KOH trap; 3, 6, 11, 18, 32, 53, 80, 200 d						
Control and Blank		Not reported; Sterile control included (Chalmers, pH 6.0)						
Concentration		1 mg/g						
Analytical Method, Analyt sults Per Degredation Paran	ical Details, and Re- neter	Packard 2420 scintillation counter; KOH traps acidified with HCl, and mixed with NCS reagent (quaternary ammonium base in toluene); 14CO2 evolution						
Results Remarks		Hydrolysis of the ester linkage must precede ring cleavage and hydrolysis of the second ester appears to be the rate limiting step.						
Results Value, Standard De ple Time Results, Reference and Reference Substance Co	viation Results, Sam- ce Substance Results, ompartment Results	98.6%; Not reported; 200 d; Sterile soil; 2.4%/200 d						
Results Details		0.09%/3d, 0.2%/6d, 0.8%/11d, 1.7%/18d, 39.3%/32d, 95.4%/53d, 97.0%/80d, 98.6%/200d						
Mean Total Recovery Result covery	ts and Results Per Re-	Not reported; Not reported						

EVALUATION				
Domain		Metric	Rating	Comments
Domain 1: Test Substa	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	Medium	The synthesis sequence was reported, purity was not reported.
Domain 2: Test Design	l			
	Metric 3:	Study Controls	High	Sterilized controls were included and the full results were reported.
	Metric 4:	Test Substance Stability	Medium	Test substance solvent was reported, storage was not reported.

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HERO ID: 790683 Table: 1 of 8

		continu	ied from pre	vious page		
Study Citation:	Inman, J. C., Stra Health, Part B: P	Inman, J. C., Strachan, S. D., Sommers, L. E., Nelson, D. W. (1984). The decomposition of phthalate esters in soil. Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes 19(2):245-257.				
OECD Harmonized	Biodegredation in	Biodegredation in Soil				
Template:						
HERO ID:	790683					
		F	VALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 3: Test Conditi	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Soil characteristics and test temperature were reported.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples.		
	Metric 8:	System Type and Design	N/A	This metric is not applicable to the study type.		
Demain 4. Test Oreania						
Domain 4: Test Organis	SIIIS Matria Or	Outcome Assessment Mathedalagy	High			
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and is used in similar studies.		
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to the study type.		
Domain 5: Outcome As	ssessment					
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining biodegradation.		
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and samples were collected at an appropriate fre- quency.		
Domain 6: Confounding	g/Variable Control					
Domain of Comountaing	Metric 13:	Confounding Variables	High	No significant sources of uncertainty were identified		
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to the study type		
	Medile 11.	Exposure	1.0/1	This metre is not appreade to the study type.		
Domain 7. Data Dragon	tation and Analysia					
Domain 7. Data Presen	Matria 15.	Data Danarting	Hick			
	Metric 15:	Data Reporting	High	The analytical method was appropriate, sufficient evidence was presented to support that the parent was lost to biodegradation only.		
	Metric 16:	Statistical Methods and	N/A	Statistical analysis and kinetic calculations were not applied.		
		Kinetic Calculations				
Domain 8: Other						
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable based on the method, results were not compared to previous studies		
	Metric 18:	QSAR Models	N/A	This metric is not applicable to the study type.		
Overall Quali	ty Determin	nation	High			

\* Related References: Cited in HSDB

Study Citation:	Inman, J. C., Strac	Inman, J. C., Strachan, S. D., Sommers, L. E., Nelson, D. W. (1984). The decomposition of phthalate esters in soil. Journal of Environmental Science and						
OECD Harmonized	Health, Part B: Pes Biodegredation in	Biodegredation in Soil						
Template: HERO ID:	790683	790683						
			EXTRACTION					
Parameter		Data						
CASRN and Test Material		84-74-2; DBP						
Confidentiality, EndPoint, T	Гуре,	None; other; Experimental; o	other: Not reported; Ultimate biodegradation in soil					
Guideline Solvent, Reactivity, Storage	Stability	Acetone: NR: NR: NR						
Radiolabel, Source, State, P	Purity	14C carboxy-labeled, specifi	c activity 2.85E7 dpm/g; Synthesized from 14C pht	halic acid (ICN Chemical and Radioisotope Division); NR: NR				
Oxygen, pH, and CEC		aerobic; 6.0; 23.8 meq/100 g		I I I I I I I I I I I I I I I I I I I				
Test Type, Test Temperature, and Test Details		laboratory; 23°C; 100 g soil amended with test substance, acetone solvent allowed to evapor sample and distilled water		d to evaporate; moisture adjusted with 2 mL soil extract from soil				
Soil Type, Clay Silts and Organic Carbon, and Bulk Density		silt loam; 14.3% sand, 60.9%	6 silt, 24.8% clay, 1.96% organic carbon; Not report	ed				
Soil Classification, Microbial Biomass, and Hu-		Surface 15 cm Chalmers silt	loam (Typic Haplaquoll); Not reported: Soil moistu	re -0.6 bar tension				
Duration, Parameter, Syster	n, and	200 d; test mat.; 1 L Erlenmeyer flask connected to closed aeration system with CO2-free		CO2-free moist air at 8 mL/min flow rate; CO2 trapped in 25 mL				
Sampling Frequency Control and Blank		1M KOH trap; 3, 6, 11, 18, 3 Not reported; Sterile control	32, 53, 80, 200 d included (Chalmers, pH 6.0)					
Concentration		1 mg/g						
Analytical Method, Analyt sults Per Degredation Paran	ical Details, and Re-	Packard 2420 scintillation counter; KOH traps acidified with HCl, and mixed with NCS		ith NCS reagent (quaternary ammonium base in toluene); 14CO2				
Results Remarks		Hydrolysis of the ester linkage must precede ring cleavage and hydrolysis of the second e		second ester appears to be the rate limiting step.				
Results Value, Standard Deviation Results, Sam- ple Time Results, Reference Substance Results, and Reference Substance Comportment Results		88.1%; Not reported; 200 d; Sterile soil; 2.4%/200 d						
Results Details	Results Details		d, 1.6%/18d, 4.8%/32d, 32.4%/53d, 84.7%/80d, 88	1%/200d				
Mean Total Recovery Result covery	ts and Results Per Re-	Not reported; Not reported						
			EVALUATION					
Domain		Metric	Pating	Comments				

Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
	Metric 2:	Test Substance Purity	Medium	The synthesis sequence was reported, purity was not reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	High	Sterilized controls were included and the full results were reported.	
	Metric 4:	Test Substance Stability	Medium	Test substance solvent was reported, storage was not reported.	
Domain 3: Test Condition	ons Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
Continued on next page					

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HERO ID: 790683 Table: 2 of 8

		continu	ed from pre	vious page			
Study Citation:	Inman, J. C., Strad Health, Part B: Pe	Inman, J. C., Strachan, S. D., Sommers, L. E., Nelson, D. W. (1984). The decomposition of phthalate esters in soil. Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes 19(2):245-257.					
OECD Harmonized	Biodegredation in	Biodegredation in Soil					
Template:							
HERO ID:	790683						
		E	VALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 6:	Testing Conditions	High	Soil characteristics and test temperature were reported.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples.			
	Metric 8:	System Type and Design	N/A	This metric is not applicable to the study type.			
Domain 4: Test Organis	ms Matria Or	Outcome Assessment Methodology	Iliah				
	Metric 9:	Someling Methods	nign N/A	The modulum source was reported and is used in similar studies.			
	Metric 10.	Sampling Methods	IN/A	This metric is not applicable to the study type.			
Domain 5: Outcome As	sessment						
Domain 5. Outcome Hs	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining biodegradation			
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and samples were collected at an appropriate fre-			
			0	quency.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	High	No significant sources of uncertainty were identified.			
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to the study type.			
		Exposure					
Domain 7: Data Present	ation and Analysis						
Domain 7. Data Present	Metric 15.	Data Reporting	High	The analytical method was appropriate, sufficient evidence was presented to support that			
	Wedde 15.	Data Reporting	Ingn	the parent was lost to biodegradation only.			
	Metric 16:	Statistical Methods and	N/A	Statistical analysis and kinetic calculations were not applied.			
		Kinetic Calculations		· · · · · · · · · · · · · · · · · · ·			
Domain 8: Other	Matula 17	Varifiantian an Dia (1914)	TT: 1				
	Metric 17:	Verification or Plausibility of	High	The results were reasonable based on the method, results were not compared to previous			
	Matric 18.	CSAP Models	N/A	Suures. This matrix is not applicable to the study type			
	ivicule 10.	VOUL MOULIS	11/71	This meane is not applicable to the study type.			
Averall Auglit	ty Dotormin	ation	High				
	ly Deter mill	auvii	Ingli				

\* Related References: Cited in HSDB

Study Citation:	Inman, J. C., Strac	nan, S. D., Sommers, L. E.,	Nelson, D. W. (1984). The decomposition of p	ohthalate esters in soil. Journal of Environmental Science and				
OECD Harmonized	Health, Part B: Pes Biodegredation in	Biodegredation in Soil						
Template: HERO ID:	790683	790683						
			EXTRACTION					
Parameter		Data						
CASRN and Test Material		84-74-2; DBP						
Confidentiality, EndPoint, T	Гуре,	None; other; Experimental; o	other: Not reported; Ultimate biodegradation in soil					
Guideline Solvent, Reactivity, Storage	Stability	Acetone: NR: NR: NR						
Radiolabel, Source, State, P	Purity	14C carboxy-labeled, specifi	c activity 2.85E7 dpm/g; Synthesized from 14C phth	alic acid (ICN Chemical and Radioisotope Division): NR: NR				
Oxygen, pH, and CEC		aerobic; 7.2; 23.8 meq/100 g	;					
Test Type, Test Temperature, and Test Details		laboratory; 23°C; 100 g soil amended with test substance, acetone solvent allowed to evaporat sample and distilled water		t to evaporate; moisture adjusted with 2 mL soil extract from soil				
Soil Type, Clay Silts and Organic Carbon, and Bulk Density		silt loam; 14.3% sand, 60.9%	6 silt, 24.8% clay, 1.96% organic carbon; Not reported	d				
Soil Classification, Microbial Biomass, and Hu-		Surface 15 cm Chalmers silt	loam (Typic Haplaquoll); Not reported: Soil moistur	e -0.6 bar tension				
Duration, Parameter, Syster	n, and	200 d; test mat.; 1 L Erlenmeyer flask connected to closed aeration system with CO2-fr		CO2-free moist air at 8 mL/min flow rate; CO2 trapped in 25 mL				
Sampling Frequency Control and Blank		1M KOH trap; 3, 6, 11, 18, 32, 53, 80, 200 d Not reported: Sterile control included (Chalmers, pH 6.0)						
Concentration		1 mg/g						
Analytical Method, Analyt sults Per Degredation Paran	ical Details, and Re-	Packard 2420 scintillation co	ounter; KOH traps acidified with HCl, and mixed wi	h NCS reagent (quaternary ammonium base in toluene); 14CO2				
Results Remarks		Hydrolysis of the ester linkage must precede ring cleavage and hydrolysis of the second		second ester appears to be the rate limiting step.				
Results Value, Standard Deviation Results, Sam- ple Time Results, Reference Substance Results, and Reference Substance Competence Results		97.2%; Not reported; 200 d; Sterile soil; 2.4%/200 d						
Results Details	omparanent results	1.20%/3d, 16.5%/6d, 63.3%/	/11d, 78.0%/18d, 90.8%/32d, 94.9%/53d, 95.8%/80d	, 97.2%/200d				
Mean Total Recovery Result covery	ts and Results Per Re-	Not reported; Not reported						
			EVALUATION					
Domain		Metric	Pating	Comments				

Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
	Metric 2:	Test Substance Purity	Medium	The synthesis sequence was reported, purity was not reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	High	Sterilized controls were included and the full results were reported.	
	Metric 4:	Test Substance Stability	Medium	Test substance solvent was reported, storage was not reported.	
Domain 3: Test Conditions       Metric 5:       Test Method Suitability       High       The test method was suitable for the test substance.					
Continued on next page					

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HERO ID: 790683 Table: 3 of 8

		continu	ed from pre	vious page		
Study Citation:	Inman, J. C., Strad Health, Part B: Pe	Inman, J. C., Strachan, S. D., Sommers, L. E., Nelson, D. W. (1984). The decomposition of phthalate esters in soil. Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes 19(2):245-257.				
OECD Harmonized	Biodegredation in	Biodegredation in Soil				
Template:						
HERO ID:	790683					
		Ε	VALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 6:	Testing Conditions	High	Soil characteristics and test temperature were reported.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples.		
	Metric 8:	System Type and Design	N/A	This metric is not applicable to the study type.		
Domain 4: Test Organis	sms		TT' 1			
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and is used in similar studies.		
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to the study type.		
Domain 5: Outcome As	sessment					
Domain J. Outcome As	Metric 11.	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining biodegradation		
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and samples were collected at an appropriate fre-		
	1100110 12.		mgn	quency.		
Domain 6: Confounding	g/Variable Control					
	Metric 13:	Confounding Variables	High	No significant sources of uncertainty were identified.		
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to the study type.		
		Exposure				
Domain 7. Data Dresant	totion and Analysia					
Domain /: Data Present	Motrie 15:	Data Paparting	Uiah	The applytical method was appropriate sufficient avidence was presented to support that		
	Wieure 15.	Data Reporting	nign	the parent was lost to biodegradation only		
	Metric 16:	Statistical Methods and	N/A	Statistical analysis and kinetic calculations were not applied.		
		Kinetic Calculations				
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	High	The results were reasonable based on the method, results were not compared to previous		
	Matria 19.	Results OSAB Modele	NT/A	studies.		
	wieuric 18.	QOAR MOUEIS	IN/A	This metric is not applicable to the study type.		
Avorall Analis	ty Dotormin	ation	High			
	ly Determin	auvii	Ingii			

\* Related References: Cited in HSDB

Study Citation:	Inman, J. C., Strac	nman, J. C., Strachan, S. D., Sommers, L. E., Nelson, D. W. (1984). The decomposition of phthalate esters in soil. Journal of Environmental Science and				
OFCD Harmonized	Health, Part B: Pes	Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes 19(2):245-257.				
Template:	blodegredation in					
HERO ID:	790683	790683				
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, EndPoint, T	Type,	None; other; Experimental; other: Not	reported; Ultimate bi	odegradation in soil		
Guideline Solvent, Reactivity, Storage	Stability	Acetone: NR: NR: NR				
Radiolabel, Source, State, P	Purity	14C carboxy-labeled, specific activity 2	2.85E7 dpm/g; Synth	esized from 14C phthalic acid (ICN Chemical and Radioisotope Division); NR; NR		
Oxygen, pH, and CEC	5	anaerobic; 6.0; 23.8 meq/100 g	1 67 9			
Test Type, Test Temperature	ture, and Test Details laboratory; 23°C; 100 g soil amended with test substance, acetone solvent allowed to evaporate; moisture adjusted with 2 mL soil extract from soil sample and distilled water			cetone solvent allowed to evaporate; moisture adjusted with 2 mL soil extract from soil		
Soil Type, Clay Silts and Bulk Density	Organic Carbon, and	rganic Carbon, and silt loam; 14.3% sand, 60.9% silt, 24.8% clay, 1.96% organic carbon; Not reported				
Soil Classification, Microbi midity	ication, Microbial Biomass, and Hu- Surface 15 cm Chalmers silt loam (Typic Haplaquoll); Not reported: Soil moisture -0.6 bar tension			reported: Soil moisture -0.6 bar tension		
Duration, Parameter, System	n, and	200 d; test mat.; 1 L Erlenmeyer flask c	connected to closed a	heration system with CO2-free moist air at 8 mL/min flow rate; CO2 trapped in 25 mL		
Sampling Frequency		1M KOH trap; 3, 6, 11, 18, 32, 53, 80, 200 d				
Control and Blank		Not reported, Sterne control included (Unalmers aerobic, pri 6.0)				
Analytical Mathad Analyti	ical Dataila and Da	1 шууд Packard 2420 scintillation counter: KOH trans acidified with HCl and mixed with NCS reagent (quaternary ammonium base in toluene): 14СО2				
sults Per Degredation Paran	neter	evolution				
Results Remarks		Hydrolysis of the ester linkage must precede ring cleavage and hydrolysis of the second ester appears to be the rate limiting step.				
Results Value, Standard Dep ple Time Results, Reference	viation Results, Sam- e Substance Results.	97.8%; Not reported; 200 d; Sterile soil	; 2.4%/200 d			
and Reference Substance Co	ompartment Results					
Results Details		0.04%/3d, 0.6%/6d, 6.6%/11d, 12.3%/1	8d, 45.1%/32d, 68.6	5%/53d, 83.7%/80d, 97.8%/200d		
Mean Total Recovery Result covery	ts and Results Per Re-	Not reported; Not reported				
Domain		Metric	EVALUATION Rating	Comments		
Domain 1: Test Substand	<u>ге</u>	IVICUIC	Kaung	Comments		
Domain 1. 10st Substant	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The synthesis sequence was reported, purity was not reported.		

 Domain 2: Test Design
 Metric 3:
 Study Controls
 High Medium
 Sterilized controls were included and the full results were reported.

 Metric 4:
 Test Substance Stability
 Medium
 Test substance solvent was reported, storage was not reported.

 Domain 3: Test Conditions
 Test Method Suitability
 High
 The test method was suitable for the test substance.

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HERO ID: 790683 Table: 4 of 8

		continu	ed from prev	vious page			
Study Citation:	Inman, J. C., Strac Health, Part B: Pe	Inman, J. C., Strachan, S. D., Sommers, L. E., Nelson, D. W. (1984). The decomposition of phthalate esters in soil. Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes 19(2):245-257.					
OECD Harmonized	Biodegredation in	Biodegredation in Soil					
Template:							
HERO ID:	790683						
		Ε	VALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 6:	Testing Conditions	High	Soil characteristics and test temperature were reported.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples.			
	Metric 8:	System Type and Design	N/A	This metric is not applicable to the study type.			
Domain 4: Test Organis	ms						
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and is used in similar studies.			
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to the study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining biodegradation.			
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and samples were collected at an appropriate fre-			
				quency.			
Domain 6: Confounding	Wariable Control						
Domain 0. Comounding	Metric 13.	Confounding Variables	High	No significant sources of uncertainty were identified			
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to the study type			
	Metric 14.	Exposure	14/24	This metre is not appreade to the study type.			
		Exposure					
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	High	The analytical method was appropriate, sufficient evidence was presented to support that			
		1 0	e	the parent was lost to biodegradation only.			
	Metric 16:	Statistical Methods and	N/A	Statistical analysis and kinetic calculations were not applied.			
		Kinetic Calculations					
Domain 8: Other	M-4. 17.		TT: -1-				
	Metric 17:	Regulta	High	the results were reasonable based on the method, results were not compared to previous			
	Metric 18.	OSAR Models	N/A	This matric is not applicable to the study type			
	methe 10.	Zov in models	11/17	This metric is not applicable to the study type.			
Avorall Augli	ty Dotormin	ation	High				
	y Determina	auvii	nign				

\* Related References: Cited in HSDB

Study Citation:	Inman, J. C., Stracl	nan, S. D., Sommers, L. E.,	Nelson, D. W. (1984). The decomposition	of phthalate esters in soil. Journal of Environmental Science and		
OECD Harmonized	Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes 19(2):245-257. Biodegredation in Soil					
Template:						
HERO ID:	790683					
			EXTRACTION			
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, EndPoint, T	Type,	None; other; Experimental; other: Not reported; Ultimate biodegradation in soil				
Guideline Solvent Reactivity Storage Stability		Acetone: NR: NR				
Radiolabel, Source, State, Purity		14C carboxy-labeled, specific activity 2.85E7 dpm/g; Synthesized from 14C phthalic acid (ICN Chemical and Radioisotope Division); NR; NR				
Oxygen, pH, and CEC		aerobic; 5.3; 23.8 meq/100 g				
Test Type, Test Temperature, and Test Details		laboratory; 30°C; 100 g soil a	wed to evaporate; moisture adjusted with 2 mL soil extract from soil			
Soil Type, Clay Silts and Organic Carbon, and		silt loam: 14.3% sand 60.9% silt. 24.8% clay, 1.96% organic carbon. Not reported				
Bulk Density		······································				
Soil Classification, Microbial Biomass, and Hu-		Surface 15 cm Chalmers silt loam (Typic Haplaquoll); Not reported: Soil moisture -0.6 bar tension				
midity Duration Parameter System	n and	200 di tast mat i 1 L. Erlanmavar flack connected to closed corotion system with CO2 free maist oir at 8 mL/min flavy rates CO2 tranned in 25 mL				
Sampling Frequency	n, and	1M KOH trap: 3 6 11 18 32 53 80 200 d				
Control and Blank		Not reported; Sterile control included (Chalmers, pH 6.0 23°C)				
Concentration		1 mg/g				
Analytical Method, Analytical Details, and Re-		Packard 2420 scintillation counter; KOH traps acidified with HCl, and mixed with NCS reagent (quaternary ammonium base in toluene); 14CO2				
Results Remarks		Hydrolysis of the ester linkag	e must precede ring cleavage and hydrolysis of t	he second ester appears to be the rate limiting step. No data for 200		
Deculte Value Standard Da	vistion Deculte Som	d due to mechanical failure.	arile soil: 2.4%/200 d			
nle Time Results Reference	e Substance Results	62.0%, Not reported, 80 d, 51	eme son, 2.470/200 d			
and Reference Substance Co	ompartment Results					
Results Details	esults Details 0		l, 2.7%/18d, 9.8%/32d, 77.7%/53d, 82.6%/80d,	ND/200d		
Mean Total Recovery Results and Results Per Re- Not reported; Not reported						
covery						
			εναι ματιονι			
Domain		Metric	Rating	Comments		

Domain		Metric	Rating	Comments	
Domain 1: Test Substa	nce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
	Metric 2:	Test Substance Purity	Medium	The synthesis sequence was reported, purity was not reported.	
Domain 2: Test Design	1				
	Metric 3:	Study Controls	High	Sterilized controls were included and the full results were reported.	
	Metric 4:	Test Substance Stability	Medium	Test substance solvent was reported, storage was not reported.	
Domain 3: Test Condit	ions				

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HERO ID: 790683 Table: 5 of 8

		continu	ed from pre	vious page	
Study Citation:	Inman, J. C., Strachan, S. D., Sommers, L. E., Nelson, D. W. (1984). The decomposition of phthalate esters in soil. Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes 19(2):245-257.				
OECD Harmonized	Biodegredation in Soil				
Template:					
HERO ID:	790683				
		E	VALUATIO	Ň	
Domain		Metric	Rating	Comments	
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	High	Soil characteristics and test temperature were reported.	
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples.	
	Metric 8:	System Type and Design	N/A	This metric is not applicable to the study type.	
Domain 4: Test Organis	ms				
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and is used in similar studies.	
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to the study type.	
		1 0			
Domain 5: Outcome As	sessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining biodegradation.	
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and samples were collected at an appropriate fre- quency.	
Domain 6: Confounding	g/Variable Control				
	Metric 13:	Confounding Variables	High	No significant sources of uncertainty were identified.	
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to the study type.	
		Exposure			
Domain 7: Data Present	ation and Analysis				
	Metric 15:	Data Reporting	High	The analytical method was appropriate, sufficient evidence was presented to support that the parent was lost to biodegradation only.	
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	Statistical analysis and kinetic calculations were not applied.	
Domain 8: Other					
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable based on the method, results were not compared to previous studies.	
	Metric 18:	QSAR Models	N/A	This metric is not applicable to the study type.	
Overall Quali	ty Determina	ation	High		

\* Related References: Cited in HSDB

Study Citation:	Inman, J. C., Strac	han, S. D., Sommers, L. E., Nelson, D.	W. (1984). The	e decomposition of phthalate esters in soil. Journal of Environmental Science and		
	Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes 19(2):245-257.					
OECD Harmonized	Biodegredation in Soil					
Template:						
HERO ID:	790683					
			EXTRACTIO	DN		
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, EndPoint, T	ype,	None; other; Experimental; other: Not reported; Ultimate biodegradation in soil				
Guideline Solvent, Reactivity, Storage	Stability	Acetone: NR: NR: NR				
Radiolabel, Source, State, P	urity	14C carboxy-labeled, specific activity 2.85E7 dpm/g: Synthesized from 14C phthalic acid (ICN Chemical and Radioisotope Division): NR: NR				
Oxygen, pH, and CEC	-	aerobic; 6.0; 23.8 meq/100 g				
Test Type, Test Temperature, and Test Details		laboratory; 4°C; 100 g soil amended with test substance, acetone solvent allowed to evaporate; moisture adjusted with 2 mL soil extract from soil sample and distilled water				
Soil Type, Clay Silts and Organic Carbon, and		silt loam; 14.3% sand, 60.9% silt, 24.8% clay, 1.96% organic carbon; Not reported				
Soil Classification, Microbial Biomass, and Hu-		Surface 15 cm Chalmers silt loam (Typic Haplaquoll); Not reported: Soil moisture -0.6 bar tension				
Duration, Parameter, System, and		200 d; test mat.; 1 L Erlenmeyer flask connected to closed aeration system with CO2-free moist air at 8 mL/min flow rate; CO2 trapped in 25 mL				
Sampling Frequency		1M KOH trap; 3, 6, 11, 18, 32, 53, 80, 200 d				
Control and Blank		Not reported; Sterile control included (Chalmers, pH 6.0 23°C)				
Concentration		1 mg/g				
Analytical Method, Analyti sults Per Degredation Param	cal Details, and Re-	Packard 2420 scintillation counter; KOH traps acidified with HCl, and mixed with NCS reagent (quaternary ammonium base in toluene); 14CO2 evolution				
Results Remarks		Hydrolysis of the ester linkage must precede ring cleavage and hydrolysis of the second ester appears to be the rate limiting step. No data for 80 -				
Paculte Value Standard Day	viation Deculte Sam	200 d due to mechanical failure.				
ple Time Results, Reference	e Substance Results,	1.9%, Not reported, 55 d, Sterne son, 2.4	///200 d			
Results Details		0.02%/3d, 0.06%/6d, 0.3%/11d, 0.8%/18d, 1.2%/32d, 1.9%/53d, ND/80d, ND/200d				
Mean Total Recovery Result covery	s and Results Per Re-	d Results Per Re- Not reported; Not reported				
			EVALUATIO	DN		
Domain		Metric	Rating	Comments		
Domain 1: Test Substance	e					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The synthesis sequence was reported, purity was not reported.		
Domain 2: Test Design						

Metric 3:	Study Controls	High	Sterilized controls were included and the full results were reported.
Metric 4:	Test Substance Stability	Medium	Test substance solvent was reported, storage was not reported.

Domain 3: Test Conditions
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HERO ID: 790683 Table: 6 of 8

		continu	ed from pre	vious page		
Study Citation:	Inman, J. C., Strad Health, Part B: Pe	Inman, J. C., Strachan, S. D., Sommers, L. E., Nelson, D. W. (1984). The decomposition of phthalate esters in soil. Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes 19(2):245-257.				
OECD Harmonized	Biodegredation in	Soil				
Template:						
HERO ID:	790683					
		E	VALUATIO	Ň		
Domain		Metric	Rating	Comments		
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Soil characteristics and test temperature were reported.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples.		
	Metric 8:	System Type and Design	N/A	This metric is not applicable to the study type.		
Domain 4: Toot Organia	m.					
Domain 4. Test Organis	Matria O:	Outcome Assessment Methodology	High	The incontrol games was reported and is used in similar studies		
	Metric 10:	Sampling Methods	N/A	The modulum source was reported and is used in similar studies.		
	Wieute 10.	Sampling Methods	IN/A	This metric is not applicable to the study type.		
Domain 5: Outcome As	sessment					
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining biodegradation.		
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and samples were collected at an appropriate fre- quency.		
Domain 6: Confounding	v/Variable Control					
Domain of Comountaing	Metric 13:	Confounding Variables	High	No significant sources of uncertainty were identified		
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to the study type.		
		Exposure				
Domain 7: Data Present	tation and Analysis					
	Metric 15:	Data Reporting	High	The analytical method was appropriate, sufficient evidence was presented to support that the parent was lost to biodegradation only.		
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	Statistical analysis and kinetic calculations were not applied.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable based on the method, results were not compared to previous studies.		
	Metric 18:	QSAR Models	N/A	This metric is not applicable to the study type.		
Overall Qualit	ty Determin	ation	High			

\* Related References: Cited in HSDB

Study Citation:	Inman, J. C., Strac	han, S. D., Sommers, L. E.,	Nelson, D. W. (1984). The decomposition of	nman, J. C., Strachan, S. D., Sommers, L. E., Nelson, D. W. (1984). The decomposition of phthalate esters in soil. Journal of Environmental Science and					
OECD Harmonized	Health, Part B: Pes Biodegredation in	ticides, Food Contaminants Soil	s, and Agricultural Wastes 19(2):245-257.						
Template: HERO ID:	790683								
			EXTRACTION						
Parameter		Data							
CASRN and Test Material		84-74-2; DBP							
Confidentiality, EndPoint, T	ype,	None; other; Experimental; o	other: Not reported; Ultimate biodegradation in soil						
Guideline Solvent Reactivity Storage	Stability	Acetone: NR · NR · NR							
Radiolabel, Source, State, P	urity	14C carboxy-labeled, specifi	c activity 2.85E7 dpm/g; Synthesized from 14C phtl	nalic acid (ICN Chemical and Radioisotope Division); NR: NR					
Oxygen, pH, and CEC		aerobic: 6.2; 9.3 meg/100 g							
Test Type, Test Temperature, and Test Details		laboratory; 23°C; 100 g soil amended with test substance, acetone solvent allowed to evaporate; me sample and distilled water		d to evaporate; moisture adjusted with 2 mL soil extract from soil					
Soil Type, Clay Silts and Organic Carbon, and Bulk Density		sand; 90.3% sand, 7.1% silt, 2.6% clay, 1.38% organic carbon; Not reported							
Soil Classification, Microbial Biomass, and Hu-		Surface 15 cm Plainfield sand (Typic Udipsamment); Not reported: Soil moisture -0.6 bar tension							
Duration, Parameter, System	n. and	200 d: test mat.: 1 L Erlenmever flask connected to closed aeration system with CO2-f		CO2-free moist air at 8 mL/min flow rate: CO2 trapped in 25 mL					
Sampling Frequency		1M KOH trap; 3, 6, 11, 18, 32, 53, 80, 200 d							
Control and Blank		Not reported; Sterile control included (Chalmers, pH 6.0)							
Concentration		1 mg/g							
Analytical Method, Analyti sults Per Degredation Param	ical Details, and Re-	Packard 2420 scintillation co	ounter; KOH traps acidified with HCl, and mixed wi	th NCS reagent (quaternary ammonium base in toluene); 14CO2					
Results Remarks		Hydrolysis of the ester linka	ge must precede ring cleavage and appears to be the	rate limiting step.					
Results Value, Standard Deviation Results, Sam- ple Time Results, Reference Substance Results, and Reference Substance Compartment Results		89.6%; Not reported; 200 d; Sterile soil; 2.4%/200 d							
Results Details	Results Details		0.3%/18d, 0.6%/32d, 2.6%/53d, 77.9%/80d, 89.6%	/200d					
Mean Total Recovery Result covery	ts and Results Per Re-	Not reported; Not reported							
			EVALUATION						
Domain		Metric	Rating	Comments					

Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
	Metric 2:	Test Substance Purity	Medium	The synthesis sequence was reported, purity was not reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	High	Sterilized controls were included and the full results were reported.	
	Metric 4:	Test Substance Stability	Medium	Test substance solvent was reported, storage was not reported.	
Domain 3: Test Condition	ons Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
Continued on next page					

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HERO ID: 790683 Table: 7 of 8

		continu	ed from pre	vious page		
Study Citation:	Inman, J. C., Strad Health, Part B: Pe	Inman, J. C., Strachan, S. D., Sommers, L. E., Nelson, D. W. (1984). The decomposition of phthalate esters in soil. Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes 19(2):245-257.				
OECD Harmonized	Biodegredation in	Soil				
Template:						
HERO ID:	790683					
		E	VALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 6:	Testing Conditions	High	Soil characteristics and test temperature were reported.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples.		
	Metric 8:	System Type and Design	N/A	This metric is not applicable to the study type.		
Domain 4: Test Organis	sms					
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and is used in similar studies.		
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to the study type.		
Domain 5. Outcome Aa	accoment					
Domain 5. Outcome As	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining high-gradation		
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and samples were collected at an appropriate fre		
	Wieurie 12.	Test Substance Furity	Ingn	quency.		
Domain 6: Confounding	g/Variable Control					
	Metric 13:	Confounding Variables	High	No significant sources of uncertainty were identified.		
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to the study type.		
		Exposure				
D . 7 D / D /						
Domain /: Data Present	ation and Analysis	Data Danastina	II: -1-			
	Metric 15:	Data Reporting	High	The analytical method was appropriate, sufficient evidence was presented to support that the parent was lost to biodegradation only		
	Metric 16.	Statistical Methods and	N/A	Statistical analysis and kinetic calculations were not annlied		
	Meule 10.	Kinetic Calculations	10/11	Statistical analysis and kinetic calculations were not appred.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	High	The results were reasonable based on the method, results were not compared to previous		
	10	Results	27/4	studies.		
	Metric 18:	QSAK Models	N/A	This metric is not applicable to the study type.		
	D - 4 *	- 4	TT! 1			
Overall Quality	ty Determin	ation	High			

\* Related References: Cited in HSDB

Study Citation:	Inman, J. C., Strack	man, J. C., Strachan, S. D., Sommers, L. E., Nelson, D. W. (1984). The decomposition of phthalate esters in soil. Journal of Environmental Science and					
OECD Harmonized	Biodegredation in S	Soil	s, and Agricultural wastes 19(2):245-257.				
Template: HERO ID:	790683						
			EXTRACTION				
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, EndPoint, T	Type,	None; other; Experimental;	other: Not reported; Ultimate biodegradation in soil				
Guideline Solvent, Reactivity, Storage	. Stability	Acetone: NR: NR: NR					
Radiolabel, Source, State, P	urity	14C carboxy-labeled, specif	ic activity 2.85E7 dpm/g; Synthesized from 14C ph	halic acid (ICN Chemical and Radioisotope Division); NR; NR			
Oxygen, pH, and CEC		aerobic; 5.9; 15.2 meq/100 g	5				
Test Type, Test Temperature, and Test Details		laboratory; 23°C; 100 g soil amended with test substance, acetone solvent allowed to evaporate; moisture adjusted with 2 mL soil extrac sample and distilled water		ed to evaporate; moisture adjusted with 2 mL soil extract from soil			
Soil Type, Clay Silts and Organic Carbon, and Bulk Density		silt loam; 13.5% sand, 69.7% silt, 16.8% clay, 1.24% organic carbon; Not reported					
Soil Classification, Microbial Biomass, and Hu-		Surface 15 cm Fincastle silt loam (Aeric Ochraqualf); Not reported: Soil moisture -0.6 bar tension					
Duration, Parameter, Syster	n, and	200 d; test mat.; 1 L Erlenmeyer flask connected to closed aeration system with CO		CO2-free moist air at 8 mL/min flow rate; CO2 trapped in 25 mL			
Control and Blank		Not reported; Sterile control included (Chalmers, pH 6.0)					
Concentration		1 mg/g					
Analytical Method, Analyt sults Per Degredation Paran	ical Details, and Re- neter	Packard 2420 scintillation counter; KOH traps acidified with HCl, and mixed with NCS reagent (quaternary ammonium base in toluene) evolution		ith NCS reagent (quaternary ammonium base in toluene); 14CO2			
Results Remarks		Hydrolysis of the ester linkage must precede ring cleavage and appears to be the rate limiting		rate limiting step.			
Results Value, Standard Deviation Results, Sam- ple Time Results, Reference Substance Results, and Reference Substance Compartment Results		93.0%; Not reported; 200 d; Sterile soil; 2.4%/200 d					
Results Details		0.12%/3d, 0.2%/6d, 0.3%/1	1d, 0.7%/18d, 1.7%/32d, 8.7%/53d, 89.4%/80d, 93.	0%/200d			
Mean Total Recovery Result covery	ts and Results Per Re-	Not reported; Not reported					
			EVALUATION				
Domain		Metric	Rating	Comments			

Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
	Metric 2:	Test Substance Purity	Medium	The synthesis sequence was reported, purity was not reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	High	Sterilized controls were included and the full results were reported.	
	Metric 4:	Test Substance Stability	Medium	Test substance solvent was reported, storage was not reported.	
Domain 3: Test Conditio	ons Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
Continued on next page					

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HERO ID: 790683 Table: 8 of 8

		continu	ed from prev	vious page		
Study Citation:	Inman, J. C., Strac Health, Part B: Pe	Inman, J. C., Strachan, S. D., Sommers, L. E., Nelson, D. W. (1984). The decomposition of phthalate esters in soil. Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes 19(2):245-257.				
OECD Harmonized	Biodegredation in	Soil				
Template:						
HERO ID:	790683					
		Ε	VALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 6:	Testing Conditions	High	Soil characteristics and test temperature were reported.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples.		
	Metric 8:	System Type and Design	N/A	This metric is not applicable to the study type.		
Domain 4: Test Organis	ms					
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and is used in similar studies.		
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to the study type.		
Domain 5: Outcome As	sessment					
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining biodegradation.		
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and samples were collected at an appropriate fre-		
				quency.		
Domain 6: Confounding	Wariable Control					
Domain 0. Comounding	Metric 13.	Confounding Variables	High	No significant sources of uncertainty were identified		
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to the study type		
	Metric 14.	Exposure	14/24	This metre is not appreade to the study type.		
		Exposure				
Domain 7: Data Present	ation and Analysis					
	Metric 15:	Data Reporting	High	The analytical method was appropriate, sufficient evidence was presented to support that		
		1 0	e	the parent was lost to biodegradation only.		
	Metric 16:	Statistical Methods and	N/A	Statistical analysis and kinetic calculations were not applied.		
		Kinetic Calculations				
Domain 8: Other	M-4. 17.		TT: -1-			
	Metric 17:	Regulta	High	the results were reasonable based on the method, results were not compared to previous		
	Metric 18.	OSAR Models	N/A	This matric is not applicable to the study type		
	methe 10.	Zov in models	11/17	This metric is not applicable to the study type.		
Avorall Augli	ty Dotormin	ation	High			
	y Determina	auvii	nign			

\* Related References: Cited in HSDB

Study Citation:	Mathur, S. P. (197-	Mathur, S. P. (1974). Respirometric evidence of the utilization of Di-octyl and Di-2-ethylhexyl phthalate piasticizers. Journal of Environmental Quality				
<b>OECD</b> Harmonized	Biodegredation in S	odegredation in Soil				
Template:	6					
HERO ID:	1334165					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material	-	not reported; Not Reported				
Confidentiality, EndPoint, T	ype,	No; other; degradation in soil; other: Non-guideline Warburg Respirometric Test				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	urity	NR; Fisher Chem. Co.; NR; NR Notes: NR				
Oxygen, pH, and CEC	-	aerobic; Not reported; Not reported				
Test Type, Test Temperature	e, and Test Details	laboratory; 22-25°C; 3 soil enrichment samples were prepared by amending with 0.3 mL DOP, DEHP, or DiBP for 14 weeks				
Soil Type, Clay Silts and Organic Carbon, and Bulk Density		loam; Not reported; Not reported				
Soil Classification, Microbial Biomass, and Hu- midity		Grenville loam (North Caldwell field of Central Experimental Farm, Ottawa); Not reported: 66% moisture content; 10ml water/100g soil				
Duration, Parameter, System, and Sampling Frequency		8 hours; test material; oxygen consumption; Warburg flasks; periodically				
Control and Blank		Not reported; One unamended flask included as control; preincubated for 14 wks without PAE amendment				
Concentration		Not specified - mL				
Analytical Method, Analyt	ical Details, and Re-	TLC and UV photometry; empirical estimations made from silica gel extracts of TLC plate scrapings; % decrease from endogenous consumption				
sults Per Degredation Paran	neter	of oxygen				
Results Remarks		Respiration response in enrichment cultures after 8 hours: 218.21% increase (after 8 hours) observed, 200.26% increase (after 8 hours) observed, and 142.00% increase (after 6 hours) observed in soils amended with DOP DEHP and DiBP respectively. DBP suppressed the oxygen consump-				
		tion in the unamended soil. DBP oxygen consumption was enhanced in the soil previously amended with DOP, DEHP and DiBP.				
Results Value, Standard Deviation Results, Sam- ple Time Results, Reference Substance Results, and Reference Substance Compartment Results		36.00% decrease in respiration from unamended soil (study control) after 6 hrs; Not reported; 6-8 hours; Not reported; Not reported				
Results Details		Not reported				
Mean Total Recovery Result covery	ts and Results Per Re-	Not reported; Not reported				
		εναιματιον				

			EVALUATION		
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ice				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2:	Test Substance Purity	Medium	The source was reported, purity was not reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	High	Controls were included.	
Continued on next page					

		contin	ued from previous	page	
Study Citation:	Mathur, S. P. (197 3(3):207-209.	74). Respirometric evidence of the utilization	ation of Di-octyl an	d Di-2-ethylhexyl phthalate piasticizers. Journal of Environmental Quality	
OECD Harmonized	Biodegredation in Soil				
Template:	1224165				
HERO ID:	1334165				
		]	EVALUATION		
Domain		Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.	
Domain 3: Test Conditi	ions				
	Metric 5:	Test Method Suitability	Medium	Applied target chemical concentrations were not explicitly stated; however, sufficient detail was provided and the omissions were not likely to have a substantial impact on the results.	
	Metric 6:	Testing Conditions	Medium	Soil characteristics were not reported.	
	Metric 7:	Testing Consistency	High	Test conditions were consistent.	
	Metric 8:	System Type and Design	Medium	The system was appropriate; however, note that flasks were "loosely' covered.	
Domain 4: Test Organis	sme				
Domain 4. Test Organis	Metric 9:	Outcome Assessment Methodology	High	Soil source was reported	
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study.	
		1 0			
Domain 5: Outcome As	ssessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.	
	Metric 12:	Test Substance Purity	Low	Limited detail regarding this metric; extract of TLC scrapings were used for analysis.	
Domain 6: Confoundin	Metric 13:	Confounding Variables	Low	Sources of variability and uncertainty in the measurements were not considered or ac-	
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study.	
Domain /: Data Presen	tation and Analysis	Data Penorting	Low	Applytical datail was amitted of recovery mass holence MDI	
	Metric 15:	Statistical Methods and	LOW N/A	Anaryucai detali was omitted; % recovery, mass balance, MDL.	
	Weute 10.	Kinetic Calculations	IN/A		
Domain 8: Other					
	Metric 17:	Verification or Plausibility of	Low	Due to limited information on analytical methods, evaluation of the reasonableness of the study results was not possible	
	Metric 18:	OSAR Models	N/A	The metric is not applicable to this study.	
				· ····································	
<b>Overall Quali</b>	ty Determin	ation	Medium		

Study Citation: OECD Harmonized	Peterson, D. R., St 3Q:85-124. Biodegredation in S	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC 3Q:85-124. Biodegredation in Soil				
Template: HERO ID:	5348332					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, EndPoint, T	ype,	no; other; experimental; other: not specified				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	urity	NR; NR; NR				
Oxygen, pH, and CEC	•	aerobic; not reported; not reported				
Test Type, Test Temperature, and Test Details		laboratory; 28°C; Not Reported				
Soil Type, Clay Silts and Organic Carbon, and Bulk Density		other; organic carbon: 2%; 3.3%; 1.6%; not reported				
Soil Classification, Microbial Biomass, and Hu- midity		not reported; not reported: 30% water holding capacity				
Duration, Parameter, System, and Sampling Frequency		30 days; test mat.; flask; every 5 days				
Control and Blank		not reported; not reported				
Concentration		500 mg/kg				
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter		GC-FID; not reported; degradation rate				
Results Remarks		half-life: 6.7 days (2% OC); 11.2 days (3.3% OC); 15.8 days (1.6%OC)				
Results Value, Standard Dev ple Time Results, Reference and References Substance Co	viation Results, Sam- e Substance Results, ompartment Results	0.103/day (2% OC); 0.044/day (3.3% OC); 0.062/day (1.6%OC); Not Reported; Not Reported; Not Reported; Not Reported				
Results Details		First-order kinetics with no appreciable lag phase.				
Mean Total Recovery Result covery	s and Results Per Re-	Not Reported; Not Reported				

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.
	Metric 2:	Test Substance Purity	Medium	The test source and purity were not reported but may be available in the cited reference.
Domain 2: Test Design				
U	Metric 3:	Study Controls	Low	Controls were not reported but may be available in the cited reference.
	Metric 4:	Test Substance Stability	Medium	The test substance stability was not reported but may be available in the cited reference.
Domain 3: Test Condit	ions			

Continued on next page ...

		continu	ed from previous	page			
Study Citation:	Peterson, D. R., S	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC					
OECD Harmonized Template:	Biodegredation in	Biodegredation in Soil					
HERO ID:	5348332						
		E	VALUATION				
Domain		Metric	Rating	Comments			
	Metric 5:	Test Method Suitability	Medium	Details on the test method were not reported but may be available in the cited reference.			
	Metric 6:	Testing Conditions	Medium	Some test conditions were not reported but may be available in the cited reference.			
	Metric 7:	Testing Consistency	Medium	Test consistency was not reported but may be available in the cited reference.			
	Metric 8:	System Type and Design	N/A	This metric is not applicable to the study type.			
Domain 4: Test Organis	sms						
2 onium in 1000 organia	Metric 9:	Outcome Assessment Methodology	Medium	Details of the inoculum were not reported but may be available in the cited reference.			
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to the study type.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.			
	Metric 12:	Test Substance Purity	Medium	Sampling method details were not reported but may be available in the cited reference.			
Domain 6 <sup>.</sup> Confoundin	g/Variable Control						
Domain of Comounding	Metric 13:	Confounding Variables	Medium	Confounding variables were not addressed but may be available in the cited reference			
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to the study type.			
		Exposure					
Domain 7: Data Presen	tation and Analysis						
	Metric 15:	Data Reporting	Medium	Result details were not reported but may be available in the cited reference.			
	Metric 16:	Statistical Methods and	Medium	Kinetic calculations were not clearly described but may be available in the cited refer-			
		Kinetic Calculations		ence.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.			
	Metric 18:	QSAR Models	N/A	This metric is not applicable to the study type.			
<b>Overall Quali</b>	ty Determin	ation	Medium				

\* Related References: Cites: Chen Y, Shen D, Hu Z, Liu X, Wu D, Zhao D, Zhang J (1997) Huanjing Kexue Xuebao 17:340. (not in HERO)

## PUBLIC RELEASE DRAFT May 2025 Biodegredation in Soil

Study Citation: OECD Harmonized	Russell, D. J., Mcduffie, B., Fineberg, S. (1985). The effect of biodegradation on the determination of some chemodynamic properties of phthalate esters. Journal of Environmental Science and Health, Part A: Environmental Science and Engineering 20(8):927-941. Biodegredation in Soil					
Template: HERO ID:	1315929					
		EXTRACTION				
Parameter		Data				
CASEN and Test Material		84-74-2· DBP				
Confidentiality, EndPoint, T	Type.	None: screening test: Experimental: other: shake flask				
Guideline						
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR; NR				
Radiolabel, Source, State, F	urity	NR; Fisher Scientific; NR; NR Notes: Di-n-butyl phthalate				
Tast Turpa Tast Temperatur	a and Tast Datails	actoric; Not reported; Not reported				
Soil Type, Clay Silts and	Organic Carbon and	$abbratory, 25\pm2$ C. Not Reported other: 0.77-1.50% organic carbon: 0.9-1.2				
Bulk Density		oner, 0.77-1.57% organic caroon, 0.9-1.2				
Soil Classification, Microbi	ial Biomass, and Hu-	Broome County (NY); NR, natural soil used: Not reported				
midity Duration Parameter System	n and	120 hours: test mat - Erlenmaver shake flock: reported as periodically				
Sampling Frequency	n, and	120 nours, test mat., Ertennieyer snake nask, reported as periodicany				
Control and Blank		Not reported; autoclaved flasks or 0.1% formaldehyde				
Concentration		3 - 10 ppm				
Analytical Method, Analyt sults Per Degredation Paran	ical Details, and Re- neter	GC-ECD; Not reported; test substance				
Results Remarks		Not reported				
Results Value, Standard De ple Time Results, Reference and Referencs Substance Co	viation Results, Sam- ce Substance Results, ompartment Results	Broome County soil: DBP disappeared (100%) at 72 hours, $30\% \pm 3$ remained in sterilized control. Leachate sprayed soils: DBP disappeared (100%) at 120 hours, 29% ( $\pm 0$ ) remained in sterilized control.; Reported above; At 7, 24, 48, 72 and 120 hours; Not reported; Not reported				
Results Details		equilibrium reached				
Mean Total Recovery Result covery	ts and Results Per Re-	NR, hexane used; Not reported				

	EVALUATION					
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.		
	Metric 2:	Test Substance Purity	High	The test substance source was reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	Data for sterile study controls were reported.		
	Metric 4:	Test Substance Stability	High	Test substance stability was considered in this study.		
Domain 3: Test Condition	ons					

Continued on next page ...

PUBLIC RELEASE DRAFT May 2025 Biodegredation in Soil

HERO ID: 1315929 Table: 1 of 1

		continu	ued from pre	vious page			
Study Citation:	Russell, D. J., Mc Journal of Enviror	Russell, D. J., Mcduffie, B., Fineberg, S. (1985). The effect of biodegradation on the determination of some chemodynamic properties of phthalate esters. Journal of Environmental Science and Health, Part A: Environmental Science and Engineering 20(8):927-941.					
<b>OECD Harmonized</b>	Biodegredation in Soil						
Template:							
HERO ID:	1315929						
		Ι	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate for the method.			
	Metric 7:	Testing Consistency	High	This metric met the criteria for high confidence as expected for this type of study.			
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.			
			0				
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	High	This metric met the criteria for high confidence as expected for this type of study.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	High	This metric met the criteria for high confidence as expected for this type of study.			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.			
		Exposure					
D : 7 D ( D )							
Domain /: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	Medium	Some result details were not reported; however, these omissions would not have a sub- stantial impact on interpreting study results.			
	Metric 16:	Statistical Methods and	Medium	Some statistical details were not reported; however, these omissions would not have a			
		Kinetic Calculations		substantial impact on interpreting study results.			
Domain & Othan							
Domain 8: Other	Matria 17.	Varification or Plausibility of	High	The moults were recomple			
	Metric 17.	Populta	rign	The results were reasonable.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall O</b> uali	tv Determin	ation	High				
Z vian Yuun	-,		8				

Study Citation:	Shanker, R., Ramakrishna, C., Seth, P. K. (1985). Degradation of some phthalic-acid esters in soil. Environmental Pollution Series A: Ecological and						
OECD Harmonized	Biodegredation in	Biological 59(1):1-7. Biodegredation in Soil					
Template: HERO ID:	1333345						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Di-n-butyl phthalate					
Confidentiality, EndPoint, T	ſype,	None; other; Experimental; other					
Solvent, Reactivity, Storage	. Stability	Methanol: NR: NR					
Radiolabel, Source, State, F	Purity	NR: BDH. Great Britain and Ranbaxy Laboratories Ltd., India.: NR: NR Notes: NR					
Oxygen, pH, and CEC		aerobic/anaerobic; 8.2; Not reported					
Test Type, Test Temperature	e, and Test Details	laboratory; 30±1°C; 10g garden soil (Alluvial, sieved and dried) spiked and mixed with methanol containing DBP. Left overnight to evaporate					
Soil Type Clay Silts and	Organic Carbon and	then were plugged and mixed before moisture adjustment and incubation. Anaerobic tests were done by flooding tubes with sterile water Not Periorted: Not reported: Not reported					
Bulk Density	Organic Carbon, and	Not Reported, Not reported					
Soil Classification, Microbi	ial Biomass, and Hu-	Not reported; Not reported: 60%					
midity							
Duration, Parameter, Syster Sampling Frequency	n, and	30 days; test mat.; Closed 25mL Erlenmeyer flasks; Sampling was done on days 0, 5, 10, 15, 20, and 30					
Control and Blank		Autoclaved soil was used as a control.; Samples without added DBP were used to determine background levels in the soil.					
Concentration		500 μg/g soil					
Analytical Method, Analyt sults Per Degredation Paran	ical Details, and Re- neter	HPLC with a UV detector.; Soil samples without DBP were used to determine background levels of phthalates.; DBP concentration					
Results Remarks		Autoclaved controls concentration after 30 days under aerobic and anaerobic conditions, respectively (µg/g soil): 465±10 and 463±9.					
Results Value, Standard Deviation Results, Sam- ple Time Results, Reference Substance Results, and Reference Substance Compartment Results		DBP concentration ( $\mu$ g/g soil) under aerobic conditions on day 0, 5, 10, 15, 20, 30: 472 $\pm$ 14 (0% Removal), 110 $\pm$ 13 (77% Removal), 40 $\pm$ 6 (92% Removal), 0 (>99% Removal), 0 (>99% Removal). Anaerobic: 470 $\pm$ 17 (0% Removal), 402 $\pm$ 9 (15% Removal), 348 $\pm$ 8 (26% Removal), 301 $\pm$ 9 (36% Removal), 239 $\pm$ 9 (49% Removal), 159 $\pm$ 4 (66% Removal).; Standard errors reported for each data point.; Not reported; Not reported; Not reported					
Results Details		Phthalic acid was detected in concentrations of 0-29 µg/g soil					
Mean Total Recovery Results and Results Per Re-		Not reported; Not reported					
		EVALUATION					

	EVALUATION				
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.	
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not clearly reported but the omission is unlikely to have a substantial impact on the study results.	
Domain 2: Test Design					
	Metric 3:	Study Controls	High	Appropriate controls were used.	
			Continued on next p	page	

		continu	ed from prev	vious page			
Study Citation:	Shanker, R., Ram Biological 39(1):	Shanker, R., Ramakrishna, C., Seth, P. K. (1985). Degradation of some phthalic-acid esters in soil. Environmental Pollution Series A: Ecological and Biological 39(1):1-7.					
OECD Harmonized	Biodegredation in	Biodegredation in Soil					
Template:							
HERO ID:	1333345						
		F	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 4:	Test Substance Stability	High	Some of the details regarding the test substance preparation and storage conditions were not reported but the omissions are unlikely to have a substantial impact on the study results.			
Domain 3: Test Condition	ons						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	The test conditions were reported and appropriate.			
	Metric 7:	Testing Consistency	High	The testing conditions were consistent across the study groups.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.			
Domain 4: Test Organis	sms	Outer and Assessment Mathedale and	11: -1-				
	Metric 9: Matria 10:	Sampling Mathada	High	The soft was sufficiently described for the purposes of the study.			
	Metric 10:	Sampling Methods	IN/A	The metric is not applicable to the study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	Sampling methods were clearly reported and appropriate.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	High	Uncertainties in the concentration measurements were reported and were unlikely to impact the study results.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.			
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	High	The data reporting was appropriate.			
	Metric 16:	Statistical Methods and	High	The statistical analysis was appropriate and no kinetic calculations were presented.			
		Kinetic Calculations	U				
Domain 8: Other							
Domain of Other	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.			
	M 10	Results	<b>NT/A</b>				
	Metric 18:	QSAK Models	N/A	The metric is not applicable to the study type.			
<b>Overall Quali</b>	ty Determin	ation	High				

Study Citation:	Vavilin, V. A. (201	0). Analysis of the mechan	nism and mathematical modeling of diethylh	exylphthalate degradation in aquatic environment. Water Re-				
OECD Harmonized	sources 37(3):399-410. Biodegredation in Soil							
Template:	700101							
HERO ID:	/92131							
_		_	EXTRACTION					
Parameter		Data						
CASRN and Test Material		84-74-2; DBP						
Confidentiality, EndPoint, Typ	pe,	None; inherent biodegradabil	ity; Calculation; other: Kinetics calculation of anac	proble phthalate degradation				
Solvent, Reactivity, Storage, S	Stability	NR; NR; NR; NR						
Radiolabel, Source, State, Pur	rity	NR; NR; NR; NR Notes: Exp	perimental details described elsewhere					
Oxygen, pH, and CEC	•	anaerobic; 5.5; Not reported						
Test Type, Test Temperature, a	and Test Details	laboratory; Not reported; Stu from an acidogenic reactor w	dy details reported in other source; the methanoge thich was diluted during weeks 18 - 52	nesis in acidogenic reactor received 144 - 169 week old leachate				
Soil Type, Clay Silts and Or Bulk Density	ganic Carbon, and	Not Reported; Not reported; 1	Not reported					
Soil Classification, Microbial	Biomass, and Hu-	Not reported; Not reported: 6	5% moisture					
Duration, Parameter, System,	and	250 wk; test mat.; Cylindrical	l reactor, lysimeter, simulating a landfill; Not repor	ted				
Control and Blank		Not reported: Not reported						
Concentration		14500 µg/L						
Analytical Method, Analytica sults Per Degredation Paramet	al Details, and Re- ter	Not reported; Not reported; T	fest substance in solution					
Results Remarks		Final concentration in solutio	n: est. 4000 ug/Ldesorption/sorption rate constants	x: k1/k2=0.035/12=0.003				
Results Value, Standard Devia ple Time Results, Reference and Reference Substance Com	ation Results, Sam- Substance Results, apartment Results	est. 98%; Not reported; 250 d	l; Not reported; Not reported					
Results Details		Degradation constant=NR						
Mean Total Recovery Results a covery	and Results Per Re-	Not reported; Not reported						
			EVALUATION					
Domain		Metric	Rating	Comments				

			LIALUATIO	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
	Metric 2:	Test Substance Purity	N/A	The test substance source and purity were reported in another source and could not be assessed.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	A control group was not explicitly included, however may have been reported in the other source.
			Continued on next p	Dage

		contin	ued from prev	vious page			
Study Citation:	Vavilin, V. A. (20 sources 37(3):399	Vavilin, V. A. (2010). Analysis of the mechanism and mathematical modeling of diethylhexylphthalate degradation in aquatic environment. Water Re- sources 37(3):399-410					
<b>OECD Harmonized</b>	Biodegredation in	Biodegredation in Soil					
Template:	792131	702121					
	792131			A.			
Domain		Metric	EVALUATIO Rating	N Comments			
	Metric 4:	Test Substance Stability	N/A	Test substance preparation may have been reported in other source and could not be assessed.			
Domain 3: Test Condition	ons						
	Metric 5:	Test Method Suitability	High	Test method was suitable for test substance.			
	Metric 6:	Testing Conditions	Medium	Many test conditions were not reported in this study, but may have been reported in another source.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent across study groups.			
	Metric 8:	System Type and Design	Medium	The metric is not applicable to this study type.			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	Medium	Some inoculum information was reported in this study, but may have been elaborated on in another source.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The calculations adequately addressed the outcomes of interest.			
	Metric 12:	Test Substance Purity	N/A	Sampling methods may have been reported in other source and could not be assessed.			
Domain 6: Confounding	v/Variable Control						
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty were considered.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	High	The model accounted for non-biodegradation related pathways.			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Kinetic calculations were described in depth and appropriate.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	The results were reasonable.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
Overall Qualit	ty Determin	ation	Low				

Study Citation:	Wang, J., Liu, P.,	Shi, H., Qian, Y. (1997). Biodegradation of phthalic acid ester in soil by indigenous and introduced microorganisms. Chemosphere					
OECD Hormonized	35(8):1747-1754.	35(8):1747-1754. Diadarradation in Sail					
OECD Harmonized	Biodegredation in a	Biodegredation in Soil					
HERO ID:	1333189						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl phthalate					
Confidentiality, EndPoint, T	lype,	None; other; Experimental; other: DBP biodegradation by indigenous soil bacteria.					
Solvent, Reactivity, Storage	, Stability	Methanol; NR; NR					
Radiolabel, Source, State, P	urity	NR; Beijing Chemical Plant; NR; Analytical grade Notes: NR					
Oxygen, pH, and CEC		aerobic; 7.2; Not reported					
Test Type, Test Temperature	e, and Test Details	laboratory; 25°C; After addition of DBP in methanol, flasks were left open overnight to allow methanol to evaporate. Total N, P, K, and Mg concentrations: 27.97, 9, 30.2, and 52.3 mg/kg soil.					
Soil Type, Clay Silts and Bulk Density	Organic Carbon, and	Not Reported; Total organic carbon: 1.14%.; Not reported					
Soil Classification, Microbi midity	ial Biomass, and Hu-	Natural soil from grounds of Tsinghua Garden.; Not reported: 60%					
Duration, Parameter, Syster Sampling Frequency	n, and	30 days; test mat.; 100mL Erlenmeyer flasks with 10g dry soil.; 0, 10, 20, and 30 days					
Control and Blank		Not reported; Sterile uninoculated soil control was used.					
Concentration		100 µg/g soil					
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter		Gas chromatography-flame ionization detection; Not Reported; DBP removal %					
Results Remarks		DBP concentration in sterile soil after 30 days was 3% less than the initial concentration.					
Results Value, Standard Der ple Time Results, Reference and Reference Substance Co	viation Results, Sam- e Substance Results, compartment Results	44% after 10 days, 61% after 20 days, 66% after 30 days.; Not reported; Not reported; Not reported; Not reported					
Results Details		Not reported					
Mean Total Recovery Result covery	ts and Results Per Re-	Not reported; Not reported					

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Substar	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.
	Metric 2:	Test Substance Purity	High	The test substance was analytical grade.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	A sterile control was used to monitor abiotic losses.
	Metric 4:	Test Substance Stability	High	The test substance homogeneity, preparation and storage conditions were reported and appropriate.
Continued on next page				

## PUBLIC RELEASE DRAFT May 2025 Biodegredation in Soil

HERO ID: 1333189 Table: 1 of 1

		contin	ued from pre	vious page				
Study Citation:	Wang, J., Liu, P. 35(8):1747-1754	Wang, J., Liu, P., Shi, H., Qian, Y. (1997). Biodegradation of phthalic acid ester in soil by indigenous and introduced microorganisms. Chemosphere 35(8):1747-1754.						
OECD Harmonized	Biodegredation in	Biodegredation in Soil						
Template:	1222100							
HERO ID:	1333189							
		I	EVALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 2: Test Conditi	000							
Domain 5. Test Conum	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance				
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate				
	Metric 7:	Testing Consistency	High	The testing conditions in the sterile control and non-sterile groups were consistent				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type				
	Mettre 0.	bystem Type and Design	10/1	The metric is not appreade to the study type.				
Domain 4: Test Organis	sms							
e	Metric 9:	Outcome Assessment Methodology	High	The inoculum source and characteristics were reported and appropriate.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.				
Domain 5: Outcome As	ssessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	The sampling frequency was reported and adequate.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	Low	Uncertainty in the measurements was not reported and it is unclear how many trials were done for each sample group.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.				
Domain 7: Data Present	tation and Analysis							
Domain 7. Data i Itself	Metric 15:	Data Reporting	Medium	Percent recovery was not reported but the omission is unlikely to have a substantial impact on the study results.				
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	No statistical analysis was reported.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.				
<b>Overall Ouali</b>	tv Determin	nation	High					
			8					

Study Citation:	Xu, G., Li, F., Wang, Q. (2008). Occurrence and degradation characteristics of dibutyl phthalate (DBP) and di-(2-ethylhexyl) phthalate (DEHP) in typical arrival scale of China. Science of the Total Environment 303(2, 3):333–340.							
<b>OECD Harmonized</b>	Biodegredation in Soil							
Template:	0							
HERO ID:	698216							
		EXTRACTION						
Parameter		Data						
CASRN and Test Material		84-74-2; Dibutyl phthalate						
Confidentiality, EndPoint, T Guideline	Гуре,	None; other; Experimental; other: Non-guideline						
Solvent, Reactivity, Storage	e, Stability	Methanol; NR; NR						
Radiolabel, Source, State, H	Purity	NR; Sigma Chemicals; NR; HPLC grade						
Oxygen, pH, and CEC		aerobic; Black soil: 7.12±0.42; Fluvo-aquic soil: 7.30±0.09; Black soil (cmol/kg): 26.84±2.57; Fluvo-aquic soil: 18.74±1.21						
Test Type, Test Temperatur	e, and Test Details	laboratory; 20°C at night and 30°C during the day with irradiation.; Initial test substance concentration was below detection limit. Treatments were conducted in triplicate. Extraction and cleanup performed according to USEPA SW-846 method 8016A						
Soil Type, Clay Silts and Organic Carbon, and Bulk Density		Not Reported; Organic matter (g/kg), Black soil: 32.2±1.5; Fluvo-aquic soil: 10.5±0.8; Not reported						
Soil Classification, Microb midity	ial Biomass, and Hu-	Black soil and fluvo-aquic soil; Not reported: 30%						
Duration, Parameter, Syster Sampling Frequency	m, and	Not reported; test mat.; 6 samples taken at each site to form homogenate. 0-20 cm depth samples taken.; Not reported						
Control and Blank		Autoclaved samples used as sterile control (120°C for 20 min); Not reported						
Concentration		Not Reported						
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter		GC-MS; Detection limit: 0.01mg/kg; Test material analysis						
Results Remarks		Not reported						
Results Value, Standard Deviation Results, Sam- ple Time Results, Reference Substance Results, and Reference Substance Compartment Results		Black soil: k=0.088; Half-life (days): 7.8; Fluvo-aquic soil: k=0.083; Half-life (Days): 8.3; Black soil: k=0.001; Half-life (days): 0.1; Fluvo-aquic soil: k=0.002; Half-life (Days): 0.2; Not reported; Not reported; Not reported						
Results Details		Not reported						
Mean Total Recovery Resul covery	ts and Results Per Re-	97.6%; Not reported						

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.	
	Metric 2:	Test Substance Purity	High	The test substance was HPLC grade.	
Domain 2: Test Design	Metric 3:	Study Controls	High	Autoclaved sterile controls were used as well as blank controls.	
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported.	

Continued on next page ...

		continu	ied from pre	vious page			
Study Citation:	Xu, G., Li, F., W agricultural soils	Xu, G., Li, F., Wang, Q. (2008). Occurrence and degradation characteristics of dibutyl phthalate (DBP) and di-(2-ethylhexyl) phthalate (DEHP) in typical agricultural soils of China. Science of the Total Environment 393(2-3):333-340					
<b>OECD Harmonized</b>	<b>Biodegredation</b>	in Soil					
Template:							
HERO ID:	698216						
		ŀ	EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 3: Test Conditi	ons						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent across the samples.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.			
Domain 4: Test Organis	sms						
C C	Metric 9:	Outcome Assessment Methodology	High	The inoculum source and characteristics were reported.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the outcome of interest.			
	Metric 12:	Test Substance Purity	High	The sampling frequency and test duration were not reported but the omission is not likely to impact the study results.			
Domain 6: Confoundin	g/Variable Control						
	Metric 13:	Confounding Variables	High	No confounding variables were noted.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.			
Domain 7: Data Presen	tation and Analysis	5					
	Metric 15:	Data Reporting	High	The data reporting was appropriate.			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Kinetic calculations were clearly described and appropriate.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable in reference to other literature.			
	Metric 18:	QSAR Models	High	The metric is not applicable to the study type.			
<b>Overall Quali</b>	ty Determi	nation	High				

Study Citation: OECD Harmonized Template:	Yuan, S. Y., Lin, Y. Y., Chang, B. V. (2011). Biodegradation of phthalate esters in polluted soil by using organic amendment. Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes 46(5):419-425. Biodegredation in Soil					
HERO ID:	1249309					
_		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, EndPoint, T	ype,	None; screening test; Experimental; other: Batch test				
Guideline Solvent, Reactivity, Storage	Stability	NR· NR· NR				
Radiolabel, Source, State, P	urity	NR: Chem Service (West Chester PA, USA): NR: 99.0% Notes: DBP				
Oxygen, pH, and CEC	5	aerobic; 7; 11.4 cmol/kg				
Test Type, Test Temperature	e, and Test Details	laboratory; 30°C; soil-to-sludge ratios of 1:0.1, 1:0.2, 1:0.5, and 1:1				
Soil Type, Clay Silts and Bulk Density	Organic Carbon, and	clay loam; 23.0% clay, 60.5 % silt, 16.5 % sand, 13.5 g/ kg organic carbon; discussed but NR				
Soil Classification, Microbi midity	al Biomass, and Hu-	Not applicable; Sewage sludge samples from Neihu municipal sewage treatment plant in Taipei: Not reported				
Duration, Parameter, System Sampling Frequency	n, and	10 days; test mat.; bioreactor; approx. every 2 days				
Control and Blank		Not applicable; autoclaved				
Concentration		200 mg/kg				
Analytical Method, Analytical Details, and Re- sults Per Degredation Parameter		GC-ECD; Not Reported; test material				
Results Remarks		k1=0.58-0.63 day-1				
Results Value, Standard Dev ple Time Results, Reference and Reference Substance Co	viation Results, Sam- e Substance Results, ompartment Results	% remaining; in figures; ~2 days; Not applicable; Not applicable				
Results Details		t1/2=1.1-1.2 days, r=0.72-0.99				
Mean Total Recovery Result covery	s and Results Per Re-	93%; Not applicable				

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ice				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2:	Test Substance Purity	High	The source or purity of the test substance was reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	High	Sterile controls were used.	
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage was reported.	
Domain 3: Test Conditions					

Continued on next page ...

PUBLIC RELEASE DRAFT May 2025 Biodegredation in Soil

HERO ID: 1249569 Table: 1 of 1

		Contine	ueu moni pre	vious page			
Study Citation:	Yuan, S. Y., Lin, Y. Y., Chang, B. V. (2011). Biodegradation of phthalate esters in polluted soil by using organic amendment. Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes 46(5):419-425.						
OECD Harmonized	Biodegredation in Soil						
Template:							
HERO ID:	1249569						
		H	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate for the study type.			
	Metric 7:	Testing Consistency	High	This metric met the criteria for high confidence as expected for this type of study.			
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.			
Domain 4: Test Organis	sms						
C	Metric 9:	Outcome Assessment Methodology	High	The test inoculum source was reported and the test inoculum is routinely used for simi- lar study types.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome As	sessment		TT' 1				
	Metric 11:	Test Substance Identity	High	This metric met the criteria for high confidence as expected for this type of study.			
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	High	Sources of uncertainty were not reported but their omission likely did not impact the study results.			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.			
		Exposure					
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	Medium	Some details were not reported; however, these omissions were not likely to have a substantial impact on interpretation of the study results.			
	Metric 16:	Statistical Methods and	Medium	Some statistical details were not reported; however, these omissions were not likely to			
		Kinetic Calculations		have a substantial impact on interpretation of the study results.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	This metric met the criteria for high confidence as expected for this type of study.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.			
Overall Quali	ty Determina	ation	High				

Study Citation:	Zhao, H., Du, H., Feng, N., Xiang, L., ei, Li, Y., Li, H., ui, Cai, Q. Y., Mo, C. (2016). Biodegradation of di-n-butylphthalate and phthalic acid by Providencia sp 2D and its stimulation in a compost-amended soil. Biology and Fertility of Soils 52(1):65-76.					
OECD Harmonized	Biodegredation in	Soil				
Template:						
HERO ID:	3352270					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		Not Reported; di-n-butylphthalate				
Confidentiality, EndPoint, Typ	pe,	None; other; experimental; other: pure culture amended biodegradation				
Guideline Solvent Reactivity Storage S	Stability	ND · ND · ND				
Radiolabel Source State Pur	rity	None: Aladdin Chemistry Co. Ltd. (Shanghai China): NR: 98.7% Notes: DRP				
Oxygen, pH, and CEC	illy	anaerobic: soil: 6.67: compost: 8.85: mixture: 7.54: not reported				
Test Type. Test Temperature.	and Test Details	Not Reported: 30+1°C: triplicate samples: % moisture/% organic matter/TOC (g/kg): 38.1/1.5/7.9 for soil: 31.7/68.9/391.7 for compost:				
		35.4/5.7/21.2 for mixture				
Soil Type, Clay Silts and Or	rganic Carbon, and	other; 11.99% clay/52.34% silt/35.67% sand/1.5% organic matter; not reported				
Soil Classification Microbial	Biomass and Hu-	soil amended with compact: Strain 2D: compact samples with mineral salt medium incubated with DRP and PA transferred serially $>10$ times to				
midity	Diomass, and Hu-	enrich culture: 40% water-holding capacity				
Duration, Parameter, System,	and	10 days (from figure); test mat; Soil/compost-amended soil in Erlenmeyer flasks and treated with DBP, drip irrigation used to add inoculum;				
Sampling Frequency		periodically				
Control and Blank		not reported; negative control: uninoculated; positive control: aerobic sterile soil/compost				
Concentration		50 - 1000 mg/L				
sults Per Degredation Paramet	ter	GC/MS; detection limit 0.045 mg/L; recovery 95.1-102.1%; % degradation				
Results Remarks		half-life (starting concentration): 8.66 h (50 mg/L), 10.49 h (100 mg/L), 10.65 h (200 mg/L), 23.50 h (500 mg/L), 26.16 h (1000 mg/L)				
Results Value, Standard Deviation Results, Sam-		almost completely at $\leq 200 \text{ mg/L}$ ; 89.0% at 500 mg/L; 84.9% at 1000 mg/L; not reported; 72 hours; non-inoculated soil; 9.7-28.1%				
ple Time Results, Reference	Substance Results,					
and Reference Substance Com	npartment Results					
Results Details		degradation rate (k) (starting concentration): $0.0800/h$ (50 mg/L), $0.0661/h$ (100 mg/L), $0.0651/h$ (200 mg/L), $0.0295/h$ (500 mg/L), $0.0265/h$				
Mean Total Recovery Results	and Results Per Re-	92.0-96.5%: Not Reported				
covery						

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	Domain 1: Test Substance					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	A concurrent negative control and positive control were included.		
Continued on next page						

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HERO ID: 3352270 Table: 1 of 1

		contin	ued from prev	nous page			
Study Citation:	Zhao, H., Du, H., Feng, N., Xiang, L.,ei, Li, Y., Li, H.,ui, Cai, Q. Y., Mo, C. (2016). Biodegradation of di-n-butylphthalate and phthalic acid by a novel Providencia sp 2D and its stimulation in a compost-amended soil. Biology and Fertility of Soils 52(1):65-76						
OECD Harmonized	Biodegredation in Soil						
HERO ID:	3352270						
		I	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.			
Domain 3: Test Condition	ons						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent.			
	Metric 8:	System Type and Design	N/A	This metric is not applicable to the study type.			
Domain 4: Test Organis	ms						
	Metric 9:	Outcome Assessment Methodology	Low	An inoculum that was pre-adapted to the test substance was used for a biodegradation rate study.			
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to the study type.			
Domain 5: Outcome Ass	sessment						
Bomain 5. Outcome 713.	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.			
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed.			
Domain 6: Confounding	/Variable Control						
e	Metric 13:	Confounding Variables	High	No significant sources of uncertainty were identified.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to the study type.			
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	High	The target chemical and transformation products concentrations, extraction efficiency, percent recovery, or mass balance were reported.			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset(s).			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	Reported values were expected.			
	Metric 19	Results OSAP Models	NT/A	This matrix is not applicable to the study ture			
	IVICITIC TA:	USAN MODELS	IN/A	This metric is not applicable to the study type.			

PUBLIC RELEASE DRAFT May 2025 Biodegredation in Soil

HERO ID: 3352270 Table: 1 of 1

		continued from previous page					
Study Citation:	Zhao, H., Du, H., Feng, N., Xiang, L.,ei, Li, Y., Li, H.,ui, Cai, Q. Y., Mo, C. (2016). Biodegradation of di-n-butylphthalate and phthalic acid by a novel						
OECD Harmonized	Biology and Fertility of Solis 52(1):65-76. Biologredation in Soil						
HERO ID:	3352270						
		EVALUATION					
Domain	Metric	Rating	Comments				
<b>Overall Qualit</b>	ty Determination	High					

Study Citation: OECD Harmonized	Adeogun, A. O., Ibor, O. R., Omiwole, R. A., Hassan, T., Adegbola, R. A., Adewuyi, G. O., Arukwe, A. (2015). Occurrence, species, and organ differences in bioaccumulation patterns of phthalate esters in municipal domestic water supply lakes in Ibadan, Nigeria. Journal of Toxicology and Environmental Health, Part A: Current Issues 78(12):761-777. Aquatic Bioconcentration						
Template:	2040228						
	2940328						
Donomotor		EXTRACTION					
		Data					
CASRN and Test Material		84-74-2; Dibutyl phthalate					
Confidentiality, Type, and G	uideline	None; Experimental; other: Levels of phthalic acid esters in environmental (water and sediment) and biota samples of two lakes Asejire and Eleyele in Nigeria					
Solvent, Reactivity, Storage,	Stability	NR; NR; NR					
Radiolabel, Source, State, Pu	urity	NR; Sigma-Aldrich (Switzerland); NR; 99% Notes: DBP					
Test Organism and Test Orga	anism Details	Tilapia zillii, Hepsetus odoe, Parachanna obscura and Chrysichthys nigrodigitatus, Mormyrus rume, and a decapod crustacean (African river prawn, Macrobrachium vollenhovenii); Natural biota samples					
Lipid Content, Test Tempera	ature, pH, and Depu-	Not reported; NR; temperature was measured at the sampling site using a mercury-in-glass thermometer.; NR; measured using a Consort C933T					
ration Time		electrochemistry meter; Not reported					
Media Type, TOC, and Salin	nty	natural water: marine; NR; measured using a Consort C933T electrochemistry meter; NR; measured using a Consort C933T electrochemistry					
Dissolved Oxygen, Conducti	ivity, and Hardness	NR; measured using a Consort C933T electrochemistry meter; NR; measured using a Consort C933T electrochemistry meter; Not reported					
Exposure Route, Elimination	n, and Nominal Mea-	Environmental; Natural; Measured					
surements Test Type, Test Temperature.	, and Test Condition	field study; NR; temperature was measured at the sampling site using a mercury-in-glass thermometer.; Water and sediment samples were collected					
Comments		from lakes Asejire and Eleyele in Nigeria					
Duration, Parameter, and Sar	mpling Frequency	Sampling conducted May 2011 to July 2011; other; Sample preparation according to the U.S. Environmental Protection Agency (U.S. EPA, 2012)					
Concentration		Not Reported					
Analytical Method and Anal	lytical Details	HPLC; Detailed protocols, including quality assurance, are given in Supplementary Material 1;					
Rate Constant and Results pe	er Recovery	Not reported; Not reported					
Statistics, Basis, and Calcula	ation Basis	Single factor analysis of variance (ANOVA) was used to compare phthalate concentration in water, sediment and biota.; Not Reported; steady state					
Results Value and Results De	etails	Bioconcentration factor BCF; Biota-Sediment Accumulation Factor BSAF; BCF (Fish From Asejire Lake): Muscle=5.14 (C. nigrodigitatus) 1.31 (M. rume) 1.13 (T. zilli), Gill=4.39 (C. nigrodigitatus) 1.89 (M. rume) 7.48 (T. zilli), Liver=1.16 (C. nigrodigitatus) 1.27 (M. rume) 2.05 (T. zilli), Kidney=1.92 (C. nigrodigitatus) 2.05 (M. rume) 2.03 (T. zilli); BSAF (Fish From Asejire Lake): Muscle =4.20 (C. nigrodigitatus) 1.07 (M. rume) 0.92 (T. zilli), Gill=3.58 (C. nigrodigitatus) 1.55 (M. rume) 6.11 (T. zilli), Liver=0.94 (C. nigrodigitatus) 1.04 (M. rume) 1.68 (T. zilli), Kidney=1.57 (C. nigrodigitatus) 1.68 (M. rume) 1.66 (T. zilli); BCF (Fish From Eleyele Lake): Muscle=0.78 (H. odoe) 0.82 (P. obscura) 2.59 (T. zilli), Gill=1.55 (H. odoe) 1.42 (P. obscura) 2.73 (T. zilli), Liver=1.50 (H. odoe) 2.64 (P. obscura) 1.44 (T. zilli), Kidney=4.37 (H. odoe) 1.66 (P. obscura) 2.58 (T. zilli); BSAF (Fish From Eleyele Lake): Muscle=0.56 (H. odoe) 0.59 (P. obscura) 1.87 (T. zilli), Gill=1.12 (H. odoe) 1.02 (P. obscura) 1.97 (T. zilli), Liver=1.08 (H. odoe) 1.90 (P. obscura) 1.04, Kidney=3.16 (H. odoe) 1.20 (P. obscura) 1.86 (T. zilli)					
Metabolites, Reference, and Substance	d Results Reference	Not reported; Not reported; Not reported					

			EVALUATION	Ň	
Domain		Metric	Rating	Comments	
Domain 1: Test Substar	nce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
			Continued on next p	age	

PUBLIC RELEASE DRAFT May 2025 Aquatic Bioconcentration

HERO ID: 2940328 Table: 1 of 1

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Study Citation: OECD Harmonized	Adeogun, A. O., I in bioaccumulatio Health, Part A: Cu Aquatic Bioconce	bor, O. R., Omiwole, R. A., Hassan, T., Ao on patterns of phthalate esters in municip urrent Issues 78(12):761-777. ntration	degbola, R. A. al domestic w	, Adewuyi, G. O., Arukwe, A. (2015). Occurrence, species, and organ differences ater supply lakes in Ibadan, Nigeria. Journal of Toxicology and Environmental
Template:				
HERO ID:	2940328			
		I	EVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 2:	Test Substance Purity	High	Test substance source and purity reported.
Domain 2. Test Design				
Domain 2: Test Design	Metric 3:	Study Controls	N/A	Controls not required for field studies
	Metric 4:	Test Substance Stability	Medium	Field sample storage details were not reported.
Domain 3: Test Condition	ons			
	Metric 5:	Test Method Suitability	High	The field study is suitable for the test substance.
	Metric 6:	Testing Conditions	Medium	No environmental conditions of the samples collected were reported; however measure- ment was conducted and may be in SI. Fish sample characteristics were limited (age, lipid content).
	Metric 7:	Testing Consistency	N/A	This metric is not applicable to field studies.
	Metric 8:	System Type and Design	High	Field studies are assumed to be at equilibrium.
Domain 4: Test Organis	ms Matria Or	Outcome Assessment Methodology	NT/A	
	Metric 9.	Sampling Methods	N/A Medium	This metric is not applicable to this type of study.
	Metile 10.	Sampling Methous	Wiedium	ported.
Domain 5: Outcome As	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcomes of interest
	Metric 12:	Test Substance Purity	Medium	Limited detail on sampling methods
	Metrie 12.	Test Substance Furity	Wiedium	Linited detail on sampling methods.
Domain 6: Confounding	/Variable Control			
-	Metric 13:	Confounding Variables	N/A	This metric is not applicable to this type of study.
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to this type of study.
		Exposure		
Domain 7: Data Present	ation and Analysis			
	Metric 15:	Data Reporting	Medium	Some details were omitted; however, this does not hinder the interpretation of the re- sults.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were described and applied appropriately.

Metric 17: Verification or Plausibility of Results

High The results were reasonable.

Continued on next page ...

PUBLIC RELEASE DRAFT May 2025 Dibutyl Phthalate Aquatic Bioconcentration HERO ID: 2940328 Table: 1 of 1 ... continued from previous page **Study Citation:** Adeogun, A. O., Ibor, O. R., Omiwole, R. A., Hassan, T., Adegbola, R. A., Adewuyi, G. O., Arukwe, A. (2015). Occurrence, species, and organ differences in bioaccumulation patterns of phthalate esters in municipal domestic water supply lakes in Ibadan, Nigeria. Journal of Toxicology and Environmental Health, Part A: Current Issues 78(12):761-777. **OECD Harmonized** Aquatic Bioconcentration **Template:** HERO ID: 2940328 **EVALUATION** Metric Domain Rating Comments Metric 18: N/A QSAR Models The metric is not applicable to this study type.

High

## **Overall Quality Determination**

Study Citation: Adeogun, A. O., I biota concentration		., Ibor, O. R., Omogbemi, E. D., Chukwuka, A. V., Adegbola, R. A., Adewuyi, G. A., Arukwe, A. (2015). Environmental occurrence and tion of phthalate esters in Epe and Lagos Lagoons, Nigeria. Marine Environmental Research 108:24-32.				
<b>OECD Harmonized</b> A	Aquatic Bioconcentration					
Template:						
HERO ID: 29	915546					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, Type, and Guide	leline	None; Experimental; other: Levels of phthalic acid esters in environmental (water and sediment) and biota samples of the two lagoon systems (Epe and Lagos) in Nigeria				
Solvent, Reactivity, Storage, Sta	ability	NR; NR; NR				
Radiolabel, Source, State, Purity	y	NR; Sigma Aldrich (Switzerland); NR; Analytical standard Notes: Monitoring study				
Test Organism and Test Organis	sm Details	Macrobrachium vollenhovenii; Chrysicthys nigrodigitatus, Tilapia guineensis; Natural biota samples; whole body BSAF values reported for Macrobrachium vollenhovenii; organ BSAF reported for Chrysicthys nigrodigitatus. Tilapia guineensis				
Lipid Content, Test Temperature	re, pH, and Depu-	Not reported; Not reported; 7.21±0.26 (Epe) 7.4±0.18 (Lagos); Not reported				
ration Time						
Media Type, TOC, and Salinity	7	natural water: marine; Total dissolved solids: $226.14\pm57.1$ mg/L (Epe) $336.50\pm18.6$ mg/L (Lagos); $0.27\pm0.12$ mg/L (Epe) $4.02\pm0.34$ mg/L (Lagos)				
Dissolved Oxygen, Conductivity, and Hardness		2.51±0.72 mg/L (Epe and Lagos); 200.50±66.03 uS/cm (Epe) 618.20±27.40 uS/cm (Lagos); Not reported				
Exposure Route, Elimination, ar	nd Nominal Mea-	Environmental; Natural; Measured				
surements Test Type, Test Temperature, an	nd Test Condition	field study; Not reported; Water and sediment samples were collected from four stations, including two landing sites of Lagos and Epe lagoons				
Duration, Parameter, and Sampl	ling Frequency	Sampling conducted May 2011 to July 2011; DT50; Not reported				
Concentration	8 1 9	$0.18 \pm 0.01$ (Epe sediment). $0.14 \pm 0.01$ (Lagos sediment) - ug/g				
Analytical Method and Analytic	cal Details	HPLC; Not reported;				
Rate Constant and Results per R	Recovery	Not reported; Not reported				
Statistics, Basis, and Calculation	on Basis	Single factor analysis of variance (ANOVA) was used to compare phthalate concentration in water, sediment and biota.; Not Reported; steady state				
Results Value and Results Detai	ils	Macrobrachium vollenhovenii Whole body BSAF=1.14 (Lagos) and 1.99 (Epe); T. guineensis BSAF in muscle=1.80, gill=6.43, liver=4.58, and kidney=1.43 (Lagos); T. guineensis BSAF in muscle=1.19, gill=2.21, liver=1.60, and kidney=1.12 (Epe); C. nigrodigitatus BSAF in muscle=1.12, gill=1.20, liver=3.50, and kidney=3.49 (Lagos); C. nigrodigitatus BSAF in muscle=3.40, gill=4.12, liver=1.87, and kidney=1.89 (Epe)				
Metabolites, Reference, and R Substance	Results Reference	Not reported; Not reported; Not reported				

	EVALUATION						
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	Domain 1: Test Substance						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	High	Analytical standard source and purity reported.			
Domain 2: Test Design	Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	Controls not required for field studies.			
	Metric 4:	Test Substance Stability	Medium	Field sample storage details were not reported.			
	Continued on next page						

PUBLIC RELEASE DRAFT May 2025 Aquatic Bioconcentration

		contin	ued from pre	vious page
Study Citation:	Adeogun, A. O., biota concentratio	Ibor, O. R., Omogbemi, E. D., Chukwuka on of phthalate esters in Epe and Lagos La	a, A. V., Adeg agoons, Nigeri	bola, R. A., Adewuyi, G. A., Arukwe, A. (2015). Environmental occurrence and a. Marine Environmental Research 108:24-32.
OECD Harmonized	Aquatic Bioconce	entration		
Template:	2015546			
	2913340			
р ·		]		N
Domain		Metric	Rating	Comments
Domain 3 <sup>.</sup> Test Conditi	ons			
Domain 5. Test Conditi	Metric 5:	Test Method Suitability	High	The field study is suitable for the test substance.
	Metric 6:	Testing Conditions	Medium	No environmental conditions of the samples collected were reported. Fish sample char- acteristics were limited (age, lipid content).
	Metric 7:	Testing Consistency	N/A	This metric is not applicable to field studies.
	Metric 8:	System Type and Design	High	Field studies are assumed to be at equilibrium.
Domain 4: Test Organis	sms	Outer and Arrest Mathedale and	NT/A	
	Metric 9: Metric 10:	Sampling Mathada	N/A Madium	The metric is not applicable to the study type.
	Metric 10.	Sampling Memous	Wiedrum	ported.
Domain 5: Outcome As	ssessment			
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcomes of interest.
	Metric 12:	Test Substance Purity	Medium	Limited detail on sampling methods.
Domain 6: Confoundin	a Wariable Control			
Domain 0. Comoundin	Metric 13.	Confounding Variables	N/A	This metric is not applicable to this type of study
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to this type of study.
		Exposure		
Domain 7: Data Presen	tation and Analysis			
	Metric 15:	Data Reporting	Medium	Some details were omitted; however, this does not hinder the interpretation of the re- sults.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were described and applied appropriately.
Domain & Other				
Domain o. Outer	Metric 17:	Verification or Plausibility of	High	The results were reasonable.
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quali	ty Determin	ation	High	

Study Citation:	Adeogun, A. O., Il	bor, O. R., Omogbemi, E. D., Chukwuka, A. V., Adegbola, R. A., Adewuyi, G. A., Arukwe, A. (2015). Environmental occurrence and
OECD Harmonized	Aquatic Bioconcer	itration
HERO ID:	2915546	
		EXTRACTION
Parameter		Data
CASRN and Test Material		84-74-2; Dibutylphthalate
Confidentiality, Type, and G	uideline	None; Experimental; other: Levels of phthalic acid esters in environmental (water and sediment) and biota samples of the two lagoon systems (Epe and Lagos) in Nigeria
Solvent, Reactivity, Storage,	Stability	NR; NR; NR
Radiolabel, Source, State, Pu	urity	NR; Sigma Aldrich (Switzerland); NR; Analytical standard Notes: Monitoring study
Test Organism and Test Orga	anism Details	Macrobrachium vollenhovenii; Chrysicthys nigrodigitatus, Tilapia guineensis; Natural biota samples; whole body BCF values reported for Mac- robrachium vollenhovenii; organ BCF reported for Chrysicthys nigrodigitatus, Tilapia guineensis
Lipid Content, Test Tempera	ture, pH, and Depu-	Not reported; Not reported; 7.21±0.26 (Epe) 7.4±0.18 (Lagos); Not reported
Media Type, TOC, and Salin	iity	natural water: marine; Total dissolved solids: $226.14\pm57.1$ mg/L (Epe) $336.50\pm18.6$ mg/L (Lagos); $0.27\pm0.12$ mg/L (Epe) $4.02\pm0.34$ mg/L (Lagos)
Dissolved Oxygen, Conducti	ivity, and Hardness	2.51±0.72 mg/L (Epe and Lagos); 200.50±66.03 uS/cm (Epe) 618.20±27.40 uS/cm (Lagos); Not reported
Exposure Route, Elimination	n, and Nominal Mea-	Environmental; Natural; Measured
surements		
Test Type, Test Temperature.	, and Test Condition	held study; Not reported; Water and sediment samples were collected from four stations, including two landing sites of Lagos and Epe lagoons
Duration, Parameter, and Sar	mpling Frequency	Sampling conducted May 2011 to July 2011; DT50; Not reported
Concentration		Not Reported
Analytical Method and Anal	ytical Details	HPLC; Not reported;
Rate Constant and Results pe	er Recovery	Not reported; Not reported
Statistics, Basis, and Calcula	tion Basis	Single factor analysis of variance (ANOVA) was used to compare phthalate concentration in water, sediment and biota.; Not Reported; steady state
Results Value and Results De	etails	Macrobrachium vollenhovenii Whole body BCF=1.21 (Lagos) and 2.81 (Epe); T. guineensis BCF in muscle=1.92, gill=6.87, liver=4.89, and kidney=1.52 (Lagos); T. guineensis BCF in muscle=1.68, gill=3.11, liver=2.25, and kidney=1.58 (Epe); C. nigrodigitatus BCF in muscle=1.19,
		gill=1.28, liver=3.73, and kidney=3.72 (Lagos); C. nigrodigitatus BCF in muscle=4.80, gill=5.82, liver=2.64, and kidney=2.67 (Epe)
Metabolites, Reference, and Substance	d Results Reference	Not reported; Not reported
		Εναιματιον

Domain		Metric	Rating	Comments
Domain 1: Test Substar	ice			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	High	Analytical standard source and purity reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	N/A	Controls not required for field studies.
	Metric 4:	Test Substance Stability	Medium	Field sample storage details were not reported.
Domain 3: Test Conditi	ons			

Continued on next page ...

PUBLIC RELEASE DRAFT May 2025 Aquatic Bioconcentration

HERO ID: 2915546 Table: 2 of 2

Study Citation: OECD Harmonized Template: HERO ID:	Adeogun, A. O., biota concentrati Aquatic Bioconc 2915546	Ibor, O. R., Omogbemi, E. D., Chukwuka on of phthalate esters in Epe and Lagos La entration	, A. V., Adeg goons, Nigeri	bola, R. A., Adewuyi, G. A., Arukwe, A. (2015). Environmental occurrence and a. Marine Environmental Research 108:24-32.
OECD Harmonized Template: HERO ID:	Aquatic Bioconc 2915546	entration		
Template: HERO ID:	2915546			
HERO ID:	2915546			
		I	EVALUATIO	Ν
Domain		Metric	Rating	Comments
	Metric 5:	Test Method Suitability	High	The field study is suitable for the test substance.
	Metric 6:	Testing Conditions	Medium	No environmental conditions of the samples collected were reported. Fish sample char- acteristics were limited (age, lipid content).
	Metric 7:	Testing Consistency	N/A	This metric is not applicable to field studies.
	Metric 8:	System Type and Design	High	Field studies are assumed to be at equilibrium.
Domain 4: Test Organis	ms			
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.
	Metric 10:	Sampling Methods	Medium	Test organism species and source were reported, limited organism characteristics re- ported.
Domain 5: Outcome Ass	sessment			
Domain 5. Outcome 713.	Metric 11	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcomes of interest
	Metric 12:	Test Substance Purity	Medium	Limited detail on sampling methods.
				I C
Domain 6: Confounding	/Variable Control			
c	Metric 13:	Confounding Variables	N/A	This metric is not applicable to this type of study.
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to this type of study.
		Exposure		
Domain 7: Data Present	ation and Analysis			
	Metric 15:	Data Reporting	Medium	Some details were omitted; however, this does not hinder the interpretation of the re- sults.
	Metric 16:	Statistical Methods and	High	Statistical methods were described and applied appropriately.
		Kinetic Calculations		
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	High	The results were reasonable.
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.
Overall Qualit	y Determin	nation	High	

Study Citation:	Call, D. J., Brooke	P, L. T., Ahmad, N. (1980). Toxicity, bioconcentration, and metabolism of selected chemicals in aquatic organisms: Fourth quarterly EPA (1 January - 31 March 1980).
OECD Harmonized	Aquatic Bioconcen	tration
Template: HERO ID:	3634375	
		EXTRACTION
Parameter		Data
CASRN and Test Material		84-74-2; Di-n-butylphthalate
Confidentiality, Type, and C	Juideline	None; Experimental; other: Bioconcentration of DBP in Fathead Minnows.
Solvent, Reactivity, Storage	, Stability	Methanol; NR; NR
Radiolabel, Source, State, P	Purity	uniformly ring-labeled; 14 C labeled from California Bionuclear Corporation, Sun Valley, CA; Unlabeled Monsanto; NR; labeled 98%; unlabeled 99.76% Notes: minimal activity of approximately 5000 counts/min in 100 mL of test water
Test Organism and Test Org	ganism Details	Fathead minnows (Pimephales promelas); 28-29 days old; average weight of 0.091±0.035 g; fed freshly hatched brine shrimp
Lipid Content, Test Temper	ature, pH, and Depu-	measured but not reported; 25.4±0.46°C; 7.22; 21 days
ration Time Media Type, TOC, and Sali	nity	natural water: freshwater; Not reported; Not reported
Dissolved Oxygen, Conduct	tivity, and Hardness	54.2% saturation; Not reported; 52.8±1.06 mg/L CaCO3
Exposure Route, Eliminatio	n, and Nominal Mea-	aqueous; Not reported; Measured
surements		
Test Type, Test Temperature	e, and Test Condition	semi-static; $25.4\pm0.46$ °C; Artificial lighting; 16 hr light/8 hr dark
Duration, Parameter, and Sa	ampling Frequency	32 days; BCF; day 0 at 0, 4, 8, and 12 hours and on days 1, 2, 3, 5, 8 and 11 during uptake; and at 0, 4, 8, and 12 hours on day 0 and on days 1, 2, $3, 4, 7, 14$ and 21 during deputation
Concentration		4.83 - 34.85 μg/L
Analytical Method and Ana	lytical Details	measured on scintillation spectrometer; extraction aliquots were added to scintillation cocktail and measured for 5 min. Concentration-count relationships were determined for each compound using 5 duplicated standards for both water and fish.;
Rate Constant and Results p	per Recovery	Not reported; mean extraction efficiency for water and fish samples: $97.59 \pm 1.32\%$ and $83.61 \pm 10.08\%$
Statistics, Basis, and Calcul	ation Basis	Not reported; whole body; other
Results Value and Results D	Details	mean BCFs of 2068 and 7006 for 4.83 and 34.85 ug/L test concentrations; maximum BCFs of 5620 and 28500 for 4.83 and 34.85 ug/L test
Metabolites, Reference, an Substance	nd Results Reference	concentrations. Not reported; not applicable; Not Reported

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ice			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Concurrent controls were included.
			Continued on next page .	

		continu	ed from previou	s page
Study Citation:	Call, D. J., Broo	oke, L. T., Ahmad, N. (1980). Toxicity, bio o EPA (1 January - 31 March 1980)	oconcentration, an	d metabolism of selected chemicals in aquatic organisms: Fourth quarterly
<b>OECD Harmonized</b>	Aquatic Bioconc	centration		
Template:	1			
HERO ID:	3634375			
		Т		
Domain		Matria	Dating	Commonto
Domain	Matuia A.		Kating	
	Metric 4.	Test Substance Stability	Medium	ever, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
Domain 3: Test Condition	ons			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent.
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type
		System Type and Design		
Domain 4: Test Organis	sms			
2 onnan in Test organis	Metric 9:	Outcome Assessment Methodology	High	The test organism information was reported and is routinely used for similar study types and appropriate.
	Metric 10:	Sampling Methods	High	Test organism information was reported, including species, age, and starting body weight.
Domain 5: Outcome As	ssessment			
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.
Domain 6 <sup>,</sup> Confounding	g/Variable Control			
Domain 0. Comountaing	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation.
	Metric 14:	Health Outcomes Unrelated to Exposure	Medium	Attrition or health outcomes were not reported; however, this omission was not likely to have a substantial impact on study results.
		•		
Domain 7: Data Present	tation and Analysis			
	Metric 15:	Data Reporting	Medium	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported.
	Metric 16:	Statistical Methods and	High	Statistical methods or kinetic calculations were clearly described and address the
		Kinetic Calculations		dataset.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	Reported values were within expected range.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
		Contin	ued on next page	····

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	continued from previous page	
Study Citation: Call, D. J., Brooke, L. T., Ahmad, Progress report to EPA (1 January -	N. (1980). Toxicity, bioconcentration, and metabolism of selected of March 1980).	chemicals in aquatic organisms: Fourth quarterly
OECD Harmonized Aquatic Bioconcentration	,	
Template:		
HERO ID: 3634375		
	EVALUATION	
Domain Metric	Rating	Comments

PUBLIC RELEASE DRAFT

Study Citation:	Casserly, D. M., Davis, E. M., Downs, T. D., Guthrie, R. K. (1983). Sorption of organics by Selenastrum capricornutum. Water Research 17(11):1591-					
OFCD Harmonized	1594. aized Aquatic Bioconcentration					
Template:						
HERO ID:	1333375					
EXTRACTION						
Parameter		Data				
CASRN and Test Material		84-74-2; Di-n-butylphthalate				
Confidentiality, Type, and Guideline		None; Experimental; other: BCF study of eight organics in green algae, Selenastrum capricornutum.				
Solvent, Reactivity, Storage, Stability		NR; NR; NR				
Radiolabel, Source, State, Purity		NR; NR; NR Notes: NR				
Test Organism and Test Organism Details		Selenastrum capricornutum; Green algae from National Eutrophication Research Program, USEPA, Corvallis, OR. Algae culture contained one				
		bacteria type that could not be removed.				
Lipid Content, Test Temperature, pH, and Depu-		Not reported; Not reported; Not reported; Not reported				
Media Type, TOC, and Salinity		other; Not reported; Not reported				
Dissolved Oxygen, Conductivity, and Hardness		Not reported; Not reported				
Exposure Route, Elimination, and Nominal Mea-		S. capricornutum cultured in Modified Bold's basal Medium with TRIS buffer to which DBP was added.; Not reported; Individual DBP test: 10.0mg/L; simultaneous test with 7 other organics: 2.0 mg/L.				
Test Type, Test Temperature, and Test Condition		semi-static; Not reported; Magnetic stirrer kept algae suspended. Algal biomass (Total suspended solids): 19.0 and 10.2 mg/L in DBP-only and				
Comments		multichemical test, respectively.				
Duration, Parameter, and Sampling Frequency		24 hours; other; Samples were taken in the control (no alga) and experimental flasks at t=0 and t=24 hours. Two replicates performed for each experiment.				
Concentration		2.0 - 10.0 mg/L				
Analytical Method and Analytical Details		GC-FID (Perkin-Elmer 910 GC); Detection limit was between 0.05-0.5mg/L.;				
Rate Constant and Results per Recovery		Not reported; Not reported				
Statistics, Basis, and Calculation Basis		Not Reported; Not Reported; Not Reported				
Results Value and Results Details		BCF; Test with DBP only: 8826 (Log BCF=3.94); multiple chemical, batch test: 36,500 (Log BCF: 4.56)				
Metabolites, Reference, and Results Reference Substance		Not reported; Not reported; Not reported				

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substar	ice					
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.		
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported but the omission was unlikely to have a sub- stantial impact on the study results.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	Appropriate controls were used in the study.		
	Metric 4:	Test Substance Stability	Medium	Details regarding the test substance were not reported but the omissions were unlikely to impact the study results.		

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#### ... continued from previous page **Study Citation:** Casserly, D. M., Davis, E. M., Downs, T. D., Guthrie, R. K. (1983). Sorption of organics by Selenastrum capricornutum. Water Research 17(11):1591-1594. **OECD Harmonized** Aquatic Bioconcentration Template: **HERO ID:** 1333375 **EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability High The test method was suitable for the test substance and was tested below its solubility in the medium. Metric 6: **Testing Conditions** Medium Some of the test conditions were not reported but the omissions were unlikely to have a substantial impact on the study results. Metric 7: Testing Consistency High There were no differences reported between the study groups that impact the study results. Metric 8: System Type and Design Medium It is not clear that equilibrium was established between the test organism and the media but the omission is unlikely to have a substantial impact on the study results. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology N/A The metric is not applicable to the study type. Metric 10: Sampling Methods High The test organism was appropriate for the study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology addressed the intended outcome of interest. Metric 12: Test Substance Purity Medium Sampling frequency was too low to determine uptake rates. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables Medium Uncertainties in the measurements were not reported but due to the replication of samples and multiple analyses, the omission is unlikely to have a substantial impact on the study results. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to the organism type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium Concentrations were not directly reported, but the omission does not have a substantial impact on the reported BCF calculations. Statistical Methods and Metric 16: Medium Statistical analysis was not reported but the omission is unlikely to have a substantial impact on the study results. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of High The study results are reasonable. Results Metric 18: **OSAR** Models N/A The metric is not applicable to the study type. **Overall Quality Determination** High
Study Citation:	Chemical Manufacturers Association, (1984). Phthalate esters panel: Summary report: Environmental studies - Phase I. Generation of environmental fate					
OFCD Harmonized	Aquatic Bioconcentration					
Tomnlato:	Aquatic Diocolicei					
HERO ID:	7325943					
		EVTPACTION				
Paramatar		Data				
		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, Type, and	Guideline	no; Calculation; other: not specified				
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR				
Radiolabel, Source, State, I	Purity	NR; NR; NR Notes: NR				
Test Organism and Test Org	ganism Details	NR; NR				
Lipid Content, Test Temper	rature, pH, and Depu-	NR; NR; NR				
ration Time						
Media Type, TOC, and Sal	inity					
Dissolved Oxygen, Conduc	ctivity, and Hardness	NR; NR				
Exposure Route, Eliminatio	on, and Nominal Mea-	NR; NR; NR				
surements Test Type Test Temperatur	re and Test Condition	NR· NR· NR				
Comments	e, and rest condition					
Duration, Parameter, and S	ampling Frequency	NR; NR				
Concentration		NR NR - NR NR				
Analytical Method and Ana	alytical Details	NR; NR;				
Rate Constant and Results	per Recovery	NR; NR				
Statistics, Basis, and Calcu	lation Basis	NR; NR				
Results Value and Results I	Details	NR; Reports a predicted BCF=525; log BCF=(0.542 x log Kow)+0.124; calculated from actual Kow determinations.				
Metabolites, Reference, an	nd Results Reference	NR; NR				
Substance						

	EVALUATION						
Domain		Metric	Rating	Comments			
Domain 1: Test Substand	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified.			
	Metric 2:	Test Substance Purity	Medium	The test substance and purity were not reported.			
Domain 2: Test Design Metric 3: Study Controls N/A The study did not require concurrent control groups.							
	Metric 4:	Test Substance Stability	N/A	This metric does not apply to this study type.			
Domain 3: Test Condition	ons						
	Metric 5:	Test Method Suitability	N/A	This metric does not apply to this study type.			
	Metric 6:	Testing Conditions	N/A	This metric does not apply to this study type.			
Continued on next page							

		contin	ued from pre	vious page					
Study Citation:	Chemical Manufa and effects data b	Chemical Manufacturers Association, (1984). Phthalate esters panel: Summary report: Environmental studies - Phase I. Generation of environmental fate and effects data base on 14 phthalate esters.							
<b>OECD Harmonized</b>	Aquatic Bioconce	Aquatic Bioconcentration							
Template:	-								
HERO ID:	7325943								
		1	EVALUATIO	N					
Domain		Metric	Rating	Comments					
	Metric 7:	Testing Consistency	N/A	This metric does not apply to this study type.					
	Metric 8:	System Type and Design	N/A	This metric does not apply to this study type.					
Domain 4: Test Organia	sms								
	Metric 9:	Outcome Assessment Methodology	N/A	This metric does not apply to this study type.					
	Metric 10:	Sampling Methods	N/A	This metric does not apply to this study type.					
Domain 5: Outcome As	ssessment								
	Metric 11:	Test Substance Identity	High	The outcome of interest was reported.					
	Metric 12:	Test Substance Purity	N/A	This metric does not apply to this study type.					
Domain 6: Confoundin	g/Variable Control								
	Metric 13:	Confounding Variables	N/A	This metric does not apply to this study type.					
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric does not apply to this study type.					
		Exposure							
Domain 7: Data Presen	tation and Analysis								
	Metric 15:	Data Reporting	N/A	This metric does not apply to this study type.					
	Metric 16:	Statistical Methods and	Medium	Equation used for calculation was reported.					
		Kinetic Calculations		1 ···· · ···· · · · · · · · · · · · · ·					
Domain 8: Other									
	Metric 17:	Verification or Plausibility of	Low	Due to limited information, evaluation of the reasonableness of the study results was not					
		Results		possible.					
	Metric 18:	QSAR Models	N/A	A QSAR model was not reported.					
<u> </u>									
<b>Overall Quali</b>	ty Determin	ation	High						

Study Citation: OECD Harmonized	Chi, J. (2009). Phthalate acid esters in Potamogeton crispus L. from Haihe River, China. Chemosphere 77(1):48-52. Aquatic Bioconcentration				
HERO ID:	697462				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Dibutyl phthalate			
Confidentiality, Type, and C	Guideline	None; Field Study; other: Aquatic plant BCF field study at 4 sampling sites			
Solvent, Reactivity, Storage	, Stability	Plant samples extracted and analyzed in dichloromethane; NR; NR; NR			
Radiolabel, Source, State, P	Purity	NA; 0-50 cm water samples, top 2 cm sediment samples, and whole plants were collected from 4 sites along the Haihe River, China; NR; NA Notes: Extraction efficiencies were performed with analytical standards of unreported origin and purity			
Test Organism and Test Org	anism Details	Potamogeton crispus L.; Submerged herbaceous perennial plant			
Lipid Content, Test Temperature, pH, and Depuration Time		March: 2.63, 3.80, 4.08, and 2.17%; April: 1.11, 1.35, 1.43, and 1.56%; May: 0.38, 0.51, 0.43, and 0.29%; March: 11, 12, 12, and 15°C; April: 18, 19, 20, and 22°C; May: 25, 26, 27, and 29°C; March: 7.9, 8.2, 8.1, and 8.2; April: 7.9, 8.0, 8.2, and 8.3; May: 7.8, 7.7, 7.8, and 7.9; Not reported			
Media Type, TOC, and Sali	nity	natural water / sediment: freshwater; March: 3.05, 3.01, 1.94, and 2.04%; April: 2.78, 2.66, 1.74, and 2.58%; May: 2.75, 2.93, 1.83, and 2.29%; Not reported			
Dissolved Oxygen, Conduct	tivity, and Hardness	Not reported; Not reported; Not reported			
Exposure Route, Eliminatio	n, and Nominal Mea-	Sediment and water; Not reported; Measured			
surements Test Type, Test Temperature	e, and Test Condition	field study; March: 11, 12, 12, and 15°C; April: 18, 19, 20, and 22°C; May: 25, 26, 27, and 29°C; Samples collected at 4 sites			
Duration, Parameter, and Sa	ampling Frequency	2 mo (March - May 2008); other; 3 dates (March 29, April 29, May 25)			
Concentration		0.35 - 40.68 µg/L			
Analytical Method and Analytical Details		Gas chromatography-flame ionization detector; Water LOD: 0.1 ug/LSediment LOD: 0.02 mg/kgPlant LOD: 0.002 mg/kg;			
Rate Constant and Results per Recovery		Not reported; Water: 91.8%Sediment: 85.9%Plant: 89.1%			
Statistics, Basis, and Calcul	ation Basis	SD water 3-15%; SD sediment 5-16%; SD plant 6-18%; organ w.w.; steady state			
Results Value and Results D	Details	BCF (estimated from figure, based on water and above-ground tissues wet wt.); March: 80, 32, 38, and 20; April: 5, 5, 10 and 15; May: 12, 40, 15			
Metabolites, Reference, an Substance	d Results Reference	and 8 Not reported; Not applicable; Not applicable			

			EVALUATION	N	
Domain		Metric	Rating	Comments	
Domain 1: Test Substand	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2:	Test Substance Purity	High	The test substance was detected in field studies, the source of which were well reported. Analytical standard source and purity were not reported but these omissions are unlikely to have substantial impact on study results.	
Domain 2: Test Design	Metric 3:	Study Controls	N/A	Field studies do not require concurrent control groups.	
Continued on next page					

HERO ID: 697462 Table: 1 of 1

		contin	ued from prev	vious page				
Study Citation: OECD Harmonized	Chi, J. (2009). Phthalate acid esters in Potamogeton crispus L. from Haihe River, China. Chemosphere 77(1):48-52. Aquatic Bioconcentration							
HERO ID:	697462							
	077102			AT .				
Domain		Metric	EVALUATIO Rating	Comments				
Domain	Metric 4:	Test Substance Stability	Medium	Test substance extraction was reported for plant samples but not for water or sediment samples, storage conditions were not reported; these omissions are not likely to have substantial impact on study results.				
Domain 3: Test Conditi	ons							
Domain 5. Test Conditi	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	High	Adequate sediment, water, and plant characteristics were reported.				
	Metric 7:	Testing Consistency	High	Exposure conditions were reported and comparable across groups. The sampling and analytical methods were consistent across all groups.				
	Metric 8:	System Type and Design	High	Field studies are assumed to be at equilibrium.				
Domain 4. Test Organis	sms							
Domain 1. Test organis	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	High	The test organism species was reported and is routinely used for similar study types.				
Domain 5: Outcome As	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest				
	Metric 12.	Test Substance Purity	High	The sampling methods were reported and appropriate for the study type				
	Wette 12.		Ingn	The sampring methods were reported and appropriate for the study type.				
Domain 6: Confounding	g/Variable Control							
·	Metric 13:	Confounding Variables	High	Reported variability was not likely to influence the outcome of the assessment.				
	Metric 14:	Health Outcomes Unrelated to Exposure	High	Plants were collected from field sites; no differences among study groups in organism attrition or health were reported.				
Domain 7: Data Present	tation and Analysis							
2 smain // Data 1 1050m	Metric 15:	Data Reporting	High	The target chemical concentrations and extraction efficiency were reported, analytical methods were suitable for detection, plant lipid contents were reported, and detection limits were sensitive enough to detect the target chemical.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were appropriate for the datasets.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The results were reasonable.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Quali	ty Determin	ation	High					

\* Related References: Cited in HSDB

Study Citation:	Chi, J., Liu, H., Li, B., Huang, G. L. (2006). Accumulation and biodegradation of dibutyl phthalate in Chlorella vulgaris. Bulletin of Environmental						
	Contamination and	1 Toxicology 77(1):21-29.					
OECD Harmonized	Aquatic Bioconcei	Aquatic Bioconcentration					
Template:	1202014						
HERO ID:	1323214						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, Type, and	Guideline	None; Experimental; other: Bioconcentration study with alga in lake water					
Solvent, Reactivity, Storag	e, Stability	NR; NR; NR					
Radiolabel, Source, State,	Purity	NR; Sigma Company; NR; 99%					
Test Organism and Test Or	ganism Details	Chlorella vulgaris; alga					
Lipid Content, Test Tempe	erature, pH, and Depu-	Not reported; 13 and 25°C; Not reported; Not reported					
ration Time	inity	0.45 um filterad laka watar starilizadi 20.0 ma/L dissolvad argania aarban. Nat rapartad					
Dissolved Oxygen Condu	ativity and Hardness	Not reported. Not reported					
Exposure Poute Eliminati	on and Nominal Maa	Not reported, Not reported.					
surements	on, and Nominal Mea-	aiga in media of fake water, Not reported, Measured					
Test Type, Test Temperatu	re, and Test Condition	static; 13 and 25°C; Not applicable					
Comments							
Duration, Parameter, and S	sampling Frequency	150 hours; other; 7 datapoints over 150 hours					
Concentration		0.2/3 mg/L					
Analytical Method and Analytical Details		GC-FID; Not applicable;					
Rate Constant and Results	per Recovery	1.3E10-3 to 6.8E-3 h-1 as concentrations of DBP decreases from 4.85 to 0.317 mg/L; spiked water 90.9 $\pm$ 3.7% and algal samples and 84.1 $\pm$ 7.2%					
Statistics, Basis, and Calcu	lation Basis	SD and average reported; not specified; steady state					
Results Value and Results	Details	BCF; ≤10,800					
Metabolites, Reference, a Substance	nd Results Reference	Not reported; Not reported; Not reported					

			EVALUATIO	N	
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.	
	Metric 2:	Test Substance Purity	High	The source of the test substance was reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	High	Controls were performed without algae in this study.	
	Metric 4:	Test Substance Stability	Medium	Details regarding this metric were not discussed; however, the omissions were not likely to have hindered the interpretation of the results.	
Domain 3: Test Conditions					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
Continued on next page					

		continu	ued from pre	vious page
Study Citation:	Chi, J., Liu, H., Contamination an	Li, B., Huang, G. L. (2006). Accumulated Toxicology 77(1):21-29.	ion and biode	gradation of dibutyl phthalate in Chlorella vulgaris. Bulletin of Environmental
OECD Harmonized	Aquatic Bioconce	entration		
Template: HERO ID:	1323214			
		I	EVALUATIO	Ň
Domain		Metric	Rating	Comments
	Metric 6:	Testing Conditions	Medium	Not reported in detail, but not likely to have influenced the study results.
	Metric 7:	Testing Consistency	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 8:	System Type and Design	Medium	Details regarding this metric were omitted; however, this was not likely to have hindered the interpretation of the results.
Domain 4: Test Organis	sms			
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	Medium	The test species was reported but not routinely used for similar studies; species charac- teristics were not provided.
Domain 5: Outcome As	ssessment			
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.
	Metric 12:	Test Substance Purity	Medium	Some sampling details were omitted; however, the lack of data is not likely to hinder the interpretation of the results.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	High	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Present	tation and Analysis			
	Metric 15:	Data Reporting	Medium	Details regarding this metric were omitted; however, this was not likely to have hindered the interpretation of the results.
	Metric 16:	Statistical Methods and	Medium	Details regarding this metric were omitted; however, this was not likely to have hindered
		Kinetic Calculations		the interpretation of the results.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	Study results were reasonable and compared to other studies.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quali</b>	ty Determin	ation	High	

\* Related References: Cited in HSDB

Study Citation: OECD Harmonized Template:	Chi, J., Yang, Q. (2012). Effects of Potamogeton crispus L. on the fate of phthalic acid esters in an aquatic microcosm. Water Research 46(8):2570-2578. Aquatic Bioconcentration					
HERO ID:	1332769					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2. Di-n-butyl phthalate				
Confidentiality, Type, and C	Juideline	None: Experimental: other: Plant concentration factors in submerged Potamogeton crispus L.				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	urity	NR; Sigma; NR; 99% Notes: NR				
Test Organism and Test Org	ganism Details	Potamogeton crispus L.; Submerged herbaceous perennial plant. Tissue was cultured from a parent material collected from Jingye Lake, China.				
Lipid Content, Test Temper	ature, pH, and Depu-	Not reported; 20±1°C; 7.8-7.9; Not Reported				
ration Time Media Type, TOC, and Salinity		natural water / sediment: freshwater; 2.18% in background sediment sample, 2.69 and 2.94 in rhizosphere and non-rhizosphere soil, respectively, at the end of the experiment.; Not reported				
Dissolved Oxygen, Conduc	tivity, and Hardness	Not reported; Not reported; Not reported				
Exposure Route, Eliminatio	n, and Nominal Mea-	DBP was added to inflow water at 0.3-0.5mg/L; Not reported; Not reported				
Test Type, Test Temperature	e, and Test Condition	flow-through; 20±1°C; In- and out-flow rates were 0.2L/h.				
Duration, Parameter, and Sampling Frequency		20 days; other; Water samples were sampled at 0, 0.2, 0.5, 1, 1.5, 2, 3, 4, 6, 8, 10, 12.4, 14, 17, and 20 days. Plants and sediment were sampled at 0, 0.5, 1, 2, 4, 6, 8, 10, 12.4, 14, 17, and 20 days.				
Concentration		0.3 - 0.5 mg/L				
Analytical Method and Ana	lytical Details	Gas chromatography-flame ionization detection.; Limit of detection in water: 0.1µg/L; LOD in sediment: 0.02mg/kg; LOD in plant: 0.002 mg/kg;				
Rate Constant and Results p	per Recovery	Not reported; Average recovery in water, sediment, and plant: >92.5, >87.9, and >89.6%.				
Statistics, Basis, and Calcul	ation Basis	Relative standard deviation in water: 2-11%; in sediment: 5-14%; in plant: 3-13%; Not Reported; Not Reported				
Results Value and Results E	Details	Plant concentration factor: 16.9-36.0 L/kg; PCF=DBP plant conc./DBP water conc.				
Metabolites, Reference, an Substance	d Results Reference	Not reported; Not reported; Not reported				

	EVALUATION						
Domain		Metric	Rating	Comments			
Domain 1: Test Substance	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.			
	Metric 2:	Test Substance Purity	High	The test substance purity was reported and appropriate.			
Domain 2: Test Design							
	Metric 3:	Study Controls	High	Blank controls were included in this study.			
	Metric 4:	Test Substance Stability	High	The test substance preparation and homogeneity were reported and appropriate.			
Domain 3: Test Conditio	ons						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance and the target chemical was tested at a concentration below its solubility.			
		С	ontinued on next	page			

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		continu	ued from pre	vious page			
Study Citation: OECD Harmonized	Chi, J., Yang, Q. (2012). Effects of Potamogeton crispus L. on the fate of phthalic acid esters in an aquatic microcosm. Water Research 46(8):2570-2578. Aquatic Bioconcentration						
Template:							
HERO ID:	1332769						
		F	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate for the study type.			
	Metric 7:	Testing Consistency	High	The experiment was conducted in triplicate and no variations in the testing conditions were reported.			
	Metric 8:	System Type and Design	High	Equilibrium was established and the system type was capable of maintaining substance concentrations.			
Domain 4: Test Organis	sms						
-	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.			
	Metric 10:	Sampling Methods	High	The test organism information was reported and appropriate for the study type.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	The sampling methods were reported and appropriate for the study type.			
Domain 6: Confoundin	g/Variable Control						
	Metric 13:	Confounding Variables	High	Uncertainties in the measurements were reported and experiments were done in tripli- cate with no indication that any significant variability occurred.			
	Metric 14:	Health Outcomes Unrelated to Exposure	High	There were no reported differences in the study groups that would impact the organism health.			
Domain 7: Data Presen	tation and Analysis						
	Metric 15:	Data Reporting	High	The recoveries were reported and adequate and the plant concentration factors were clearly reported.			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis was reported and appropriate.			
Domain 8: Other			· · ·				
	Metric 17:	Verification or Plausibility of	High	The study results were consistent with field derived values according to the authors.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.			
<b>Overall Quali</b>	ty Determin	ation	High				

Study Citation:	De Peyster, A., Do use: The San Dieg	De Peyster, A., Donohoe, R., Slymen, D. J., Froines, J. R., Olivieri, A. W., Eisenberg, D. M. (1993). Aquatic biomonitoring of reclaimed water for potable use: The San Diego health effects study. Journal of Toxicology and Environmental Health 39(1):121-141.				
OECD Harmonized	Aquatic Bioconce	Aquatic Bioconcentration				
Template:	1					
	657057					
HERO ID.	037937					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Di-n-butyl phthalate				
Confidentiality, Type, and	Guideline	None; Experimental; other: ASTM 1985 Standard Practice for Conducting Bioconcentration Tests with Fishes and Saltwater Bivalve Mollusks				
Solvent, Reactivity, Storag	ge, Stability	NR; NR; NR				
Radiolabel, Source, State,	Purity	NR; Contaminated waters; NR; NR Notes: Detected in advanced wastewater treatment facility (AWT water) and a Water Treatment facility				
		(Miramar water); standards used for analytical method not reported.				
Test Organism and Test Or	rganism Details	Pimephales promelas; Juvenile fathead minnows				
Lipid Content, Test Tempe	erature, pH, and Depu-	Not reported; 22±1°C; 7.48 (AWT water); 8.25 (Miramar water); Not reported				
ration Time						
Media Type, TOC, and Sal	linity	other; Not reported; Not reported				
Dissolved Oxygen, Condu	ctivity, and Hardness	$\geq$ 60% (5.6 mg/L); 210 (AWT water); 813 (Miramar water); As CaCO3: 32 mg/L (AWT water); 245 mg/L (Miramar water)				
Exposure Route, Eliminati	on, and Nominal Mea-	Contaminated waters; target analyte concentration not reported; Not reported; Measured				
surements						
Test Type, Test Temperatu	re, and Test Condition	flow-through; $22\pm1^{\circ}$ C; Bioaccumulation of contaminants over a 28-d period using water from and advanced wastewater treatment facility (AWT				
Comments		water) and a Water Treatment facility (Miramar water)				
Duration, Parameter, and S	Sampling Frequency	28 days; other; 0, 7, 14, and 28 days				
Concentration		Not Reported				
Analytical Method and An	alytical Details	Method 625 base/neutral/acid extraction (B/N/A); Target analyte measured above the detection limit of 1 ug/L in fish samples exposed to water				
		sources;				
Rate Constant and Results	per Recovery	Not reported; Specific concentrations in source waters not reported because extraneous sources of phthalates were not ruled out, test hish plastic				
Statistics Designed Color	-1-then Deele	shipping bags, trace amount in extraction solvent blanks				
Statistics, Basis, and Calct		p < 0.03; Divide Statistical Software was used for data analysis; other; other				
Results Value and Results	Details	25% (AW1 water); 25% (Miramar water); Percentage of samples above DL (1 ug/kg)				
Metabolites, Reference, a Substance	and Results Reference	Not reported; Not reported; Not reported				

	EVALUATION					
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	nce					
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.		
	Metric 2:	Test Substance Purity	High	The test substance source was reported.		
Domain 2: Test Design	Metric 3:	Study Controls	Uninformative	Controls included; however, no results were reported and concentrations of analytes in controls were not measured/reported. It was reported that analytical blanks contained trace amounts of phthalates and the possibility of phthalate contamination as a result of the plastic bags the test organisms were received in was not ruled out.		
			Continued on next page			

PUBLIC RELEASE DRAFT May 2025 Aquatic Bioconcentration

		co	ontinued from previous page					
Study Citation:	De Peyster, A., Do use: The San Dieg	De Peyster, A., Donohoe, R., Slymen, D. J., Froines, J. R., Olivieri, A. W., Eisenberg, D. M. (1993). Aquatic biomonitoring of reclaimed water for potable use: The San Diego health effects study. Journal of Toxicology and Environmental Health 39(1):121-141.						
OECD Harmonized Template:	Aquatic Bioconcentration							
HERO ID:	657957							
			EVALUATION					
Domain		Metric	Rating	Comments				
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.				
Domain 3: Test Condit	ions							
	Metric 5:	Test Method Suitability	High	A standard method was reported.				
	Metric 6:	Testing Conditions	High	The testing conditions were appropriate for the method.				
	Metric 7:	Testing Consistency	High	The test conditions were consistent across samples or study groups. The conditions of the exposure were documented.				
	Metric 8:	System Type and Design	High	The system design details were appropriate.				
Domain 4: Test Organi	eme							
Domani 4. Test Organi	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type				
	Metric 10:	Sampling Methods	Medium	The test organism was a standard species; however, prior contamination from plastic shipping bags noted but was not quantified.				
Domain 5: Outcome A	accoment							
Domain 5: Outcome A	Metric 11	Test Substance Identity	Uninformative	There was incomplete reporting of outcome assessment method: BCE or BAE value				
	Moule II.	Test Substance Identity	Chinicimative	was not reported. Concentration ranges detected in fish were reported and the water concentrations were not reported.				
	Metric 12:	Test Substance Purity	High	The reported sampling details were appropriate.				
Domain 6: Confoundin	a Wariable Control							
Domain 0. Comoundin	Metric 13:	Confounding Variables	Uninformative	Prior contamination from plastic shipping bags noted but not assessed or quantified:				
		C		trace contamination in analytical blanks.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7: Data Preser	ntation and Analysis							
2 shun 7. Duu 110sel	Metric 15:	Data Reporting	Low	Additional detail would proved support; however, the outcome, quantitative results for bioaccumulation, were not reported.				
	Metric 16:	Statistical Methods and	High	Statistical analysis reported and acceptable.				
		Kinetic Calculations						
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	Uninformative	Quantitative results for bioaccumulation were not reported.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
<b>Overall Quali</b>	ity Determin	ation	Uninformative					

Study Citation: OECD Harmonized	EC/HC, (1994). Ca Aquatic Bioconcer	anadian environmental protection act priority substances list assessment report: Dibutyl phthalate. ntration			
Template:					
HERO ID:	1333071				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; dibutyl phthalate			
Confidentiality, Type, and C	Guideline	no; experimental; Not Reported: not reported			
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR			
Radiolabel, Source, State, I	Purity	NR; NR; NR			
Test Organism and Test Org	ganism Details	brown shrimp; fathead minnow; Penaeus aztecus; Pimephales promelas			
Lipid Content, Test Temper	rature, pH, and Depu-	not reported; not reported; not reported; not reported			
ration Time					
Media Type, TOC, and Salinity		not reported; not reported; not reported			
Dissolved Oxygen, Conduc	ctivity, and Hardness	not reported; not reported			
Exposure Route, Elimination	on, and Nominal Mea-	not reported; not reported; not reported			
surements Test Type Test Temperatur	e and Test Condition	not reported: not reported			
Comments	e, and rest condition	nor reported, nor reported			
Duration, Parameter, and S	ampling Frequency	not reported; BCF; not reported			
Concentration		Not Reported			
Analytical Method and Analytical Details		not reported; not reported;			
Rate Constant and Results	per Recovery	not reported; not reported			
Statistics, Basis, and Calcu	lation Basis	not reported; not reported; not specified			
Results Value and Results I	Details	2.9 for brown shrimp; 2125 for fathead minnow; Not Reported			
Metabolites, Reference, an	nd Results Reference	Not Reported; Not Reported; Not Reported			
Substance					

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name, CASRN and structure.
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported; however, the omission was not likely to have a substantial impact on the study results.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.
	Metric 4:	Test Substance Stability	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.
Domain 3: Test Conditi	ons			

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		conti	nued from previous	page		
Study Citation: OECD Harmonized	EC/HC, (1994). Canadian environmental protection act priority substances list assessment report: Dibutyl phthalate. Aquatic Bioconcentration					
HERO ID:	1333071					
			EVALUATION			
Domain		Metric	Rating	Comments		
	Metric 5:	Test Method Suitability	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.		
	Metric 6:	Testing Conditions	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.		
	Metric 7:	Testing Consistency	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.		
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study.		
Domain 4. Toot Or						
Domain 4: Test Organis	Metric 9:	Outcome Assessment Methodology	Medium	The test organism, species, or inoculum source were reported, but are not routinely used for similar study types; however, the deviation was not likely to have a substantial impact on study results.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study.		
Domain 5: Outcome As	ssessment					
	Metric 11:	Test Substance Identity	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.		
	Metric 12:	Test Substance Purity	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.		
Domain 6: Confoundin	g/Variable Control					
Domain 0. Comoundan	Metric 13:	Confounding Variables	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study.		
Domain 7. Data Present	tation and Analysis					
Domain 7. Data Presen	Metric 15:	Data Reporting	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited		
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.		
Domain & Other						
Domain 8: Other	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable as reported in this gray literature source; however, further details may be provided in source cited		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study.		
Overall Quali	ty Determin	ation	Medium			

\* Related References: cites: HEROID: 789995: Wofford, H.W., C.D. Wilsey, G.S. Neff, C.S. Giam, and J.M. Neff, "Bioaccumulation and Metabolism of Phthalate Esters by Oysters, Brown Shrimp, and Sheepshead Minnows," Ecotoxicol. Environ. Safety, 5:202-210 (1981) and HEROID: 3634370: Call, D.J., L.T. Brooke, N. Ahmad, and J.E. Richter, "Toxicity and Metabolism Studies with EPA Priority Pollutants and Related Chemicals in Freshwater Organisms," EPA-600/3-83-095, Environmental Research Laboratory, Office of Research and Development, Duluth, MN, 120 pp. (1983).

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Study Citation:	ECHA, (2012). Co	ECHA, (2012). Committee for Risk Assessment (RAC) Committee for Socio-economic Analysis (SEAC): Background document to the Opinion on the					
OFCD Harmaninad	Annex XV dossier	proposing restrictions on four phthalates.					
Tompleto:	Aquatic Bioconcer	Aquatic Bioconcentration					
HFRO ID.	3661424						
	5001121						
<b>D</b> (		EXTRACTION					
Parameter		Data					
CASRN and Test Material		Not Reported; Dibutylphthalate					
Confidentiality, Type, and C	Guideline	None; experimental; other: Not specified					
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR					
Radiolabel, Source, State, F	Purity	14C; NR; NR; NR Notes: NR					
Test Organism and Test Org	ganism Details	fathead minnow (Pimephales promelas); NR					
Lipid Content, Test Temperature, pH, and Depu-		NR; NR; NR					
ration Time		ND · ND · ND					
Disashad Orman, Candratizity and Handward		NR: NR: NR					
Exposure Route Eliminatio	on and Nominal Mea-	NR· NR					
surements	n, and Nommar Wea-	14K, 14K					
Test Type, Test Temperature	e, and Test Condition	NR; NR; NR					
Comments	amelina Essavanav	ND, other ND					
Concentration	ampling Frequency	NK, OUREF, NK					
Analytical Mathad and Ana	Initiaal Dataila						
Analytical Method and Analytical Details		INK; INK;					
Statistics Design and Calculation Design		NK, NK					
Statistics, Basis, and Calculation Basis		NN, NN, 14C COllicili RCE - 2 125: Both 14CDBD and any 14C labelled metabolities of DBD were measured. Data for brown shrimp (Penaus aztacus) already reported					
Metabolitas Deference or	od Desults Deference	ND ND					
Substance	iu Results Reference	1NK, 1NK					
Sussuite							

	EVALUATION						
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ice						
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.			
	Metric 2:	Test Substance Purity	Medium	The test substance source was not reported and the test substance purity was low or not reported.			
Domain 2: Test Design	Metric 3: Metric 4:	Study Controls Test Substance Stability	Low Low	Control details were not reported. The test substance stability, homogeneity, preparation, and storage conditions were not reported and these factors likely influenced the test substance or are likely to have a substantial impact on the study results.			

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## **Study Citation:** ECHA, (2012). Committee for Risk Assessment (RAC) Committee for Socio-economic Analysis (SEAC): Background document to the Opinion on the Annex XV dossier proposing restrictions on four phthalates. **OECD Harmonized** Aquatic Bioconcentration **Template: HERO ID:** 3661424 **EVALUATION** Domain Metric Comments Rating Domain 3: Test Conditions Metric 5: Test Method Suitability Low The test method was not reported in detail. Metric 6: **Testing Conditions** Low Testing conditions were not reported in detail. Testing Consistency Metric 7: Low Testing consistency details were not reported. Metric 8: System Type and Design Medium System type and design details were not reported in detail. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology N/A The metric is not applicable to this study type. Metric 10: Sampling Methods Medium The test organism or species is routinely used for similar study types; however, one or more additional characteristics of the organisms were not reported. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology addressed or reported the intended outcome(s) of interest. Metric 12: Test Substance Purity Low Details regarding sampling methods of the outcome(s) were not fully reported, and the omissions were likely to have a substantial impact on study results. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables Low Sources of variability and uncertainty in the measurements and statistical techniques and between study groups (if applicable) were not considered or accounted for in data evaluation resulting in some uncertainty. Metric 14: Health Outcomes Unrelated to Medium Attrition or health outcomes were not reported; however, this omission was not likely to have a substantial impact on study results. Exposure Domain 7: Data Presentation and Analysis Metric 15: Medium Lipid normalized BCF and lipid content were not measured or reported, preventing Data Reporting meaningful interpretation of study results. Metric 16: Statistical Methods and Low Statistical analysis or kinetic calculations were not conducted or were not described clearly. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of Medium The study results were reasonable. Results Metric 18: QSAR Models N/A A QSAR model was not reported. **Overall Quality Determination** Low

\* Related References: Data citing Canadian EPA, 1994 and some values entered under HERO ID 789995.

Study Citation:	ECHA, (2012). Committee for Risk Assessment (RAC) Committee for Socio-economic Analysis (SEAC): Background document to the Opinion on the				
OFCD Harmonized	Annex XV dossier	proposing restrictions on four phthalates.			
Template:	Aquatic Dioconcer				
HERO ID:	3661424				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		Not Reported; Dibutylphthalate			
Confidentiality, Type, and G	Guideline	None; experimental; OECD Guideline 305 E (Bioaccumulation: Flow-through Fish Test) - [before 14 June 1996]: Not specified			
Solvent, Reactivity, Storage	, Stability	NR; NR; NR			
Radiolabel, Source, State, P	Purity	14C; NR; NR; NR Notes: NR			
Test Organism and Test Org	ganism Details	Carp (Cyprinus carpio); NR			
Lipid Content, Test Temperature, pH, and Depu-		NR; NR; NR			
ration Time		NID · NID			
Niedra Type, TOC, and Samity		ND. ND			
Exposure Doute Elimination	n and Naminal Maa	INK, INK			
surements	in, and Nominal Mea-	INK, INK, INK			
Test Type, Test Temperature	e, and Test Condition	NR; NR			
Comments					
Duration, Parameter, and Sa	ampling Frequency	28 days; other; NR			
Concentration		10 - 50 ug/L			
Analytical Method and Ana	lytical Details	NR; NR;			
Rate Constant and Results per Recovery		NR; NR			
Statistics, Basis, and Calcul	ation Basis	NR; NR; 14C content			
Results Value and Results D	Details	BCF = 1.8 l/kg; Weak recovery performance, unidentified background contamination, a remarkable (unclarified) drop in DBP levels during exposure period and the mono-exter MBP was not analyzed were noted in the study summary.			
Metabolites, Reference, an Substance	nd Results Reference	None; NR; NR			

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.		
	Metric 2:	Test Substance Purity	Low	The test substance source was not reported and the identified impurities were likely to have a substantial impact on study results.		
Domain 2: Test Design						
	Metric 3:	Study Controls	Low	Control details were not reported.		
	Metric 4:	Test Substance Stability	Low	The test substance stability, homogeneity, preparation, and storage conditions were not reported and these factors likely influenced the test substance or are likely to have a substantial impact on the study results.		
Domain 3: Test Conditions						
	wieute J.	Test Method Suitability	nigii			
	Continued on next page					

		continu	ued from previous	page			
Study Citation:	ECHA, (2012). C Annex XV dossie	ECHA, (2012). Committee for Risk Assessment (RAC) Committee for Socio-economic Analysis (SEAC): Background document to the Opinion on the Annex XV dossier proposing restrictions on four phthalates.					
OECD Harmonized	Aquatic Bioconce	entration					
Template:	2661424						
HERO ID:	3661424						
		I	EVALUATION				
Domain		Metric	Rating	Comments			
	Metric 6:	Testing Conditions	Low	Testing conditions were not reported in detail.			
	Metric 7:	Testing Consistency	Low	Testing consistency details were not reported.			
	Metric 8:	System Type and Design	Medium	Equilibrium was not definitively established and, other system type and design details were not reported.			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.			
	Metric 10:	Sampling Methods	Medium	The test organism or species is routinely used for similar study types; however, one or more additional characteristics of the organisms were not reported.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.			
	Metric 12:	Test Substance Purity	Low	Details regarding sampling methods of the outcome(s) were not fully reported, and the omissions were likely to have a substantial impact on study results.			
Domain 6: Confoundin	g/Variable Control						
	Metric 13:	Confounding Variables	Medium	Sources of variability and uncertainty in the measurements and statistical techniques and between study groups (if applicable) were not considered or accounted for in data evaluation resulting in some uncertainty.			
	Metric 14:	Health Outcomes Unrelated to Exposure	Medium	Attrition or health outcomes were not reported; however, this omission was not likely to have a substantial impact on study results.			
Domain 7: Data Presen	tation and Analysis						
	Metric 15:	Data Reporting	Medium	Lipid normalized BCF and lipid content were not measured or reported, preventing meaningful interpretation of study results.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis or kinetic calculations were not conducted or were not described clearly.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.			
	Metric 18:	Results QSAR Models	N/A	A QSAR model was not reported.			
Overall Quali	ty Determin	ation	Medium				

\* Related References: Data citing Hüls, 1996.

Study Citation:	Hawker, D. W., Connell, D. W. (1986). Bioconcentration of lipophilic compounds by some aquatic organisms. Ecotoxicology and Environmental Safety			
OECD Harmonized	11(2):184-197.			
Template:	riquate Dioconcen			
HERO ID:	1333588			
		EXTRACTION		
Parameter		Data		
CASRN and Test Material		not reported; Not Reported		
Confidentiality, Type, and G	uideline	no; other; other: non-guideline		
Solvent, Reactivity, Storage,	, Stability	NR; NR; NR		
Radiolabel, Source, State, P	urity	NR; NR; NR Notes: NR		
Test Organism and Test Org	anism Details	Pulex (daphnids); not reported		
Lipid Content, Test Temperature, pH, and Depu-		not reported; not reported; not reported; not reported		
ration Time Madia Tuma, TOC, and Salinity		not reported; not reported; not reported		
Dissolved Owycon, Conductivity, and Handness		not reported; not reported; not reported		
Exposure Route Elimination	n and Nominal Mea-	not reported; not reported; not reported		
surements	ii, and i toininai titea	not reported, not reported		
Test Type, Test Temperature	e, and Test Condition	not reported; not reported; not reported		
Comments Duration Parameter and Sa	mnling Frequency	not reported; not reported; not reported		
Concentration	inpling I requeitey	not reported, not reported not reported not reported not reported		
Analytical Method and Ana	lytical Details	not reported not reported - not reported not reported not reported		
Rate Constant and Results n	er Recovery	not reported, not reported		
Statistics, Basis, and Calcula	ation Basis	not reported: not reported: steady state (BCF at equilibrium)		
Results Value and Results D	etails	log BCF = $3.70$ : experimental data from cited reference in the study		
Metabolites, Reference, an	d Results Reference	not reported: not reported		
Substance		$\mathbf{T}$ , $\mathbf{T}$		

EVALUATION							
Domain		Metric	Rating	Comments			
Domain 1: Test Substand	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified.			
	Metric 2:	Test Substance Purity	Low	No details reported in this secondary source; additional detail may be in primary litera-			
				ture.			
Domain 2: Test Design							
	Metric 3:	Study Controls	Low	No details reported in this secondary source; additional detail may be in primary litera- ture.			
	Metric 4:	Test Substance Stability	Low	No details reported in this secondary source; additional detail may be in primary litera- ture.			

## Continued on next page ...

**HERO ID:** 

1333588

## ... continued from previous page

Study Citation:	Hawker, D. W., Connell, D. W. (1986). Bioconcentration of lipophilic compounds by some aquatic organisms. Ecotoxicology and Environmental Safety
	11(2):184-197.
<b>OECD Harmonized</b>	Aquatic Bioconcentration
Template:	

**EVALUATION** Domain Metric Rating Comments Domain 3: Test Conditions Metric 5: Test Method Suitability Low No details reported in this secondary source; additional detail may be in primary literature. Metric 6: **Testing Conditions** No details reported in this secondary source; additional detail may be in primary litera-Low ture. Metric 7: Testing Consistency Low No details reported in this secondary source; additional detail may be in primary literature. Metric 8: System Type and Design Low No details reported in this secondary source; additional detail may be in primary literature. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology N/A Not applicable to this study. Metric 10: Sampling Methods Low Limited details reported in this secondary source; additional detail may be in primary literature. Domain 5: Outcome Assessment Metric 11: Test Substance Identity Low No details reported in this secondary source; additional detail may be in primary literature. Metric 12: Test Substance Purity No details reported in this secondary source; additional detail may be in primary litera-Low ture. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables Low No details reported in this secondary source; additional detail may be in primary literature. No details reported in this secondary source; additional detail may be in primary litera-Metric 14: Health Outcomes Unrelated to Low ture. Exposure Domain 7: Data Presentation and Analysis Metric 15: No details reported in this secondary source; additional detail may be in primary litera-Data Reporting Low ture. Metric 16: Statistical Methods and N/A Not applicable to this study. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of Low No details reported in this secondary source; additional detail may be in primary litera-Results ture. Metric 18: QSAR Models N/A 0

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**Overall Quality Determination** 

		continued from previous page	
Study Citation:	Hawker, D. W., Connell, D. W. (1986). Bioco	ncentration of lipophilic compounds by so	me aquatic organisms. Ecotoxicology and Environmental Safety
OECD Harmonized Template:	11(2):184-197. Aquatic Bioconcentration		
HERO ID:	1333588		
		EVALUATION	
Domain	Metric	Rating	Comments

\* Related References: Source: KENAGA, G. E., AND GORING, C. A. I. (1980). Relationship between water solubility, soil sorption, octanol-water partitioning and concentration of chemicals in biota. Aquat. Toxicol. ASTM STP 707,78-115. HERO ID 7417; not available at time of extraction.

Low

Study Citation:	Huang C. I. Sum	H. W. Song 7. H. (1999). Interactions between dibutyl apthelete and equatic organisms. Bulletin of Environmental Contemination					
Study Citation:	and Toxicology 63	and Toxicology 63(6):759-765					
<b>OECD Harmonized</b>	Aquatic Bioconcer	Aquatic Bioconcentration					
Template:	1						
HERO ID:	5551982						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl phthalate					
Confidentiality, Type, and	Guideline	None; Experimental; other: Bioconcentration/degradation in algae					
Solvent, Reactivity, Storag	e, Stability	NR; NR; NR					
Radiolabel, Source, State,	Purity	NR; NR; NR					
Test Organism and Test Or	ganism Details	Scenedesmus obliquus; Green algae (Scenedesmus obliquus) purchased from Institute for Hydrobiology, Academy of Science, China					
Lipid Content, Test Temperature, pH, and Depu-		Not reported; Not reported; 7.40; Not reported					
ration Time Media Type TOC and Sal	linity	not specified. Not reported. Not reported					
Dissolved Oxygen Condu	ctivity and Hardness	Not reported. Not reported					
Exposure Route Eliminati	on and Nominal Mea-	Cultures: Not reported. Measured					
surements	on, and rominal mea	Curtares, not reported, inclusined					
Test Type, Test Temperatu	re, and Test Condition	static; Not reported; Not reported					
Comments	ampling Fraguency	169 hours: other 11 algae culture and 0.51 control tested at 9, 49, 06, and 169 hours					
Concentration	sampning Prequency	108 nours; other; 1L aigae culture and 0.5L control tested at 8, 48, 90, and 108 nours					
Analytical Method and An	alytical Details	SC FID: DRP in water and aloge measured: no further details:					
Analytical Method and Analytical Details		Not reported. Not reported					
Statistics Basis and Calcu	lation Basis	relative deviation between observed and predicted data was 7 50%. Not Reported, other					
Basulta Valua and Basulta Dataila		BCE-4 33F3 (at 8 hrs): DRP neaked at 8 hr and declined due to degradation (and a small amount due to growth dilution effect)					
Metabolites Reference a	nd Results Reference	Not reported: Control with 5% formaldehyde included: Loss was ca. 2.0%					
Substance	ind Results Reference	not reported, Control with 570 formal denya e moladed, 2005 was ea. 2.070					

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ice			
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
	Metric 2:	Test Substance Purity	Low	Source and purity were not reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Controls were included.
	Metric 4:	Test Substance Stability	Medium	Limited or no detail provided regarding this metric.
Domain 3: Test Conditi	ons			
	Metric 5:	Test Method Suitability	Low	The test method was non-guideline and not specific to the outcome of interest.
	Metric 6:	Testing Conditions	Low	Limited or no detail provided regarding this metric.
			Continued on next page	

		co	ontinued from previous page	e				
Study Citation:	Huang, G. L., St and Toxicology	Huang, G. L., Sun, H. W., Song, Z. H. (1999). Interactions between dibutyl phthalate and aquatic organisms. Bulletin of Environmental Contamination and Taxicology 63(6):759-765						
<b>OECD Harmonized</b>	Aquatic Bioconc	Aquatic Bioconcentration						
Template:	1							
HERO ID:	5551982							
			EVALUATION					
Domain		Metric	Rating	Comments				
	Metric 7:	Testing Consistency	Medium	Limited or no detail provided regarding this metric.				
	Metric 8:	System Type and Design	Uninformative	No detail provided regarding this metric.				
Domain 4: Test Organi	sms							
Domain in Test organi	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	Medium	No-standard species used.				
		r c						
Domain 5: Outcome A	ssessment							
	Metric 11:	Test Substance Identity	Low	Limited detail provided regarding this metric.				
	Metric 12:	Test Substance Purity	Low	No detail provided.				
Domain 6 <sup>.</sup> Confoundin	g/Variable Control							
Domain of Comoundair	Metric 13:	Confounding Variables	N/A	No details provided.				
	Metric 14:	Health Outcomes Unrelated to	N/A	Not applicable to this study type				
		Exposure						
Domain 7: Data Presen	tation and Analysis							
	Metric 15.	Data Reporting	Low	Informative quantitative data was limited				
	Metric 16:	Statistical Methods and	Low	Limited or no detail provided regarding this metric				
	Wieure 10.	Kinetic Calculations	Low	Linned of no detail provided regarding this metric.				
Damain 9. Other								
Domain 8: Other	Matria 17.	Varifaction or Disusibility of	Low	Des 4. limited information contration of the manual burner of the state of the state of				
	Metric 17:	vernication of Plausibility of	LOW	Due to infinited information, evaluation of the reasonableness of the study results was not				
	Matric 18:	Kesuits OSAP Models	NI/A	pussion. The matrice is not employed to this study type				
	ivicult 10.	COAR MODELS	IN/A	The metric is not applicable to this study type.				
<b>Overall Ouali</b>	tv Determin	nation	Uninformative					

Study Citation:Huang, P. C., Tien, C. J., Sun, Y. M., Hsieh, C. Y., Lee, C. C. (2008). Occurrence of phthalates in sediment and biota: Relationship to aquatic factor. Chemosphere 73(4):539-544.OECD HarmonizedAquatic Bioconcentration							
Template:	1						
HERO ID:	675207						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl Phthalate					
Confidentiality, Type, and	Guideline	None; Experimental; other: BSAF field study					
Solvent, Reactivity, Storag	e, Stability	Hexane; NR; In amber vial at -20°C; NR					
Radiolabel, Source, State,	Purity	Nr; Supelco, Bellefonate, PA; NR; >99.0 %					
Test Organism and Test Organism Details		Fish: Oreochromis miloticus niloticus, Liza subviridis, Acanthopagrus schlegeli, Zacco platypus and Acrossecheilus paradoxus; Two samples of each fish were caught or bought 23 individual fish 10 pooled fish samples ( $<15$ cm) and 128 sediment samples were analyzed					
Lipid Content, Test Temperature, pH, and Depu-		Mean (g lipid/g of fish): 0.061 (0.025-0.140); SD=0.037.; Not reported; Not reported; Not reported					
Media Type, TOC, and Sal	inity	natural sediment; Mean (g TOC/ g of sediment): 0.025 (0.008-0.056); SD=0.013.; Not reported					
Dissolved Oxygen, Conduc	ctivity, and Hardness	Not reported; Not reported; Not reported					
Exposure Route, Elimination	on, and Nominal Mea-	Not reported; Not reported; Not reported					
surements Test Type, Test Temperatur	re, and Test Condition	field study; Not reported; Not Reported					
Comments Duration, Parameter, and Sampling Frequency		Not reported; other; Sediment samples were collected in March-April and August-October.					
Concentration		Not Reported					
Analytical Method and Analytical Details		GC-MS-SIM used for identification and quantification.; US EPA SW-846 Method 8270 with some modifications.;					
Rate Constant and Results per Recovery		BSAF (reported in figure): Mean=0.6, range=0.2-2; Mean DBP sediment recovery (RSD): 87.5% (10%); Mean DBP fish recovery (RSD): 90.6% (2.4%)					
Statistics, Basis, and Calculation Basis		Not Reported; Not Reported; Not Reported					
Results Value and Results	Details	Not reported; BSAF=(phthalate in fish/lipid content in fish) / (phthalate in sediment/organic carbon in sediment)					
Metabolites, Reference, and Results Reference Substance		Not reported; Not reported					

			EVALUATIO	Ň		
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ice					
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.		
	Metric 2:	Test Substance Purity	High	Test substance standard was >99.0% pure.		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	Study controls were not required for this study.		
	Metric 4:	Test Substance Stability	High	Standards and sediment samples were stored in amber vials at -20 and 4°C, respectively.		
Domain 3: Test Condition	ons Metric 5:	Test Method Suitability	High	The test method was suitable for the test material.		
Continued on next page						

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		continu	ued from prev	vious page			
Study Citation:	Huang, P. C., Tier the biota-sedimen	Huang, P. C., Tien, C. J., Sun, Y. M., Hsieh, C. Y., Lee, C. C. (2008). Occurrence of phthalates in sediment and biota: Relationship to aquatic factors and the biota-sediment accumulation factor. Chemosphere 73(4):539-544.					
OECD Harmonized	Aquatic Bioconce	Aquatic Bioconcentration					
Template:							
HERO ID:	675207						
		I	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 6:	Testing Conditions	Medium	Water parameters such as dissolvable oxygen, temperature, and pH were not reported in the study but were tested; therefore, their omission is not likely to impact the study results.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent across sample groups.			
	Metric 8:	System Type and Design	High	The system type was appropriate.			
Domain 4: Test Organis	sms						
U	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.			
	Metric 10:	Sampling Methods	High	Test organism information was reported and suitable for the study type.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	The sampling methods were reported and appropriate for the study type.			
Domain 6: Confoundin	g/Variable Control						
	Metric 13:	Confounding Variables	High	Sources of variability were reported and no confounding variables between study groups were found.			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.			
		Exposure					
Domain 7. Data Presen	tation and Analysis						
Domain 7. Data Presen	Metric 15:	Data Reporting	High	Extraction recovery was reported and the analytical method was suitable for detecting the target chemical.			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were reported.			
Domain 8: Other							
Domain 6. Outer	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.			
Overall Quali	ty Determin	ation	High				

Study Citation:	Kim, J., Gobas, F. A., Arnot, J. A., Powell, D. E., Seston, R. M., Woodburn, K. B. (2016). Evaluating the roles of biotransformation, spatial concentration					
OFCD Harmonized	differences, organism home range, and field sampling design on trophic magnification factors. Science of the Total Environment 551-552:438-451.					
Template.	Aquate bioconcentration					
HERO ID:	3350326					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; di-n-butyl phthalate ester				
Confidentiality, Type, and	Guideline	no; calculation; other: Multibox-AQUAWEB model				
Solvent, Reactivity, Storag	e, Stability	NR; NR; NR				
Radiolabel, Source, State,	Purity	NR; NR; NR Notes: DBP				
Test Organism and Test Organism Details		3 phytoplankton, 1 zooplankton, 10 invertebrates, 10 fish; invertebrates: Manila clams, blue mussel, Pacific oyster, cockle clams, geoduck clams, benthic invertebrates, shrimp, small crabs, purple seastar, Dungeness crab; fish: shiner perch pile perch, striped seaperch, surf smelt, Pacific herring, staghorn sculpin, starry flounder, English sole, white-spotted greenling, spiny dogfish				
Lipid Content, Test Temperature, pH, and Depuration Time		not reported; 15; not reported; not applicable				
Media Type, TOC, and Sal	linity	natural water / sediment - marine; not applicable, not applicable				
Dissolved Oxygen, Conduc	ctivity, and Hardness	0.26 mg/L; not applicable; not applicable				
Exposure Route, Eliminatio	on, and Nominal Mea-	environmental; not applicable; not applicable				
Test Type, Test Temperatu	re, and Test Condition	field study data; 15; data were applied using 6 different scenarios				
Comments Duration, Parameter, and S	Sampling Frequency	not applicable: TMF: not applicable				
Concentration		Not Reported				
Analytical Method and Analytical Details		s scenarios: S1 spatial concentration gradients in water and sediment were not present; S2 spatial concentration gradients were present in bo water and sediment; S3 spatial concentration gradients were present in water but not in sediment; S4 spatial concentration gradients were prese in sediment but not in water; S5 judgment sampling concentration gradient: (Area-1 <area-2<area-3); concentrati<br="" judgment="" s6="" sampling="">gradient: (Area-1&gt;Area-2&gt;Area-3); fugacity ratio: S1-fixed; S2-fixed; S3-varied; S4-varied; S5-fixed; S6-fixed;</area-2<area-3);>				
Rate Constant and Results per Recovery		Not Reported; not applicable				
Statistics, Basis, and Calcu	lation Basis	Not Reported; other; Not Reported				
Results Value and Results I	Details	S1-0.45; S2-0.45; S3-0.45; S4-0.44; S5-3.57; S6-0.10; Data compared to the experimental TMF of 0.70. Concentrations in biota were (ng/g-lipid): S1: 22.1-102; S2: 817-3780; S3: 81.7-378; S4: 22.1-102; S5: 95.9-8350; S6: 28.2-9590.				
Metabolites, Reference, and Results Reference Substance		not applicable; S1 was used as reference: sediment concentration 1 ug/kg dry weight; sed/water fugacity ratio of 1.; TMF = 0.45				

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.		
	Metric 2:	Test Substance Purity	N/A	The metric is not applicable to this study type.		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.		
Continued on next page						

PUBLIC RELEASE DRAFT May 2025 Aquatic Bioconcentration

HERO ID: 3350326 Table: 1 of 1

continued from previous page							
Study Citation:	Kim, J., Gobas, F. differences, organ	Kim, J., Gobas, F. A., Arnot, J. A., Powell, D. E., Seston, R. M., Woodburn, K. B. (2016). Evaluating the roles of biotransformation, spatial concentration differences, organism home range, and field sampling design on trophic magnification factors. Science of the Total Environment 551-552:438-451.					
OECD Harmonized	Aquatic Bioconce	Aquatic Bioconcentration					
Template:	3350326						
	5550520						
Domain		Matria	EVALUATIO	N Commonto			
Domain	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type			
	Metric 4.	Test Substance Stability	INA	The metric is not applicable to this study type.			
Domain 3: Test Condition	ons						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate for the method.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.			
Domain 4: Test Organis	ms						
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome As	sessment						
Domain 5. Outcome As	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.			
	Metric 12:	Test Substance Purity	N/A	The metric is not applicable to this study type.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups (if applicable) were considered and accounted for in data evaluation			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.			
		Exposure					
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	High	Data reporting was appropriate.			
	Metric 16:	Statistical Methods and	High	Statistical methods or kinetic calculations were clearly described and address the			
		Kinetic Calculations		dataset.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.			
		Results		·			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Quality Determination</b>			High				

Study Citation: Lo	Lee, Y. M., Lee, J. E., Choe, W., Kim, T., Lee, J. Y., Kho, Y., Choi, K., Zoh, K. D. (2019). Distribution of phthalate esters in air, water, sediments, and fish				
OECD Harmonized A	n the Asan Lake of Aquatic Bioconcen	f Korea. Environment International 126:635-643. tration			
Template:	1				
HERO ID: 50	043593				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; DBP			
Confidentiality, Type, and Guid	leline	None; Experimental; other: Not reported; Bioaccumulation field study			
Solvent, Reactivity, Storage, Sta	ability	NA; NR; Water samples stored in amber glass bottles with formaldehyde; sediment samples stored in amber straight sided glass jars; organisms wrapped in aluminum foil; all samples except water stored at -20°C; NR			
Radiolabel, Source, State, Purit	ty	NA; Asan Lake, Korea; NA; NA			
Test Organism and Test Organis	sm Details	Crucian carp; n=9			
Lipid Content, Test Temperatur ration Time	re, pH, and Depu-	Not reported; Not reported; Not reported			
Media Type, TOC, and Salinity	7	natural water / sediment; Not reported; Not reported			
Dissolved Oxygen, Conductivit	ty, and Hardness	Not reported; Not reported; Not reported			
Exposure Route, Elimination, an surements	nd Nominal Mea-	Water (BAF), sediment (BSAF); Not applicable; Measured: 0.03 ug/L (water), 73.6 ug/kg dw (sediment) (water range: n.d 0.34 ug/L, n=47; sediment range: n.d 535 ug/kg dw, n= 47)			
Test Type, Test Temperature, and Test Condition Comments		field study; Not reported; Water, sediment, and fish samples collected from Asan Lake, a large artificial lake in Korea surrounded by industrial complex and farmlands			
Duration, Parameter, and Sample	ling Frequency	Not applicable; Not Reported; October 2016. January 2017 (water and sediment only), May and July 2017			
Concentration		Not Reported			
Analytical Method and Analytic	cal Details	GC-MS in selected ion monitoring mode with an electron impact ionization, analytes separated on DB-5 MS UI capillary column; LOD 0.001 - 0.021 ug/L (water), 0.104 - 1.32 ug/kg dw (sediment), 0.17 - 0.53 ug/kg dw (fish); Water extracted by C18-E cartridge, eluted with methanol and hexane, evaporated to dryness, resuspended in acetone; Sediment and fish extracted by sonication with DCM, concentrated by roto-evap, cleaned up on Florisil-silica cartridge;			
Rate Constant and Results per F	Recovery	Not applicable; 77 - 112% (water), 88-108% (sediment), 89-118% (fish) from matrix spiked samples			
Statistics, Basis, and Calculation	on Basis	Spearman correlation and Kruskal-Wallis tests conducted with SPSS significance $p < 0.05$ ; principal component analysis with R v. 3.5.1;log BAF positive correlation with log Kow (r=0.606, $p < 0.01$ ), high bioavailability in water; Tissue, dry wt.; steady state			
Results Value and Results Detai	ils	log BAF: 3.1; log BSAF: -1.4 kg/kg dw; Fish: 37.4 ug/kg dw			
Metabolites, Reference, and Results Reference Substance		Not reported; Not reported			

			EVALUATION	N
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	High	The sample source was reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Analytical blanks or reference organisms were not explicitly included.
	Metric 4:	Test Substance Stability	High	Sample storage and preparation was reported.
			Continued on next p	page

		contir	nued from prev	vious page		
Study Citation:	Lee, Y. M., Lee,	J. E., Choe, W., Kim, T., Lee, J. Y., Kho,	Y., Choi, K., Zo	oh, K. D. (2019). Distribution of phthalate esters in air, water, sediments, and fish		
OECD Harmonized	in the Asan Lake Aquatic Bioconc	in the Asan Lake of Korea. Environment International 126:635-643. Aquatic Bioconcentration				
HERO ID:	5043593					
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 3 <sup>.</sup> Test Conditi	ons					
Domain 5. Test Conditi	Metric 5:	Test Method Suitability	High	The field study was appropriate for the test substance.		
	Metric 6:	Testing Conditions	Medium	No environmental conditions were provided; these omitted details are not expected to impact study results.		
	Metric 7:	Testing Consistency	High	Samples were collected, analyzed, and processed consistently.		
	Metric 8:	System Type and Design	High	Field sites are assumed to be in dynamic equilibrium.		
Domain 4: Test Organis	sms					
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.		
	Metric 10:	Sampling Methods	Medium	Organism species was reported, other details may be included in supplemental informa- tion.		
Domain 5: Outcome As	sessment					
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology allowed for BCF determination.		
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and were able to account for seasonal variance.		
Domain 6: Confounding	g/Variable Control					
	Metric 13:	Confounding Variables	Medium	Standard deviation was not reported, seasonal variation in fish samples was not ad- dressed.		
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No differences in organism health were reported.		
Domain 7: Data Present	tation and Analysis					
	Metric 15:	Data Reporting	Medium	Analytical method was appropriate and limits of detection and percent recovery of spiked samples was reported. Lipid content was not reported and BAF was not lipid normalized.		
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were described and applied appropriately.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable based on the method and were comparable to previous studies.		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.		
<b>Overall Quali</b>	ty Determir	nation	High			

Study Citation:	Lee, Y. M., Lee, J.	E., Choe, W., Kim, T., Lee,	J. Y., Kho, Y., Choi, K., Zoh, K. D. (2019	). Distribution of phthalate esters in air, water, sediments, and fish				
OECD Harmonized	in the Asan Lake of Korea. Environment International 126:635-643. Aquatic Bioconcentration							
Template: HERO ID:	5043593							
Danamatan		Data	EXTRACTION					
Parameter		Data						
CASRN and Test Material		84-74-2; DBP						
Confidentiality, Type, and Gui	ideline	None; Experimental; other: N	ot reported; Bioaccumulation field study					
Solvent, Reactivity, Storage, S	Stability	NA; NR; Water samples store wrapped in aluminum foil; all	d in amber glass bottles with formaldehyde; samples except water stored at -20°C; NR	sediment samples stored in amber straight sided glass jars; organisms				
Radiolabel, Source, State, Pur	ity	NA; Asan Lake, Korea; NA; N	NA					
Test Organism and Test Organ	nism Details	Skygager; n=7						
Lipid Content, Test Temperatu	ure, pH, and Depu-	Not reported; Not reported; Not reported; Not reported						
Media Type, TOC, and Salinit	ty	natural water / sediment; Not reported; Not reported						
Dissolved Oxygen, Conductiv	ity, and Hardness	Not reported; Not reported; Not reported						
Exposure Route, Elimination,	and Nominal Mea-	Water (BAF), sediment (BSA	ter), 73.6 ug/kg dw (sediment) (water range: n.d 0.34 ug/L, n=47;					
surements		sediment range: n.d 535 ug/						
Test Type, Test Temperature, a	and Test Condition	field study; Not reported; Wa	ter, sediment, and fish samples collected from	n Asan Lake, a large artificial lake in Korea surrounded by industrial				
Comments	-l' E	complex and farmlands						
Duration, Parameter, and Sam	ipling Frequency	Not applicable; Not Reported; October 2016. January 2017 (water and sediment only), May and July 2017						
Concentration	4'1 D-4-'1-							
Analytical Method and Analyt	lical Details	0.021 ug/L (water), 0.104 - 1. hexane, evaporated to dryness up on Florisil-silica cartridge;	32 ug/kg dw (sediment), 0.17 - 0.53 ug/kg dw s, resuspended in acetone; Sediment and fish e	(fish); Water extracted by C18-E cartridge, eluted with methanol and xtracted by sonication with DCM, concentrated by roto-evap, cleaned				
Rate Constant and Results per	Recovery	Not applicable; 77 - 112% (water), 88-108% (sediment), 89-118% (fish) from matrix spiked samples						
Statistics, Basis, and Calculati	ion Basis	Spearman correlation and Kruskal-Wallis tests conducted with SPSS significance $p < 0.05$ ; principal component analysis with R v. 3.5.1; lo						
		positive correlation with log Kow (r=0.606, p < 0.01), high bioavailability in water; Tissue, dry wt.; steady state						
Results Value and Results Details		log BAF: 2.4; log BSAF: -1.5	kg/kg dw; Fish: 8.0 ug/kg dw					
Metabolites, Reference, and Substance	Results Reference	Not reported; Not reported; N	ot reported					
			EVALUATION					
Domain		Metric	Rating	Comments				
Domain 1: Test Substance								

Continued	on	next	page	•••
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High

High

Medium

High

The test substance was identified by name.

Sample storage and preparation was reported.

Analytical blanks or reference organisms were not explicitly included.

The sample source was reported.

Test Substance Identity

Test Substance Stability

Test Substance Purity

Study Controls

Metric 1:

Metric 2:

Metric 3:

Metric 4:

Domain 2: Test Design

Domain 3: Test Conditions

		contin	ued from pre	vious page		
Study Citation:	Lee, Y. M., Lee, J	. E., Choe, W., Kim, T., Lee, J. Y., Kho, Y	., Choi, K., Zo	oh, K. D. (2019). Distribution of phthalate esters in air, water, sediments, and fish		
OECD Harmonized Template:	in the Asan Lake of Korea. Environment International 126:635-643. Aquatic Bioconcentration					
HERO ID:	5043593					
	FVALUATION					
Domain		Metric	Rating	Comments		
	Metric 5:	Test Method Suitability	High	The field study was appropriate for the test substance.		
	Metric 6:	Testing Conditions	Medium	No environmental conditions were provided; these omitted details are not expected to impact study results.		
	Metric 7:	Testing Consistency	High	Samples were collected, analyzed, and processed consistently.		
	Metric 8:	System Type and Design	High	Field sites are assumed to be in dynamic equilibrium.		
Domain 4: Test Organis	sms					
Domain 1. Test organi	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.		
	Metric 10:	Sampling Methods	Medium	Organism species was reported, other details may be included in supplemental informa- tion.		
Domain 5: Outcome As	sessment					
Domain 5. Outcome ra	Metric 11:	Test Substance Identity	High	The outcome assessment methodology allowed for BCF determination.		
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and were able to account for seasonal variance.		
Domain 6: Confounding	g/Variable Control	Confounding Variables	Madisse			
	Metric 13:	Confounding variables	Medium	dressed.		
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No differences in organism health were reported.		
Domain 7: Data Presen	tation and Analysis					
	Metric 15:	Data Reporting	Medium	Analytical method was appropriate and limits of detection and percent recovery of spiked samples was reported. Lipid content was not reported and BAF was not lipid normalized.		
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were described and applied appropriately.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable based on the method and were comparable to previous studies.		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.		
Overall Quali	ty Determin	ation	High			

Study Citation:	Lee, Y. M., Lee, J.	E., Choe, W., Kim, T., Lee,	J. Y., Kho, Y., Choi, K., Zoh, K. D. (2019).	Distribution of phthalate esters in air, water, sediments, and fish		
OECD Harmonized	Aquatic Bioconcen	tration	national 120:033-043.			
Template: HERO ID:	e: ID: 5043593					
			EXTRACTION			
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, Type, and C	Juideline	None; Experimental; other: 1	Not reported; Bioaccumulation field study			
Solvent, Reactivity, Storage	, Stability	NA; NR; Water samples stor	red in amber glass bottles with formaldehyde; sed	iment samples stored in amber straight sided glass jars; organisms		
	<b>.</b> .	wrapped in aluminum foil; a	Il samples except water stored at -20°C; NR			
Radiolabel, Source, State, F	urity	NA; Asan Lake, Korea; NA;	NA			
Test Organism and Test Org	anism Details	Bluegill; n=9				
ration Time	ature, pH, and Depu-	Not reported; Not reported; Not reported				
Media Type, TOC, and Sali	nity	natural water / sediment; Not reported; Not reported				
Dissolved Oxygen, Conduc	tivity, and Hardness	Not reported; Not reported; Not reported				
Exposure Route, Eliminatio	n, and Nominal Mea-	Water (BAF), sediment (BSAF); Not applicable; Measured: 0.03 ug/L (water), 73.6 ug/kg dw (sediment) (water range: n.d 0.34 ug/L, n=47;				
surements		sediment range: n.d 535 ug/kg dw, n= 47)				
Comments	e, and Test Condition	field study; Not reported; W	ater, sediment, and fish samples collected from A	san Lake, a large artificial lake in Korea surrounded by industrial		
Duration, Parameter, and Sa	ampling Frequency	Not applicable; Not Reported; October 2016. January 2017 (water and sediment only), May and July 2017				
Concentration		Not Reported				
Analytical Method and Ana	lytical Details	GC-MS in selected ion monitoring mode with an electron impact ionization, analytes separated on DB-5 MS UI capillary column; LOD 0.001 - 0.021 ug/L (water), 0.104 - 1.32 ug/kg dw (sediment), 0.17 - 0.53 ug/kg dw (fish); Water extracted by C18-E cartridge, eluted with methanol and hexane, evaporated to dryness, resuspended in acetone; Sediment and fish extracted by sonication with DCM, concentrated by roto-evap, cleaned up on Florisil-silica cartridge:				
Rate Constant and Results per Recovery Not applicable; 77 - 112% (water), 88-108% (sediment), 89-118% (fish) from matrix spiked samples				matrix spiked samples		
Statistics, Basis, and Calculation Basis Spearman correlation and Kruskal-Wallis tests conducted with SPSS significance $p < 0.05$ ; principal component analysis with R v. 3.5.1; positive correlation with log Kow (r=0.606, $p < 0.01$ ), high bioavailability in water; Tissue, dry wt.: steady state				ce p $< 0.05$ ; principal component analysis with R v. 3.5.1;log BAF vater; Tissue, dry wt.; steady state		
Results Value and Results Details log BAF: 2.0; log BSAF: -1.6 kg/kg dw; Fish: 3.3 ug/kg dw						
Metabolites, Reference, an Substance	d Results Reference	Not reported; Not reported; I	Not reported			
			EVALUATION			
Domain		Metric	Rating	Comments		

Domain		Metric	Rating	Comments
Domain 1: Test Substan	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	High	The sample source was reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Analytical blanks or reference organisms were not explicitly included.
	Metric 4:	Test Substance Stability	High	Sample storage and preparation was reported.

Domain 3: Test Conditions

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		contin	ued from pre	vious page		
Study Citation:	Lee, Y. M., Lee, J	. E., Choe, W., Kim, T., Lee, J. Y., Kho, Y	., Choi, K., Zo	oh, K. D. (2019). Distribution of phthalate esters in air, water, sediments, and fish		
OECD Harmonized Template:	in the Asan Lake of Korea. Environment International 126:635-643. Aquatic Bioconcentration					
HERO ID:	5043593					
	FVALUATION					
Domain		Metric	Rating	Comments		
	Metric 5:	Test Method Suitability	High	The field study was appropriate for the test substance.		
	Metric 6:	Testing Conditions	Medium	No environmental conditions were provided; these omitted details are not expected to impact study results.		
	Metric 7:	Testing Consistency	High	Samples were collected, analyzed, and processed consistently.		
	Metric 8:	System Type and Design	High	Field sites are assumed to be in dynamic equilibrium.		
Domain 4: Test Organis	sms					
Domain 1. Test organi	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.		
	Metric 10:	Sampling Methods	Medium	Organism species was reported, other details may be included in supplemental informa- tion.		
Domain 5: Outcome As	sessment					
Domain 5. Outcome ra	Metric 11:	Test Substance Identity	High	The outcome assessment methodology allowed for BCF determination.		
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and were able to account for seasonal variance.		
Domain 6: Confounding	g/Variable Control	Confounding Variables	Madisse			
	Metric 13:	Confounding variables	Medium	dressed.		
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No differences in organism health were reported.		
Domain 7: Data Presen	tation and Analysis					
	Metric 15:	Data Reporting	Medium	Analytical method was appropriate and limits of detection and percent recovery of spiked samples was reported. Lipid content was not reported and BAF was not lipid normalized.		
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were described and applied appropriately.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable based on the method and were comparable to previous studies.		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.		
Overall Quali	ty Determin	ation	High			

Study Citation:	Lee, Y. M., Lee, J. E., Choe, W., Kim, T., Lee, J. Y., Kho, Y., Choi, K., Zoh, K. D. (2019). Distribution of phthalate esters in air, water, sediments, and fish				
OECD Harmonized	in the Asan Lake o Aquatic Bioconcer	f Korea. Environment International 126:635-643. tration			
Template: HERO ID:	5043593				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; DBP			
Confidentiality, Type, and C	Juideline	None; Experimental; other: Not reported; Bioaccumulation field study			
Solvent, Reactivity, Storage	, Stability	NA; NR; Water samples stored in amber glass bottles with formaldehyde; sediment samples stored in amber straight sided glass jars; organisms wrapped in aluminum foil; all samples except water stored at -20°C; NR			
Radiolabel, Source, State, P	Purity	NA; Asan Lake, Korea; NA; NA			
Test Organism and Test Org	anism Details	Bass; n=5			
Lipid Content, Test Temper	ature, pH, and Depu-	Not reported; Not reported; Not reported			
Media Type, TOC, and Sali	nity	natural water / sediment; Not reported; Not reported			
Dissolved Oxygen, Conduc	tivity, and Hardness	Not reported; Not reported; Not reported			
Exposure Route, Eliminatio surements	n, and Nominal Mea-	Water (BAF), sediment (BSAF); Not applicable; Measured: 0.03 ug/L (water), 73.6 ug/kg dw (sediment) (water range: n.d 0.34 ug/L, n=47; sediment range: n.d 535 ug/kg dw, n= 47)			
Test Type, Test Temperature, and Test Condition Comments		field study; Not reported; Water, sediment, and fish samples collected from Asan Lake, a large artificial lake in Korea surrounded by industrial complex and farmlands			
Duration, Parameter, and Sa	ampling Frequency	Not applicable; Not Reported; October 2016. January 2017 (water and sediment only), May and July 2017			
Concentration		Not Reported			
Analytical Method and Ana	lytical Details	GC-MS in selected ion monitoring mode with an electron impact ionization, analytes separated on DB-5 MS UI capillary column; LOD 0.001 - 0.021 ug/L (water), 0.104 - 1.32 ug/kg dw (sediment), 0.17 - 0.53 ug/kg dw (fish); Water extracted by C18-E cartridge, eluted with methanol and hexane, evaporated to dryness, resuspended in acetone; Sediment and fish extracted by sonication with DCM, concentrated by roto-evap, cleaned up on Florisil-silica cartridge;			
Rate Constant and Results per Recovery		Not applicable; 77 - 112% (water), 88-108% (sediment), 89-118% (fish) from matrix spiked samples			
Statistics, Basis, and Calculation Basis S		Spearman correlation and Kruskal-Wallis tests conducted with SPSS significance $p < 0.05$ ; principal component analysis with R v. 3.5.1;log BAF positive correlation with log Kow (r=0.606, $p < 0.01$ ), high bioavailability in water; Tissue, dry wt.; steady state			
Results Value and Results Details log BAF: 2.5; log BSAF: -1.5 kg/kg dw; Fish: 11.2 ug/kg dw		log BAF: 2.5; log BSAF: -1.5 kg/kg dw; Fish: 11.2 ug/kg dw			
Metabolites, Reference, an Substance	d Results Reference	Not reported; Not reported; Not reported			
		EVALUATION			

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	High	The sample source was reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Analytical blanks or reference organisms were not explicitly included.
	Metric 4:	Test Substance Stability	High	Sample storage and preparation was reported.
Domain 3: Test Conditi	ons			

Continued on next page ...

		contin	ued from pre	vious page		
Study Citation:	Lee, Y. M., Lee, J	. E., Choe, W., Kim, T., Lee, J. Y., Kho, Y	., Choi, K., Zo	oh, K. D. (2019). Distribution of phthalate esters in air, water, sediments, and fish		
OECD Harmonized Template:	in the Asan Lake of Korea. Environment International 126:635-643. Aquatic Bioconcentration					
HERO ID:	5043593					
	FVALUATION					
Domain		Metric	Rating	Comments		
	Metric 5:	Test Method Suitability	High	The field study was appropriate for the test substance.		
	Metric 6:	Testing Conditions	Medium	No environmental conditions were provided; these omitted details are not expected to impact study results.		
	Metric 7:	Testing Consistency	High	Samples were collected, analyzed, and processed consistently.		
	Metric 8:	System Type and Design	High	Field sites are assumed to be in dynamic equilibrium.		
Domain 4: Test Organis	sms					
Domain 1. Test organi	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.		
	Metric 10:	Sampling Methods	Medium	Organism species was reported, other details may be included in supplemental informa- tion.		
Domain 5: Outcome As	sessment					
Domain 5. Outcome ra	Metric 11:	Test Substance Identity	High	The outcome assessment methodology allowed for BCF determination.		
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and were able to account for seasonal variance.		
Domain 6: Confounding	g/Variable Control	Confounding Variables	Madisse			
	Metric 13:	Confounding variables	Medium	dressed.		
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No differences in organism health were reported.		
Domain 7: Data Presen	tation and Analysis					
	Metric 15:	Data Reporting	Medium	Analytical method was appropriate and limits of detection and percent recovery of spiked samples was reported. Lipid content was not reported and BAF was not lipid normalized.		
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were described and applied appropriately.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable based on the method and were comparable to previous studies.		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.		
Overall Quali	ty Determin	ation	High			

Study Citation:	Mackintosh, C. E.,	Maldonado, J., Hongwu, J., Hoover, N., Chong, A., Ikonomou, M. G., Gobas, F. A. (2004). Distribution of phthalate esters in a marine				
OECD Harmonized	Aquatic Bioconcentration					
HERO ID:	789501					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		Not Reported; dibutyl phthalate				
Confidentiality, Type, and Guideline		no; experimental; other: food-web magnification study				
Solvent, Reactivity, Storage, Stability		NR; NR; NR				
Radiolabel, Source, State, Purity		NR; 18 marine species; NR; NR				
Test Organism and Test Org	anism Details	18 species: GA=green algae; BA=brown algae; PK=plankton; BM=blue mussels; PO=Pacific oysters; GC=geoduck clams; MC=manila clams; DC=dungeness crabs; St=purple seastar; jPer=juvenile shiner perch; He=Pacific herring; PP=pile perch; SP=striped seaperch; Sc=Pacific staghorn; So=English sole; WG=white-spotted greenling; Dg=spiny dogfish; SS=surf scoters; GA=Enteromorpha intestinalis; BA=Nereocystis luetkeana, Fucus gardneri; PK=plankton; BM=Mytilus edulis; PO=Crassostrea gigas; GC=Panope abrupta; MC=Tapes philippinarum; DC=Cancer magister; St=Pisaster ochraccus; jPer=Cymatogaster aggregata; He=Clupea harengus pallasi; PP=Rhacochilus vacca; SP=Embiotoca lateralis; Sc=Leptocottus armatus; So=Pleuronectes ventulus; WG=Hexogrammos stelleri; Dg=Squalus acanthias; SS=Melanitta perspicillata				
Lipid Content, Test Temper ration Time	ature, pH, and Depu-	GA=0.2%; BA=0.08%; PK=0.09%; BM=1.3%; PO=2.1%; GC=0.7%; MC=1.2%; DC=8.0%; St=2.5-18%; jPer=2.1%; He=3.2%; PP=0.7%; SP=0.17%; Sc=0.3%; So=0.5%; WG=0.6%; Dg=8.3% (muscle) 62% (liver) 6-28% (embryo); SS=2.2%; not applicable; not applicable; not applicable				
Media Type, TOC, and Salinity		marine, natural water; not applicable; not reported				
Dissolved Oxygen, Conductivity, and Hardness		not reported; not applicable; not applicable				
Exposure Route, Elimination surements	n, and Nominal Mea-	vironmental; not applicable; measured; concentration in samples (ng/g lipid): GA=2.82; BA=2.94; PK=4.07; BM=2.80; PO=2.59; GC=3.02; C=2.76; DC=2.37; St=2.19; jPer=2.54; He=2.41; PP=2.90; SP=3.47; Sc=3.39; So=3.35; WG=3.11; Dg=2.32 (muscle) 1.95 (liver) 2.49 (em-vo): SS=2.84				
Test Type, Test Temperature Comments	e, and Test Condition	field study; not applicable; 9 individual samples of each species.				
Duration, Parameter, and Sampling Frequency		samples collected June-September 1999; food-web magnification factor (FWMF); mot applicable				
Concentration		Not Reported				
Analytical Method and Analytical Details		GC/LRMS; LC/ESI-MS; Not Reported;				
Rate Constant and Results p	ber Recovery	Not Reported; not applicable				
Statistics, Basis, and Calculation Basis		Not Reported; total lipid content; Not Reported				
Results Value and Results Details		0.70; lower-upper 95% interval (0.40-1.23)				
Metabolites, Reference, an Substance	d Results Reference	not applicable; not applicable; Not Reported				

	EVALUATIONDomainMetricRatingComments					
Domain		Metric	Rating	Comments		
Domain 1: Test Subs	stance					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	N/A	The metric is not applicable to this study type.		

Domain 2: Test Design

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PUBLIC RELEASE DRAFT May 2025 Aquatic Bioconcentration

HERO ID: 789501 Table: 1 of 1

		continu	ed from pre	vious page				
Study Citation: N	Mackintosh, C. E., Maldonado, J., Hongwu, J., Hoover, N., Chong, A., Ikonomou, M. G., Gobas, F. A. (2004). Distribution of phthalate esters in a marine aquatic food web: Comparison to polychlorinated binhenvls. Environmental Science & Technology 38(7):2011-2020							
DECD Harmonized A	aquatic flood web: Comparison to porychiorinated orphenyls. Environmental Science & Technology 58(7):2011-2020. zed Aquatic Bioconcentration							
<b>Femplate:</b>								
HERO ID: 7	89501							
		E	VALUATIO	N				
Domain		Metric	Rating	Comments				
Ν	Aetric 3:	Study Controls	N/A	The metric is not applicable to this study type.				
Ν	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.				
Domain 2. Test Conditions								
Joinanii 5: Test Conditions	Actric 5.	Test Mathad Suitability	High	The test method was quitable for the test substance				
IN N	Actric 5.	Testing Conditions	High	The test method was suitable for the test substance.				
IN IN		Testing Conditions	High II: -h	Testing conditions were monitored, reported, and appropriate for the method.				
N	Metric 7:	Sectors True and Davier	High	Test conditions were consistent across samples or study groups.				
N	Metric 8:	System Type and Design	High	Equilibrium was established.				
Domain 4: Test Organisms								
Ν	Metric 9:	Outcome Assessment Methodology	High	The test organism information was reported and routinely used for similar study types				
		~		and appropriate for the study method or route.				
Ν	Aetric 10:	Sampling Methods	High	Test organism information was reported, including species or sex, age, and starting body weight.				
Domain 5: Outcoma Associ	emont							
Joinanii J. Outcome Asses	Metric 11.	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of				
1	ficule 11.	Test Substance Identity	mgn	interest.				
Ν	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed.				
Jomain 6: Confounding/Va	Ariable Control	Confounding Variables	TT: -1-					
Ν	vietric 15:	Comounding variables	High	sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation				
٨	Metric 14.	Health Outcomes Unrelated to	High	There were multiple study groups and there were no differences among the study				
		Exposure	mgn	groups in organism attrition or health outcomes that influenced the outcome assess- ment.				
	1.4 . 1 .							
Domain 7: Data Presentatio	on and Analysis		TT' 1					
Ν	Metric 15:	Data Reporting	Hıgh	analytical methods used were suitable for detection and quantification of the target chemical and transformation product(s) and the lipid content or the lipid-normalized bioconcentration factor (BCF) was reported for BCF studies				
Ν	Metric 16:	Statistical Methods and	High	Statistical methods or kinetic calculations were clearly described and address the				
		Kinetic Calculations	U	dataset(s).				
Domain 8: Other								
Domain 8: Other	Metric 17.	Verification or Plausibility of	High	Reported values were expected				
1		Results	ingn	reported values were expected.				
		C4						
continued from previous page								
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Study Citation:	Mackintosh, C. aquatic food w	Mackintosh, C. E., Maldonado, J., Hongwu, J., Hoover, N., Chong, A., Ikonomou, M. G., Gobas, F. A. (2004). Distribution of phthalate esters in a marine aquatic food web: Comparison to polychlorinated biphenyls. Environmental Science & Technology 38(7):2011-2020.						
<b>OECD Harmonized</b>	Aquatic Biocor	ncentration	1 2					
Template:	•							
HERO ID:	789501							
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
<b>Overall Quali</b>	ty Determi	ination	High					

Study Citation:	Mayer Jr, F., Sanders, H. O., Walsh, D. F. (1973). Toxicity, residue dynamics, and reproductive effects of phthalate esters in aquatic invertebrates.					
OFCD Harmonized	Environmental Res	Environmental Research 6(1):84-90.				
Templeter	Aquatic Bioconcer	Aquatic Bioconcentration				
HERO ID:	1334646					
	1001010	Εντριζοτι				
Demonster		EATKAUTION Data				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, Type, and G	luideline	None; Experimental; other				
Solvent, Reactivity, Storage,	, Stability	NR; NR; Stock solutions made in water; NR				
Radiolabel, Source, State, P	urity	14-C carbonyl labeled DBP (1.53 mCi/mmol); NR; NR; NR				
Test Organism and Test Org	anism Details	Midge larvae; Chironomus plumosus, n=18 (number of organisms in each sample replicate)				
Lipid Content, Test Tempera	ature, pH, and Depu-	Not reported; 21±1°C; 7.4; None				
ration Time						
Media Type, TOC, and Salir	nity	natural water: Iresnwater; Not reported; Not reported				
Dissolved Oxygen, Conduct	tivity, and Hardness	Not reported; Not reported; 270 mg/L as CaCO3				
Exposure Route, Elimination	n, and Nominal Mea-	Not reported; Not reported; 0.18±0.015 µg/L				
Test Type. Test Temperature	e. and Test Condition	semi-static: 21+1°C: Not Reported				
Comments	.,					
Duration, Parameter, and Sa	mpling Frequency	14 days; Not Reported; Days 1, 3, 7 and 14				
Concentration		Not Reported				
Analytical Method and Anal	lytical Details	Liquid scintillation counting.; Beckman 200 L liquid scintillation counter.;				
Rate Constant and Results p	er Recovery	Not reported; Not reported				
Statistics, Basis, and Calcula	ation Basis	Not reported; Not Reported; Not Reported				
Results Value and Results D	oetails	Magnification factor after 1, 3, 7 and 14 days: 3500, 3900, 6600, NR.; Concentrations were derived from original specific activity, which was assumed to represent 14-C di-n-butyl phthalate				
Metabolites, Reference, and Results Reference Not reported; Not Reported; Not Reported Substance						

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Substance	e			
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported but the omission is unlikely to have a substan- tial impact on the study results.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	No controls were reported but the omission is unlikely to have a substantial impact on the study results.
	Metric 4:	Test Substance Stability	Medium	Some details regarding the test substance preparation and storage conditions were not reported but are unlikely to have a substantial impact on the study results.

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# PUBLIC RELEASE DRAFT May 2025 Aquatic Bioconcentration

continued from previous page						
Study Citation:	Mayer Jr, F., San	Mayer Jr, F., Sanders, H. O., Walsh, D. F. (1973). Toxicity, residue dynamics, and reproductive effects of phthalate esters in aquatic invertebrates.				
OFCD Harmonized	Environmental Re	search $6(1)$ :84-90.				
Template:	Aquatic Biocolice	intation				
HERO ID:	1334646					
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate.		
	Metric 7:	Testing Consistency	High	The testing conditions were consistent among study groups.		
	Metric 8:	System Type and Design	High	Equilibrium was established and maintained.		
Domain 4: Test Organis	ms					
U	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.		
	Metric 10:	Sampling Methods	High	The test organism was reported and appropriate.		
Domain 5: Outcome As	sessment					
	Metric 11:	Test Substance Identity	Medium	There were minor differences between the outcome assessment methodology and the endpoint of interest but the difference is unlikely to have a substantial impact on the study results.		
	Metric 12:	Test Substance Purity	High	Some details regarding the sampling methods were not reported but the omissions are unlikely to have a substantial impact on the study results.		
Domain 6: Confounding	/Variable Control					
	Metric 13:	Confounding Variables	Medium	Uncertainty was not reported in the final BCF values but the omission is unlikely to have a substantial impact on the study results.		
	Metric 14:	Health Outcomes Unrelated to Exposure	Medium	Health outcomes were not reported, but the omission is unlikely to have a substantial impact of the study results.		
Domain 7: Data Present	ation and Analysis					
Domain 7. Data i resent	Metric 15:	Data Reporting	Low	The percent recovery was not reported and the analytical method could not distinguish metabolites from the parent compound, which may have an impact on the study results.		
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis and kinetic calculations were not reported and sufficient data is not reported to conduct an independent analysis.		
Domain & Other						
Domain 6. Other	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.		
	Metric 18:	Results OSAR Models	N/A	The metric is not applicable to the study type.		
<b>Overall Qualit</b>	ty Determina	ation	High			

Study Citation:	Mayer Jr, F., Sanders, H. O., Walsh, D. F. (1973). Toxicity, residue dynamics, and reproductive effects of phthalate esters in aquatic invertebrates. Environmental Research 6(1):84-90.						
OECD Harmonized	Aquatic Bioconcer	Aquatic Bioconcentration					
Template: HERO ID:	1334646						
			EXTRACTION				
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl phthalate					
Confidentiality, Type, and G	uideline	None; Experimental; other					
Solvent, Reactivity, Storage,	Stability	NR; NR; Stock solutions made in	n water; NR				
Radiolabel, Source, State, Pu	ırity	14-C carbonyl labeled DBP (1.53	3 mCi/mmol); NR; NR; NR				
Test Organism and Test Orga	anism Details	Water flea; Daphnia magna, n=18	80 (number of organisms in each sample repl	icate)			
Lipid Content, Test Temperature, pH, and Depu- Not reported; 21±1°C; 7.4; None ration Time							
Media Type, TOC, and Salin	iity	natural water: freshwater; Not rej	ported; Not reported				
Dissolved Oxygen, Conducti	ivity, and Hardness	Not reported; Not reported; 270 r	Not reported; Not reported; 270 mg/L as CaCO3				
Exposure Route, Elimination	i, and Nominal Mea-	Not reported; Not reported; 0.08	±0.005 µg/L				
surements Test Type, Test Temperature,	, and Test Condition	semi-static; 21±1°C; Not Report	ni-static; 21±1°C; Not Reported				
Comments Duration Parameter and Sat	mnling Frequency	14 days: Not Reported: Days 1, 3, 7 and 14					
Concentration	inpling Proquency	Not Reported					
Analytical Method and Anal	vtical Details	Liquid scintillation counting.: Be	eckman 200 L liquid scintillation counter.:				
Rate Constant and Results pe	er Recoverv	Not reported: Not reported	1				
Statistics, Basis, and Calcula	tistics Basis and Calculation Basis Not reported: Not Reported: Not Reported						
Results Value and Results De	etails	Magnification factor after 1, 3, 7 and 14 days: 2200, 3500, 5000, 5000; Concentrations were derived from original specific activity, which was assumed to represent 14-C di-n-butyl phthalate					
Metabolites, Reference, and Substance	d Results Reference	Not reported; Not Reported; Not	Reported				
			EVALUATION				
Domain		Metric	Rating	Comments			

Domain		Metric	Rating	Comments		
Domain 1: Test Substar	ice					
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.		
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported but the omission is unlikely to have a substan- tial impact on the study results.		
Domain 2: Test Design						
	Metric 3:	Study Controls	Medium	No controls were reported but the omission is unlikely to have a substantial impact on the study results.		
	Metric 4:	Test Substance Stability	Medium	Some details regarding the test substance preparation and storage conditions were not reported but are unlikely to have a substantial impact on the study results.		
Domain 3: Test Conditi	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
Continued on next page						

		contin	ued from pre	vious page		
Study Citation:	Mayer Jr, F., Sar Environmental Re	Mayer Jr, F., Sanders, H. O., Walsh, D. F. (1973). Toxicity, residue dynamics, and reproductive effects of phthalate esters in aquatic invertebrates. Environmental Research 6(1):84-90. Aquatic Bioconcentration				
Tomplato.	Aquate Bioconcentration					
HERO ID:	1334646	34646				
		]	EVALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate.		
	Metric 7:	Testing Consistency	High	The testing conditions were consistent among study groups.		
	Metric 8:	System Type and Design	High	Equilibrium was established and maintained.		
Domain 4: Test Organis	sms					
U	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.		
	Metric 10:	Sampling Methods	High	The test organism was reported and appropriate.		
Domain 5: Outcome As	ssessment					
	Metric 11:	Test Substance Identity	Medium	There were minor differences between the outcome assessment methodology and the endpoint of interest but the difference is unlikely to have a substantial impact on the study results.		
	Metric 12:	Test Substance Purity	High	Some details regarding the sampling methods were not reported but the omissions are unlikely to have a substantial impact on the study results.		
Domain 6: Confoundin	g/Variable Control					
Domain o. Comountain	Metric 13:	Confounding Variables	Medium	Uncertainty was not reported in the final BCF values but the omission is unlikely to have a substantial impact on the study results.		
	Metric 14:	Health Outcomes Unrelated to Exposure	Medium	Health outcomes were not reported, but the omission is unlikely to have a substantial impact of the study results.		
Domain 7: Data Presen	tation and Analysis					
Domain 7. Data 110301	Metric 15:	Data Reporting	Low	The percent recovery was not reported and the analytical method could not distinguish metabolites from the parent compound, which may have an impact on the study results.		
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis and kinetic calculations were not reported and sufficient data is not reported to conduct an independent analysis.		
Domain 8: Other	Matric 17.	Varification or Plausibility of	Uiah	The study regults are reasonable		
	wieure 17:	Results	riigii	The survy results are reasonable.		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.		
<b>Overall Quali</b>	ty Determin	ation	High			
	v		0			

Study Citation: OECD Harmonized	Mayer Jr, F., Sanders, H. O., Walsh, D. F. (1973). Toxicity, residue dynamics, and reproductive effects of phthalate esters in aquatic invertebrates. Environmental Research 6(1):84-90. Aquatic Bioconcentration						
Template:	1224646						
HEKU ID:	1554040						
			EXTRACTION				
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl phthalate					
Confidentiality, Type, and G	uideline	None; Experimental; other					
Solvent, Reactivity, Storage,	, Stability	NR; NR; Stock solutions made in	water; NR				
Radiolabel, Source, State, P	urity	14-C carbonyl labeled DBP (1.53	mCi/mmol); NR; NR; NR				
Test Organism and Test Organism Details Scud; Gammarus pseudolimnaeus, n=18 (number of organisms in each sample replicate)				le replicate)			
Lipid Content, Test Tempera	ature, pH, and Depu-	Not reported; 21±1°C; 7.4; None					
ration Time	•.						
Media Type, TOC, and Salif		natural water: freshwater; Not rep	orted; Not reported				
Dissolved Oxygen, Conduct	ivity, and Hardness	Not reported; Not reported; 2/0 m	Ig/L as CaCO3				
Exposure Route, Elimination	n, and Nominal Mea-	Not reported; Not reported; $0.10\pm$	0.010 μg/L				
Test Type, Test Temperature	e, and Test Condition	semi-static; 21±1°C; Not Reporte	d				
Comments							
Duration, Parameter, and Sa	mpling Frequency	14 days; Not Reported; Days 1, 3,	7 and 14				
Concentration		Not Reported					
Analytical Method and Anal	lytical Details	Liquid scintillation counting.; Bec	kman 200 L liquid scintillation counter.;				
Rate Constant and Results p	er Recovery	Not reported; Not reported					
Statistics, Basis, and Calcula	Statistics, Basis, and Calculation Basis Not reported; Not Reported; Not Reported						
Results Value and Results D	Results Details Magnification factor after 1, 3, 7 and 14 days: 1700, 3700, 6500, 6700; Concentrations were derived from original specific activity, which was						
Metabolites Reference an	d Results Reference	assumed to represent 14-C di-n-butyl phthalate					
Substance			<u>r</u>				
			EVALUATION				
Domain		Metric	Rating	Comments			

Domain		Metric	Rating	Comments		
Domain 1: Test Substand	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.		
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported but the omission is unlikely to have a substan- tial impact on the study results.		
Domain 2: Test Design						
	Metric 3:	Study Controls	Medium	No controls were reported but the omission is unlikely to have a substantial impact on the study results.		
	Metric 4:	Test Substance Stability	Medium	Some details regarding the test substance preparation and storage conditions were not reported but are unlikely to have a substantial impact on the study results.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
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		contin	ued from pre	vious page		
Study Citation:	Mayer Jr, F., Sar Environmental Re	Mayer Jr, F., Sanders, H. O., Walsh, D. F. (1973). Toxicity, residue dynamics, and reproductive effects of phthalate esters in aquatic invertebrates. Environmental Research 6(1):84-90. Aquatic Bioconcentration				
Tomplato.	Aquate Bioconcentration					
HERO ID:	1334646	34646				
		]	EVALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate.		
	Metric 7:	Testing Consistency	High	The testing conditions were consistent among study groups.		
	Metric 8:	System Type and Design	High	Equilibrium was established and maintained.		
Domain 4: Test Organis	sms					
U	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.		
	Metric 10:	Sampling Methods	High	The test organism was reported and appropriate.		
Domain 5: Outcome As	ssessment					
	Metric 11:	Test Substance Identity	Medium	There were minor differences between the outcome assessment methodology and the endpoint of interest but the difference is unlikely to have a substantial impact on the study results.		
	Metric 12:	Test Substance Purity	High	Some details regarding the sampling methods were not reported but the omissions are unlikely to have a substantial impact on the study results.		
Domain 6: Confoundin	g/Variable Control					
Domain o. Comountain	Metric 13:	Confounding Variables	Medium	Uncertainty was not reported in the final BCF values but the omission is unlikely to have a substantial impact on the study results.		
	Metric 14:	Health Outcomes Unrelated to Exposure	Medium	Health outcomes were not reported, but the omission is unlikely to have a substantial impact of the study results.		
Domain 7: Data Presen	tation and Analysis					
Domain 7. Data 110301	Metric 15:	Data Reporting	Low	The percent recovery was not reported and the analytical method could not distinguish metabolites from the parent compound, which may have an impact on the study results.		
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis and kinetic calculations were not reported and sufficient data is not reported to conduct an independent analysis.		
Domain 8: Other	Matric 17.	Varification or Plausibility of	Uiah	The study regults are reasonable		
	wieure 17:	Results	riigii	The survy results are reasonable.		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.		
<b>Overall Quali</b>	ty Determin	ation	High			
	v		0			

Study Citation:	Mayer Jr, F., Sand	Mayer Jr, F., Sanders, H. O., Walsh, D. F. (1973). Toxicity, residue dynamics, and reproductive effects of phthalate esters in aquatic invertebrates.					
OECD Harmonized	Aquatic Bioconcer	Environmental Research 6(1):84-90. Aquatic Bioconcentration					
Template:	riquate Bioconcer	uuton					
HERO ID:	1334646						
			EXTRACTION				
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl phthalate					
Confidentiality, Type, and G	Buideline	None; Experimental; other					
Solvent, Reactivity, Storage	, Stability	NR; NR; Stock solutions made in w	ater; NR				
Radiolabel, Source, State, P	urity	14-C carbonyl labeled DBP (1.53 m	Ci/mmol); NR; NR; NR				
Test Organism and Test Org	anism Details	Mayfly; Hexagenia bilineata, n=9 (number of organisms in each sample replicate)					
Lipid Content, Test Temper	ature, pH, and Depu-	Not reported; $21\pm1^{\circ}$ C; 7.4; None					
ration Time			de de Nied accorde d				
Media Type, TOC, and Sali		natural water: freshwater; Not repoi	ted; Not reported				
Dissolved Oxygen, Conduct	tivity, and Hardness	Not reported: Not reported: 0.08±0.001.uc/I					
Exposure Route, Elimination	n, and Nominal Mea-	Not reported; Not reported; $0.08\pm0$	.001 μg/L				
Test Type, Test Temperature	e, and Test Condition	semi-static; 21±1°C; Not Reported					
Comments							
Duration, Parameter, and Sa	mpling Frequency	14 days; Not Reported; Days 1, 3, 7 and 14					
Concentration		Not Reported					
Analytical Method and Ana	lytical Details	Liquid scintillation counting.; Beck	man 200 L liquid scintillation counter.;				
Rate Constant and Results p	ber Recovery	Not reported; Not reported					
Statistics, Basis, and Calcul	tatistics, Basis, and Calculation Basis Not reported; Not Reported; Not Reported						
Results Value and Results D	Details	Magnification factor after 1, 3, 7 and 14 days: 500, 980, 1900, NR; Concentrations were derived from original specific activity, which was assumed					
Metabolites, Reference, an Substance	d Results Reference	to represent 14-C di-n-butyl phthala Not reported; Not Reported; Not Re	te ported				
			EVALUATION				
Demain		Matula	D -time	Commonsta			

			EVALUATION			
Domain		Metric	Rating	Comments		
Domain 1: Test Substa	nce					
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.		
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported but the omission is unlikely to have a substan-		
				that impact on the study results.		
Domain 2: Test Design						
	Metric 3:	Study Controls	Medium	No controls were reported but the omission is unlikely to have a substantial impact on the study results.		
	Metric 4:	Test Substance Stability	Medium	Some details regarding the test substance preparation and storage conditions were not reported but are unlikely to have a substantial impact on the study results.		
Domain 3: Test Condit	ions					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Continued on next page					

		contin	ued from pre	vious page			
Study Citation:	Mayer Jr, F., Sar Environmental Re	Mayer Jr, F., Sanders, H. O., Walsh, D. F. (1973). Toxicity, residue dynamics, and reproductive effects of phthalate esters in aquatic invertebrates. Environmental Research 6(1):84-90. Aquatic Bioconcentration					
Tomplato.	Aquatic Dioconce						
HERO ID:	1334646						
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate.			
	Metric 7:	Testing Consistency	High	The testing conditions were consistent among study groups.			
	Metric 8:	System Type and Design	High	Equilibrium was established and maintained.			
Domain 4: Test Organis	sms						
U	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.			
	Metric 10:	Sampling Methods	High	The test organism was reported and appropriate.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	Medium	There were minor differences between the outcome assessment methodology and the endpoint of interest but the difference is unlikely to have a substantial impact on the study results.			
	Metric 12:	Test Substance Purity	High	Some details regarding the sampling methods were not reported but the omissions are unlikely to have a substantial impact on the study results.			
Domain 6: Confoundin	g/Variable Control						
Domain o. Comountain	Metric 13:	Confounding Variables	Medium	Uncertainty was not reported in the final BCF values but the omission is unlikely to have a substantial impact on the study results.			
	Metric 14:	Health Outcomes Unrelated to Exposure	Medium	Health outcomes were not reported, but the omission is unlikely to have a substantial impact of the study results.			
Domain 7: Data Presen	tation and Analysis						
Domain 7. Data 110301	Metric 15:	Data Reporting	Low	The percent recovery was not reported and the analytical method could not distinguish metabolites from the parent compound, which may have an impact on the study results.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis and kinetic calculations were not reported and sufficient data is not reported to conduct an independent analysis.			
Domain 8: Other	Matric 17.	Varification or Plausibility of	Uiah	The study regults are reasonable			
	wieure 17:	Results	riigii	The survy results are reasonable.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.			
<b>Overall Quali</b>	ty Determin	ation	High				
	v		0				

Study Citation:	Mayer Jr, F., Sand Environmental Res	Mayer Jr, F., Sanders, H. O., Walsh, D. F. (1973). Toxicity, residue dynamics, and reproductive effects of phthalate esters in aquatic invertebrates. Environmental Research 6(1):84-90.					
Template:	Aquatic Biocolicel	uation					
HERO ID:	1334646						
			EXTRACTION				
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl phthalate					
Confidentiality, Type, and Gu	uideline	None; Experimental; other					
Solvent, Reactivity, Storage,	Stability	NR; NR; Stock solutions made in	water; NR				
Radiolabel, Source, State, Pu	rity	14-C carbonyl labeled DBP (1.53	mCi/mmol); NR; NR; NR				
Test Organism and Test Orga	nism Details	Glass shrimp; Palaemonetes kadia	akensis, n=9 (number of organisms in each sar	nple replicate)			
Lipid Content, Test Temperature, pH, and Depu- Not reported; 21±1°C; 7.4; None rotion Time							
Media Type, TOC, and Salini	ity	natural water: freshwater; Not rep	oorted; Not reported				
Dissolved Oxygen, Conducti	vity, and Hardness	Not reported; Not reported; 270 m	ng/L as CaCO3				
Exposure Route, Elimination	, and Nominal Mea-	Not reported; Not reported; 0.08±	=0.001 μg/L				
surements Test Type, Test Temperature,	and Test Condition	semi-static; 21±1°C; Not Reporte	ed				
Comments Duration, Parameter, and San	npling Frequency	14 days; Not Reported; Days 1, 3, 7 and 14					
Concentration		Not Reported					
Analytical Method and Analy	ytical Details	Liquid scintillation counting.; Bec	ckman 200 L liquid scintillation counter.;				
Rate Constant and Results pe	er Recovery	Not reported; Not reported					
Statistics, Basis, and Calculat	Ind Calculation Basis Not reported; Not Reported; Not Reported						
Results Value and Results De	etails	Magnification factor after 1, 3, 7 and 14 days: 1500, 5000, NR, NR; Concentrations were derived from original specific activity, which was					
Metabolites, Reference, and Substance	Results Reference	Not reported; Not Reported; Not I	Reported				
			EVALUATION				
Domain		Metric	Rating	Comments			

Domain		Metric	Rating	Comments				
Domain 1: Test Substan	ce							
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.				
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported but the omission is unlikely to have a substan- tial impact on the study results.				
Domain 2: Test Design								
	Metric 3:	Study Controls	Medium	No controls were reported but the omission is unlikely to have a substantial impact on the study results.				
	Metric 4:	Test Substance Stability	Medium	Some details regarding the test substance preparation and storage conditions were not reported but are unlikely to have a substantial impact on the study results.				
Domain 3: Test Conditions								
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Continued on next page							

		contin	ued from pre-	vious page			
Study Citation:	Mayer Jr, F., Sar Environmental Re	Mayer Jr, F., Sanders, H. O., Walsh, D. F. (1973). Toxicity, residue dynamics, and reproductive effects of phthalate esters in aquatic invertebrates. Environmental Research 6(1):84-90.					
OECD Harmonized	Aquatic Bioconce	entration					
Template:							
HERO ID:	1334646						
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate.			
	Metric 7:	Testing Consistency	High	The testing conditions were consistent among study groups.			
	Metric 8:	System Type and Design	High	Equilibrium was established and maintained.			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.			
	Metric 10:	Sampling Methods	High	The test organism was reported and appropriate.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	Medium	There were minor differences between the outcome assessment methodology and the endpoint of interest but the difference is unlikely to have a substantial impact on the study results.			
	Metric 12:	Test Substance Purity	High	Some details regarding the sampling methods were not reported but the omissions are unlikely to have a substantial impact on the study results.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	Medium	Uncertainty was not reported in the final BCF values but the omission is unlikely to have a substantial impact on the study results.			
	Metric 14:	Health Outcomes Unrelated to Exposure	Medium	Health outcomes were not reported, but the omission is unlikely to have a substantial impact of the study results.			
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	Low	The percent recovery was not reported and the analytical method could not distinguish metabolites from the parent compound, which may have an impact on the study results.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis and kinetic calculations were not reported and sufficient data is not reported to conduct an independent analysis.			
Domain 8: Other	M-4.:- 17.	Varifaction on Dlassibility of	TT: -1.				
	wietric 1/:	verification or Plausibility of	High	I ne study results are reasonable.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.			
<b>Overall Quali</b>	ty Determin	ation	High				

Study Citation:	Mayer Jr, F., Sand Environmental Res	Mayer Jr, F., Sanders, H. O., Walsh, D. F. (1973). Toxicity, residue dynamics, and reproductive effects of phthalate esters in aquatic invertebrates. Environmental Research 6(1):84-90.						
Template:	Aquatic Diocoliceli							
HERO ID:	1334646							
			EXTRACTION					
Parameter		Data						
CASRN and Test Material		84-74-2; Dibutyl phthalate						
Confidentiality, Type, and Gu	uideline	None; Experimental; other						
Solvent, Reactivity, Storage,	Stability	NR; NR; Stock solutions made in w	ater; NR					
Radiolabel, Source, State, Pu	irity	14-C carbonyl labeled DBP (1.53 m	Ci/mmol); NR; NR; NR					
Test Organism and Test Orga	nism Details	Damselfly; Ischnura verticalis, n=9	(number of organisms in each sample rep	licate)				
Lipid Content, Test Temperature, pH, and Depu- Not reported; 21±1°C; 7.4; None								
ration Time	•.							
Media Type, TOC, and Salin	ity	natural water: freshwater; Not repor	ted; Not reported					
Dissolved Oxygen, Conducti	vity, and Hardness	Not reported; Not reported; 2/0 mg/	L as CaCO3					
Exposure Route, Elimination	, and Nominal Mea-	Not reported; Not reported; $0.10\pm0.00$	.005 μg/L					
Test Type, Test Temperature,	, and Test Condition	semi-static; 21±1°C; Not Reported						
Comments		· · · · · · · · · · · · · · · · · · ·						
Duration, Parameter, and Sar	npling Frequency	14 days; Not Reported; Days 1, 3, 7 and 14						
Concentration		Not Reported						
Analytical Method and Analy	ytical Details	Liquid scintillation counting.; Becki	man 200 L liquid scintillation counter.;					
Rate Constant and Results pe	er Recovery	Not reported; Not reported						
Statistics, Basis, and Calcula	culation Basis Not reported; Not Reported; Not Reported							
Results Value and Results De	etails	Magnification factor after 1, 3, 7 and 14 days: 1000, 1600, 2700, NR; Concentrations were derived from original specific activity, which was						
Metabolites, Reference, and Substance	Results Reference	assumed to represent 14-C di-n-buty Not reported; Not Reported; Not Re	l phthalate ported					
			EVALUATION					
Domain		Metric	Rating	Comments				

Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ice						
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.			
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported but the omission is unlikely to have a substan- tial impact on the study results.			
Domain 2: Test Design							
	Metric 3:	Study Controls	Medium	No controls were reported but the omission is unlikely to have a substantial impact on the study results.			
	Metric 4:	Test Substance Stability	Medium	Some details regarding the test substance preparation and storage conditions were not reported but are unlikely to have a substantial impact on the study results.			
Domain 3: Test Condition	ons						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
Continued on next page							

		contin	ued from pre-	vious page			
Study Citation:	Mayer Jr, F., Sar Environmental Re	Mayer Jr, F., Sanders, H. O., Walsh, D. F. (1973). Toxicity, residue dynamics, and reproductive effects of phthalate esters in aquatic invertebrates. Environmental Research 6(1):84-90.					
OECD Harmonized	Aquatic Bioconce	entration					
Template:							
HERO ID:	1334646						
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate.			
	Metric 7:	Testing Consistency	High	The testing conditions were consistent among study groups.			
	Metric 8:	System Type and Design	High	Equilibrium was established and maintained.			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.			
	Metric 10:	Sampling Methods	High	The test organism was reported and appropriate.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	Medium	There were minor differences between the outcome assessment methodology and the endpoint of interest but the difference is unlikely to have a substantial impact on the study results.			
	Metric 12:	Test Substance Purity	High	Some details regarding the sampling methods were not reported but the omissions are unlikely to have a substantial impact on the study results.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	Medium	Uncertainty was not reported in the final BCF values but the omission is unlikely to have a substantial impact on the study results.			
	Metric 14:	Health Outcomes Unrelated to Exposure	Medium	Health outcomes were not reported, but the omission is unlikely to have a substantial impact of the study results.			
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	Low	The percent recovery was not reported and the analytical method could not distinguish metabolites from the parent compound, which may have an impact on the study results.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis and kinetic calculations were not reported and sufficient data is not reported to conduct an independent analysis.			
Domain 8: Other	M-4.:- 17.	Varifaction on Dlassibility of	TT: -1.				
	wietric 1/:	verification or Plausibility of	High	I ne study results are reasonable.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.			
<b>Overall Quali</b>	ty Determin	ation	High				

Study Citation:	Mcfall, J. A., Antoine, S. R., Deleon, I. R. (1985). Base-neutral extractable organic pollutants in biota and sediments from Lake Pontchartrain. Chemo-sphere 14(10):1561-1569.						
OECD Harmonized	Aquatic Bioconcentration						
Template:							
HERO ID:	6814285						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, Type, and Gu	uideline	None; Experimental; other: Not reported; Field study of three passes which link Lake Pontchartrain, Louisiana, to the Gulf of Mexico					
Solvent, Reactivity, Storage,	Stability	NA; NA; Packed in ice, frozen at -5°C; NA					
Radiolabel, Source, State, Pu	urity	NA; Inner Harbor Navigational Canal, Chef Menteur Pass, and The Rigolets at Lake Pontchartrain, Louisiana; Sediment and organism samples;					
		NA					
Test Organism and Test Orga	anism Details	Oyster, Crassotrea virginica; n=8					
Lipid Content, Test Tempera	ture, pH, and Depu-	Not reported; Not reported; Not applicable					
ration Time Media Type TOC and Salin	ity	natural water / sediment: Not reported: Not reported					
Dissolved Oxygen Conducti	ivity and Hardness	Not reported: Not reported.					
Exposure Poute Elimination	and Nominal Mea	Sediment: Not applicable: Measured					
surements	i, and Nommai Wiea-	Seament, Not appreaded, Measured					
Test Type, Test Temperature,	, and Test Condition	field study; Not reported; Samples collected from mouth of Inner Harbor Navigational Chanel at Lake Pontchartrain, Louisiana					
Comments							
Duration, Parameter, and Sar	mpling Frequency	May - June 1980; Not Reported; Not reported					
Concentration		4.5 ng/g dry wt.					
Analytical Method and Analytical Details		GC/MS with 50 m x 0.3 mm ID glass capillary column coated with SE-52; Organism and sediment samples made basic with NaOH, extracted with diethyl ether, centrifuged, supernatant concentrated by rotary evaporator and cleaned up by gel permeation chromatography.;					
Rate Constant and Results per Recovery		Not applicable; Not reported					
Statistics, Basis, and Calcula	tion Basis	Not Reported; BCF, tissue, wet wt.; steady state					
Results Value and Results De	etails	BCF=130; calculated by SRC from concentration in oysters divided by concentration in sediment; average: 570 ng/g wet wt. in organisms					
Metabolites, Reference, and Results Reference Substance		Not reported; Not reported; Not reported					

			EVALUATIO	N	
Domain		Metric	Rating	Comments	
Domain 1: Test Substar	nce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
	Metric 2:	Test Substance Purity	High	Field sampling location was reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	Medium	Reference site or analytical blanks were not explicitly included.	
	Metric 4:	Test Substance Stability	High	Sample storage was reported.	
Domain 3: Test Conditions					
	Metric 5:	Test Method Suitability	High	The field study was appropriate for the test substance and the endpoint of interest.	
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		contin	ued from pre	vious page			
Study Citation:	Mcfall, J. A., Ant sphere 14(10):156	Mcfall, J. A., Antoine, S. R., Deleon, I. R. (1985). Base-neutral extractable organic pollutants in biota and sediments from Lake Pontchartrain. Chemo- sphere 14(10):1561-1569.					
<b>OECD Harmonized</b>	Aquatic Bioconce	entration					
Template:							
HERO ID:	6814285	6814285					
		J	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 6:	Testing Conditions	Medium	No field environmental conditions were reported, no sediment sample characteristics were reported.			
	Metric 7:	Testing Consistency	High	Samples were processed and analyzed consistently.			
	Metric 8:	System Type and Design	High	Field studies are assumed to be at dynamic equilibrium.			
Domain 4: Test Organis	sms						
C	Metric 9:	Outcome Assessment Methodology	N/A	Not applicable.			
	Metric 10:	Sampling Methods	Medium	The species and source were reported, weight or other characteristics were not included.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining bioaccumula- tion.			
	Metric 12:	Test Substance Purity	High	Number of samples collected was reported, sample processing methods were appropri- ate.			
Domain 6: Confoundin	g/Variable Control						
	Metric 13:	Confounding Variables	Medium	Study is low in details of sample characteristics.			
	Metric 14:	Health Outcomes Unrelated to Exposure	Medium	Organism health was not reported.			
Domain 7: Data Presen	tation and Analysis						
	Metric 15:	Data Reporting	Medium	BCF was calculated by the reviewer. The analytical method was appropriate; limits of detection were not reported. Recovery was not reported however reported concentrations were corrected for recovery. Lipid content was not reported.			
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	Statistical and kinetic calculations were not conducted.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of Results	Medium	The results were reasonable based on the method, however without sample characteris- tics (lipid content of organisms, organic carbon content of sediments), broader conclu- sions on bioavailability and accumulation cannot be determined.			
	Metric 18:	QSAR Models	N/A	Not applicable.			
<b>Overall Quali</b>	ty Determin	ation	High				

Study Citation:	Mcfall, J. A., Anto	Mcfall, J. A., Antoine, , S. R., Deleon, I. R. (1985). Base-neutral extractable organic pollutants in biota and sediments from Lake Pontchartrain. Chemo-					
OECD Harmonized	Aquatic Bioconcen	Aquatic Bioconcentration					
Template:	riquate Broconcer						
HERO ID:	6814285						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, Type, and C	Juideline	None; Experimental; other: Not reported; Field study of three passes which link Lake Pontchartrain, Louisiana, to the Gulf of Mexico					
Solvent, Reactivity, Storage	, Stability	NA; NA; Packed in ice, frozen at -5°C; NA					
Radiolabel, Source, State, P	Purity	NA; Inner Harbor Navigational Canal, Chef Menteur Pass, and The Rigolets at Lake Pontchartrain, Louisiana; Sediment and organism samples;					
Test Organism and Test Org	anism Details	NA Clams, Rangia cuneata; Composite sample					
Lipid Content, Test Temper	ature, pH, and Depu-	Not reported; Not reported; Not applicable					
ration Time Media Type, TOC, and Sali	nity	natural water / sediment: Not reported: Not reported					
Dissolved Oxygen, Conduct	tivity, and Hardness	Not reported; Not reported					
Exposure Route, Eliminatio	n, and Nominal Mea-	Sediment; Not applicable; Measured; detected at Chef Menteur only, not Rigolets					
surements							
Test Type, Test Temperature	e, and Test Condition	field study; Not reported; Samples collected from mouths of Chef Menteur and Rigolets at Lake Pontchartrain, Louisiana					
Duration, Parameter, and Sa	ampling Frequency	May - June 1980; Not Reported; Not reported					
Concentration		15 ng/g dry wt.					
Analytical Method and Analytical Details		GC/MS with 50 m x 0.3 mm ID glass capillary column coated with SE-52; Organism and sediment samples made basic with NaOH, extracted with diethyl ether, centrifuged, supernatant concentrated by rotary evaporator and cleaned up by gel permeation chromatography.;					
Rate Constant and Results per Recovery Not ap		Not applicable; Not reported					
Statistics, Basis, and Calcul	ation Basis	Not Reported; BCF, tissue, wet wt.; steady state					
Results Value and Results D	Details	Not determined; Not detected in organisms					
Metabolites, Reference, an Substance	d Results Reference	Not reported; Not reported; Not reported					

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	High	Field sampling location was reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	Medium	Reference site or analytical blanks were not explicitly included.		
	Metric 4:	Test Substance Stability	High	Sample storage was reported.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The field study was appropriate for the test substance and the endpoint of interest.		
	Metric 6:	Testing Conditions	Medium	No field environmental conditions were reported, no sediment sample characteristics were reported.		
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		contin	ued from pre	vious page			
Study Citation:	Mcfall, J. A., Anto sphere 14(10):156	Mcfall, J. A., Antoine, S. R., Deleon, I. R. (1985). Base-neutral extractable organic pollutants in biota and sediments from Lake Pontchartrain. Chemo- sphere 14(10):1561-1569.					
OECD Harmonized	Aquatic Bioconce	ntration					
Template: HERO ID:	6814285						
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 7:	Testing Consistency	High	Samples were processed and analyzed consistently.			
	Metric 8:	System Type and Design	High	Field studies are assumed to be at dynamic equilibrium.			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	N/A	Not applicable.			
	Metric 10:	Sampling Methods	Medium	The species and source were reported, weight or other characteristics were not included.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining bioaccumula- tion.			
	Metric 12:	Test Substance Purity	High	Number of samples collected was reported, sample processing methods were appropri- ate.			
Domain 6: Confounding	g/Variable Control						
·	Metric 13:	Confounding Variables	Medium	Study is low in details of sample characteristics.			
	Metric 14:	Health Outcomes Unrelated to Exposure	Medium	Organism health was not reported.			
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	Medium	BCF was calculated by the reviewer. The analytical method was appropriate; limits of detection were not reported. Recovery was not reported however reported concentrations were corrected for recovery. Linit content was not reported			
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	Statistical and kinetic calculations were not conducted.			
Domain 8. Other							
Domain 0. Oulor	Metric 17:	Verification or Plausibility of Results	Medium	The results were reasonable based on the method, however without sample characteris- tics (lipid content of organisms, organic carbon content of sediments), broader conclu- sions on bioavailability and accumulation cannot be determined.			
	Metric 18:	QSAR Models	N/A	Not applicable.			
<b>Overall Quali</b>	ty Determina	ation	High				

Study Citation: OECD Harmonized	Monsanto, (1983). Aquatic Bioconcen	Monsanto, (1983). Investigation of phthalate ester concentrations in a Michigan sewage pond. Aquatic Bioconcentration				
HERO ID:	1316180					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Not Reported				
Confidentiality, Type, and C	Juideline	No; Monitoring study; other: Non-guideline				
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR				
Radiolabel, Source, State, P	Purity	No; Samples collected from sewage lagoon at Michigan State University; Field samples; NR Notes: NR				
Test Organism and Test Org	ganism Details	Daphnia magna; Collected from municipal sewage lagoon				
Lipid Content, Test Temper	ature, pH, and Depu-	Not reported; Ambient; Not reported; Not reported				
ration Time Media Type, TOC, and Sali	nity	Natural water, sewage lagoon; Not reported; Not reported				
Dissolved Oxygen, Conduc	tivity, and Hardness	Not reported; Not reported; Not reported				
Exposure Route, Eliminatio	on, and Nominal Mea-	Whole body; Not reported; Mesured				
surements Test Type, Test Temperature	e, and Test Condition	Field study; Ambient; Sample preparation: Environmental Sciences method ES-78-M-7 (water) and ES-78-M-6 (Daphnia)				
Comments Duration, Parameter, and Sa	ampling Frequency	Not applicable; Not applicable in the second s				
Concentration		= 35 (Daphnid); ND to <0.1 (water) - = 54 (Daphnid); 0.36 (water) μg/L				
Analytical Method and Analytical Details		Sample analysis: GC/MS with external standard; Analytical standard: DMP, DEP, DBP, S-160, DCHP, DEHP, DUP at 2 µg/L; no additional details;				
Rate Constant and Results per Recovery		Not reported; Recoveries from spiked samples were reported for DEHP = $48\%$ and BBP = $83\%$				
Statistics, Basis, and Calcul	ation Basis	Relative error reported for DEHP: $\hat{A}\pm 29\%$ ; Not specified; Not applicable				
Results Value and Results I	Details	No results for bioconcentration were obtained due to levels of phthalate esters in the blank and relative error in measurements.; Average Daphnia concentration: 42 ppb (blank: 91 ppb); average water concentration: 0.15 ppb (blank: 0.2 ppb)				
Metabolites, Reference, an Substance	nd Results Reference	Not reported; Not reported				

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substar	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
	Metric 2:	Test Substance Purity	Medium	The source was reported; purity and source of analytical standard not reported.
Domain 2: Test Design	Metric 3:	Study Controls	Uninformative	Blanks were included but reported high levels of phthalate esters and BCF values were not able to be calculated as a result.
	Metric 4:	Test Substance Stability	Low	Test substance stability, homogeneity, preparation, and storage conditions were not reported or are likely to have a substantial impact on the study results.
Domain 3: Test Conditi	ions			

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Study Citation: OECD Harmonized	Monsanto, (1983) Aquatic Bioconce	Monsanto, (1983). Investigation of phthalate ester concentrations in a Michigan sewage pond. Aquatic Bioconcentration					
Template:	1216190						
HERO ID:	1310180						
			EVALUATION				
Domain		Metric	Rating	Comments			
	Metric 5:	Test Method Suitability	High	The test method was suitable.			
	Metric 6:	Testing Conditions	Low	Field conditions were not reported.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent.			
	Metric 8:	System Type and Design	High	Equilibrium is assumed in a field study.			
Domain 4: Test Organis	sms						
U	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study.			
	Metric 10:	Sampling Methods	High	Standard species evaluated.			
Domain 5: Outcome As	ssessment						
Domain 5. Outcome 74	Metric 11	Test Substance Identity	Uninformative	The assessment methodology did not address or report the outcome of interest. This is a			
	metho II.	Test Bubblance Fachaly	emmermative	serious flaw that makes the study unusable.			
	Metric 12:	Test Substance Purity	High	Methods were appropriate.			
			-				
Domain 6: Confoundin	g/Variable Control						
	Metric 13:	Confounding Variables	Low	With the exception of the blank measurements with high levels phthalate esters high relative error, sources of variability or uncertainty were not reported.			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study.			
		Exposure					
Domain 7: Data Presen	tation and Analysis						
Domain 7. Dua 11050	Metric 15.	Data Reporting	Low	Analytical detail was omitted			
	Metric 16	Statistical Methods and	Low	Standard error was only reported for one chemical analysis (DEHP) as high as $\hat{A}$ +29%			
		Kinetic Calculations	2011				
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	Low	Due to limited information, evaluation of the reasonableness of the results was not possi-			
		Results		ble.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study.			
<b>Overall Quali</b>	ty Determin	ation	Uninformative				

Study Citation: OECD Harmonized	Ray, L. E., Murray, H. E., Giam, C. S. (1983). Organic pollutants in marine samples from Portland, Maine. Chemosphere 12(7-8):1031-1038. Aquatic Bioconcentration				
HERO ID:	5568740				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; DBP			
Confidentiality, Type, and C	Buideline	None; Experimental; other: Not reported; Bioaccumulation field study			
Solvent, Reactivity, Storage	, Stability	NA; NA; Sediment stored refrigerated in glass jars topped with petroleum ether-rinsed aluminum foil; organism samples wrapped in aluminum foil and frozen; NA			
Radiolabel, Source, State, P	Purity	NA; Samples collected from Portland, Maine, from the Fore River and Back Cove; NA; NA			
Test Organism and Test Org	anism Details	Clams; Not reported			
Lipid Content, Test Temper	ature, pH, and Depu-	Not reported; Not reported; Not reported; Not applicable			
ration Time Media Type, TOC, and Sali	nity	natural water / sediment; Not reported; Not reported			
Dissolved Oxygen, Conduc	tivity, and Hardness	Not reported; Not reported; Not reported			
Exposure Route, Eliminatio	n, and Nominal Mea-	Sediment; Not applicable; Measured, 170 ng/g (Fore River), 280 ng/g (Back Cove)			
surements Test Type, Test Temperature Comments	e, and Test Condition	field study; Not reported; Sediment and organism samples collected from the Fore River and Back Cove near Portland, Maine			
Duration, Parameter, and Sa	ampling Frequency	Samples collected November 1980; Not Reported; Not reported			
Concentration		170 - 280 ng/g			
Analytical Method and Analytical Details		Gas chromatography with electron capture detector or flame ionization detector; Sediment refluxed with acetone/acetone nitrile and organism samples homogenized in acetone/acetonitrile, both were extracted with petroleum ether under basic and acidic conditions, basic extract was purified on Florisil column;			
Rate Constant and Results per Recovery		Not applicable; Not reported			
Statistics, Basis, and Calcul	ation Basis	Not reported; Tissue, not specified; steady state			
Results Value and Results I	Details	BCF=0.59 and 0.14; Organism concentrations: 100 and 40 ng/g at Fore River and Back Cove sites, respectively. More industrial activity occurs in the Fore River but flushing from the river may prevent accumulation in sediment, compared to the stagnant more Back Cove. Difference in pollutant concentrations in organisms has less clear relationships.			
Metabolites, Reference, an Substance	d Results Reference	Not reported; Not reported; Not reported			

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substar	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	High	The sample source was reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Analytical or field controls and/or reference site was not included.
	Metric 4:	Test Substance Stability	High	Sample storage and preparation reported and appropriate.

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Study Citation:	Ray, L. E., Murra	Ray, L. E., Murray, H. E., Giam, C. S. (1983). Organic pollutants in marine samples from Portland, Maine. Chemosphere 12(7-8):1031-1038.					
<b>OECD Harmonized</b>	Aquatic Bioconcentration						
Template:							
HERO ID:	5568740						
		ŀ	EVALUATION				
Domain		Metric	Rating	Comments			
Domain 3: Test Conditi	ons						
	Metric 5:	Test Method Suitability	High	The field study method was appropriate for the test substance.			
	Metric 6:	Testing Conditions	Medium	Limited environmental conditions and sample characteristics were reported.			
	Metric 7:	Testing Consistency	High	Samples were collected, processed, and analyzed consistently.			
	Metric 8:	System Type and Design	High	Field studies are assumed to be in dynamic equilibrium.			
Domain 4: Test Organis	me						
Domain 4. Test Organis	Metric 9:	Outcome Assessment Methodology	N/A	Not applicable.			
	Metric 10:	Sampling Methods	Low	General name only reported; number, weight, lipid content, or other characteristics were			
				not reported.			
Domain 5: Outcome As	aggment						
Domain 5: Outcome As	Matria 11:	Test Substance Identity	High	The outcome accomment methodology was appropriate for determining his accountly			
	Metric 11:	Test Substance Identity	nign	tion.			
	Metric 12:	Test Substance Purity	Medium	Sampling methods were acceptable, frequency was not reported and may not be repre- sentative. Sampling does not account for possible seasonal variation.			
Domain 6: Confounding	g/Variable Control						
Domain 0. Comounding	Metric 13.	Confounding Variables	Medium	Many study details were not reported			
	Metric 14:	Health Outcomes Unrelated to	Medium	Organism health was not reported			
		Exposure	mourum				
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	Low	The analytical method was appropriate; percent recovery and limits of detection were			
		1 0		not reported. Lipid content and lipid normalized BCF were not reported.			
	Metric 16:	Statistical Methods and	N/A	Statistical analysis was not applied.			
		Kinetic Calculations					
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	Low	The results were reasonable based on the method but the study omitted many details,			
		Results		one of the most important of which was organism species and lipid content.			
	Metric 18:	QSAR Models	N/A	Not applicable.			
<b>Overall Quali</b>	ty Determin	ation	Medium				
	•						

Study Citation: OECD Harmonized	Ray, L. E., Murray, H. E., Giam, C. S. (1983). Organic pollutants in marine samples from Portland, Maine. Chemosphere 12(7-8):1031-1038. Aquatic Bioconcentration				
HERO ID:	5568740				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; DBP			
Confidentiality, Type, and C	Juideline	None; Experimental; other: Not reported; Bioaccumulation field study			
Solvent, Reactivity, Storage	, Stability	NA; NA; Sediment stored refrigerated in glass jars topped with petroleum ether-rinsed aluminum foil; organism samples wrapped in aluminum foil and frozen; NA			
Radiolabel, Source, State, P	Purity	NA; Samples collected from Portland, Maine, from the Fore River and Back Cove; NA; NA			
Test Organism and Test Org	anism Details	Neanthes virens; Not reported			
Lipid Content, Test Temper	ature, pH, and Depu-	Not reported; Not reported; Not applicable			
ration Time		notivel vyoter ( addiments Not remented. Not remented			
Dissolved Orygen Conduct	illity tivity, and Handmass	Natural water / seument, Not reported, Not reported			
Exposure Doute Eliminatio	n and Naminal Maa	Not reported, Not reported 170 ng/g (Fore Biver) 280 ng/g (Back Cove)			
surements	n, and Nominal Mea-	Sediment; Not applicable; Measured, 170 ng/g (Fore River), 280 ng/g (Back Cove)			
Test Type, Test Temperature	e, and Test Condition	field study; Not reported; Sediment and organism samples collected from the Fore River and Back Cove near Portland, Maine			
Comments	1° E				
Duration, Parameter, and Sa	impling Frequency	Samples collected November 1980; Not Reported; Not reported			
Concentration		170 - 280 ng/g			
Analytical Method and Analytical Details		Gas chromatography with electron capture detector or flame ionization detector; Sediment refluxed with acetone/acetone/nitrile and organism samples homogenized in acetone/acetonitrile, both were extracted with petroleum ether under basic and acidic conditions, basic extract was purified on Florisil column;			
Rate Constant and Results per Recovery		Not applicable; Not reported			
Statistics, Basis, and Calculation Basis		Not reported; Tissue, not specified; steady state			
Results Value and Results Details		BCF=1.1 and 0.25; Organism concentrations: 180 and 70 ng/g at Fore River and Back Cove sites, respectively. More industrial activity occurs in the Fore River but flushing from the river may prevent accumulation in sediment, compared to the stagnant more Back Cove. Difference in pollutant concentrations in organisms has less clear relationships.			
Metabolites, Reference, an Substance	d Results Reference	Not reported; Not reported; Not reported			

			EVALUATION		
Domain		Metric	Rating	Comments	
Domain 1: Test Substar	nce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
	Metric 2:	Test Substance Purity	High	The sample source was reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	Medium	Analytical or field controls and/or reference site was not included.	
	Metric 4:	Test Substance Stability	High	Sample storage and preparation reported and appropriate.	
Domain 3: Test Conditi	ons Metric 5:	Test Method Suitability	High	The field study method was appropriate for the test substance.	
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Study Citation: OECD Harmonized	Ray, L. E., Murra Aquatic Bioconce	Ray, L. E., Murray, H. E., Giam, C. S. (1983). Organic pollutants in marine samples from Portland, Maine. Chemosphere 12(7-8):1031-1038. Aquatic Bioconcentration					
Template:							
HERO ID:	5568740						
		]	EVALUATION				
Domain		Metric	Rating	Comments			
	Metric 6:	Testing Conditions	Medium	Limited environmental conditions and sample characteristics were reported.			
	Metric 7:	Testing Consistency	High	Samples were collected, processed, and analyzed consistently.			
	Metric 8:	System Type and Design	High	Field studies are assumed to be in dynamic equilibrium.			
Domain 4: Test Organis	sms						
6	Metric 9:	Outcome Assessment Methodology	N/A	Not applicable.			
	Metric 10:	Sampling Methods	Medium	Species only reported; number, weight, lipid content, or other characteristics were not reported.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining bioaccumula- tion.			
	Metric 12:	Test Substance Purity	Medium	Sampling methods were acceptable, frequency was not reported and may not be repre- sentative. Sampling does not account for possible seasonal variation.			
Domain 6: Confoundin	g/Variable Control						
	Metric 13:	Confounding Variables	Medium	Many study details were not reported.			
	Metric 14:	Health Outcomes Unrelated to Exposure	Medium	Organism health was not reported.			
Domain 7. Data Presen	tation and Analysis	•					
Domain 7. Data 1 10501	Metric 15:	Data Reporting	Low	The analytical method was appropriate; percent recovery and limits of detection were not reported. Lipid content and lipid normalized BCF were not reported.			
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	Statistical analysis was not applied.			
Domain 8: Other							
Domain 0. Other	Metric 17:	Verification or Plausibility of Results	Medium	The results were reasonable based on the method but the study omitted many details, one of the most important of which was organism lipid content			
	Metric 18:	QSAR Models	N/A	Not applicable.			
<b>Overall Quali</b>	ty Determin	ation	Medium				

\_\_\_\_

Study Citation:	Teil, M. J., Tlili, K., Blanchard, M., Chevreuil, M., Alliot, F., Labadie, P. (2012). Occurrence of Polybrominated Diphenyl Ethers, Polychlorinated Biphenyls, and Phthalates in Freshwater Fish From the Orge River (Ile-de France). Archives of Environmental Contamination and Toxicology 63(1):101-						
<b>OECD Harmonized</b>	Aquatic Bioconcentration						
Template:	1						
HERO ID:	1249662						
		EXTRACTION					
Parameter		Data					
CACON 1 T M-t		04 74 0. D-DD					
Caskin and Test Material	Cuidalina	84-74-2; DBBP					
Confidentiality, Type, and		None, Experimental, other: BSAF neud study					
Badialabal Sauraa Stata	e, Stability	ISO-OCTABE; NK; NK; NK					
Tast Organism and Tast Or	Purity	Reach, Chub, and Parah, Livar, gened, and muscle from reach and muscle only from shub and parah					
Linid Contant. Test Tempo	gailisiii Details	Not applicable: Not applicable: Not applicable: Not applicable					
Lipid Content, Test Temperature, pH, and Depu-		Not applicable, Not applicable, Not applicable					
Media Type, TOC, and Salinity		natural water: freshwater; Not applicable; Not applicable					
Dissolved Oxygen, Conduc	ctivity, and Hardness	Not applicable; Not applicable; Not applicable					
Exposure Route, Elimination	on, and Nominal Mea-	Field study; Not applicable; Not applicable					
surements Test Type, Test Temperatur	re, and Test Condition	Not applicable; Not applicable; Orge river fish, water and sediment study					
Comments Duration Parameter and S	ampling Frequency	Not applicable: other: sediment and water $(n-8)$ and fish collected 3 times in a year (July and October 2009, April 2010)					
Concentration	ampning r requency	Not Reported					
Analytical Method and Analytical Details		GC-MS: Electronic impact detector EPA methodCP5C-CHC1001-09.01 March 2009					
Rate Constant and Results per Recovery Not Reported: 91 5% in river water 51 9% in riverbed sediment and		Not Reported: 91.5% in river water, 51.9% in riverbed sediment and 80.8% in fish tissue					
Statistics Basis and Calculation Basis averages and SD reported: total lipid content: other		averages and SD reported; total lipid content; other					
Results Value and Results I	Details	Roach: $5.5\pm4.8$ , Chub: $6.0\pm2.3$ , and Perch: $11.8\pm12.6$ : BSAF					
Kesuits value and Resuits Details       Koach: 5.5±4.8, Chub: 0.0±2.5, and Perch: 11.8±12.0; BSAF         Metabolites, Reference, and Results Reference       Not reported; Not applicable; NA; Field study         Substance       Not reported; Not applicable; NA; Field study							

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ice				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2:	Test Substance Purity	High	Source and purity of analytical standard reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	This metric does not apply to field studies.	
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.	
Domain 3: Test Condition	ons Metric 5:	Test Method Suitability	High	This metric met the criteria for high confidence as expected for this type of study.	
Continued on next page					

PUBLIC RELEASE DRAFT May 2025 Aquatic Bioconcentration

HERO ID: 1249662 Table: 1 of 1

		contin	ued from prev	vious page				
Study Citation:	Teil, M. J., Tlili, Biphenyls, and Ph	Teil, M. J., Tlili, K., Blanchard, M., Chevreuil, M., Alliot, F., Labadie, P. (2012). Occurrence of Polybrominated Diphenyl Ethers, Polychlorinated Biphenyls, and Phthalates in Freshwater Fish From the Orge River (Ile-de France). Archives of Environmental Contamination and Toxicology 63(1):101-						
OECD Harmonized	113. A quatia Diagonag	ntration						
OECD Harmonized	Aquatic Bioconce	ntration						
HFRO ID.	1249662							
	1219002							
Domain		Matria	EVALUATIO Doting	N Commente				
Domain	Matria 61	Testing Conditions	Katilig	A demote addiment motor and test service above test difference server d				
	Metric 0: Metric 7:	Testing Conditions	High	Adequate sediment, water, and test organism characteristics were reported.				
	Meuric 7.	Testing Consistency	nigii	cal methods were consistent across all groups.				
	Metric 8:	System Type and Design	High	Field studies are assumed to be at equilibrium.				
			6	1				
Domain 4: Test Organis	sms							
U	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	High	This metric met the criteria for high confidence as expected for this type of study.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	The sampling methods were reported and appropriate for the study type.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	Medium	Reported variability was not likely to influence the outcome of the assessment.				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.				
		Exposure						
Domain 7. Data Present	tation and Analysis							
Domain 7. Data 11030m	Metric 15.	Data Reporting	Medium	BAE values were not explicitly reported for the phthalate studies and actual concentra-				
	Wedde 15.	Duta Reporting	Wiedrum	tions measured throughout the study were not reported; however, these details were not				
				likely to have a substantial impact on the study result interpretation.				
	Metric 16:	Statistical Methods and	Medium	Some statistical calculation details were omitted; however, these details were not likely				
		Kinetic Calculations		to have a substantial impact on the study result interpretation.				
Domain 8: Other	Matria 17.	Varifaction on Dlausikility of	II: ak					
	wietric 1/:	Populte	High	I ne study results were reasonable.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.				
<b>Overall Ouali</b>	ty Determin	ation	High					
	·		8					

\* Related References: Cited in HSDB

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Study Citation:	Wofford, H. W., Wilsey, C. D., Neff, G. S., Giam, C. S., Neff, J. M. (1981). Bioaccumulation and metabolism of phthalate esters by oysters, brown shrimp, and sheepshead minnows. Ecotoxicology and Environmental Safety 5(2):202-210.					
OECD Harmonized	ECD Harmonized Aquatic Bioconcentration					
Template:						
HERO ID:	789995					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, Type, and G	uideline	None; Experimental; other: Not reported				
Solvent, Reactivity, Storage,	Stability	NR; NR; NR				
Radiolabel, Source, State, Pu	urity	Carboxy-labeled C-14 dibutlylphthalate (9.98 mCi/mmole); California Bionuclear Corporation (Sun Valley, California, labelled); Monsanto Company (St. Louis, MO, unlabeled); NR; NR Notes: Mix of labelled and unlabeled compounds				
Test Organism and Test Orga	anism Details	American oyster, Crassostrea virginica; Collected from Galveston Bay, Texas				
Lipid Content, Test Tempera	ature, pH, and Depu-	Not reported; Not reported; Not applicable				
ration Time Media Type, TOC, and Salin	nity	other; Not reported; 20 to 30 o/oo				
Dissolved Oxygen, Conduct	ivity, and Hardness	Not reported; Not reported				
Exposure Route, Elimination	n, and Nominal Mea-	Water; Not applicable; Nominal 100 ppb (10 ppb labelled, 0 ppb unlabeled) and 500 ppb (10 ppb labelled, 490 ppb unlabeled)				
surements						
Test Type, Test Temperature	e, and Test Condition	static; Not reported; Test solution allowed to equilibrate 30 minutes after dosing; concentrations decreased 30-70% during experiment, possibly				
Duration Parameter and Sau	mnling Frequency	due to sorption to oyster shells				
Concentration	inpling l'requeiley	100 - 500 pph				
Analytical Method and Analytical Details		GC with electron capture detector and liquid scintillation counting; Organism samples homogenized 2x in Sorval Omni-Mixer with chloro- gorm:methanol, filtered, extracts combined;				
Rate Constant and Results per Recovery		Not reported; 90%				
Statistics, Basis, and Calculation Basis		3-way ANOVA with General Linear Model; n=2; BCF not significantly different for species studies ( $p > F=0.5201$ ), but was significantly different between phthalate esters studied ( $p > F=0.0179$ ) and concentrations studied ( $p > F=0.0198$ ); Muscle; steady state				
Results Value and Results D	etails	BCF= $21.1\pm9.3$ (100 ppb) and $41.6\pm5.1$ (500 ppb); Biodegradability index (ratio of metabolites to unmetabolized diester, average of exposures): 0.53				
Metabolites, Reference, and Results Reference Substance		Average of 100 and 500 ppb exposures: 64.8% unmetabolized, 30.8% monoester, 6.1% phthalic acid, 1.4% in residue; Not reported; Not reported				

EVALUATION								
Domain		Metric	Rating	Comments				
Domain 1: Test Substan	ice							
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.				
	Metric 2:	Test Substance Purity	Medium	The test substance source but not purity was reported.				
Domain 2: Test Design								
	Metric 3:	Study Controls	Medium	A baseline organism measurement was not conducted, control group was not explicitly included.				
Continued on next page								

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PUBLIC RELEASE DRAFT May 2025 Aquatic Bioconcentration

HERO ID: 789995 Table: 1 of 3

		contin	ued from prev	vious page				
Study Citation:	Wofford, H. W., Wilsey, C. D., Neff, G. S., Giam, C. S., Neff, J. M. (1981). Bioaccumulation and metabolism of phthalate esters by oysters, brown shrimp,							
OECD Harmonized	Aquatic Bioconcentration							
Template:	Aquado Diocontechtadion							
HERO ID:	789995							
		I	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 4:	Test Substance Stability	High	Test substance ratio of labelled to unlabeled compound and nominal concentrations were reported.				
Domain 3: Test Condition	ons							
	Metric 5:	Test Method Suitability	High	The test method was appropriate for the test substance.				
	Metric 6:	Testing Conditions	Medium	Only salinity was reported, no other testing conditions were included.				
	Metric 7:	Testing Consistency	High	Test set up was consistent across study groups.				
	Metric 8:	System Type and Design	High	The system was allowed to equilibrate and was capable of maintaining test substance concentrations.				
Domain 4: Test Organis	ms							
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	Medium	Organism species and source were reported, no other characteristics included.				
Domain 5: Outcome As	sassmant							
Domain 5. Outcome Ass	Metric 11.	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining bioaccumula				
	Methe II.	Test Substance Identity	Ingn	tion.				
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate, focused on the correct media, and were collected at an acceptable frequency.				
Domain 6. Confounding	Wariahla Control							
Joinani O. Comounding	Metric 13	Confounding Variables	Medium	The organisms were collected from the wild and may have had pre-accumulated the test				
	Weute 15.	contounding variables	Weddulli	substance; the organisms were allowed to equilibrate to the laboratory for 4 days but no control/baseline concentrations were reported.				
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No effects to organism health were reported.				
Domain 7: Data Present	ation and Analysis							
	Metric 15:	Data Reporting	Medium	The analytical method was reported and appropriate; percent recovery was reported. Lipid normalized BCF or lipid content were not reported.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were described and applied appropriately.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Results	Medium	The results were acceptable based on the method however a lipid normalized value was not reported and no control or baseline measurements were reported for the organism which were collected from the natural environment; BCF may be incorrectly higher if				
				not corrected for baseline concentrations.				

Page 423 of 720

May 2025 Aquatic Bioconcentration ... continued from previous page **Study Citation:** Wofford, H. W., Wilsey, C. D., Neff, G. S., Giam, C. S., Neff, J. M. (1981). Bioaccumulation and metabolism of phthalate esters by oysters, brown shrimp, and sheepshead minnows. Ecotoxicology and Environmental Safety 5(2):202-210. Aquatic Bioconcentration **OECD Harmonized** 

Dibutyl Phthalate

**Template: HERO ID:** 

Domain

789995

**Overall Quality Determination** 

Metric

PUBLIC RELEASE DRAFT

**EVALUATION** 

Rating

High

Comments

Study Citation:	Wofford, H. W., Wilsey, C. D., Neff, G. S., Giam, C. S., Neff, J. M. (1981). Bioaccumulation and metabolism of phthalate esters by oysters, brown shrimp,							
OFCD Harmonized	and sheepshead mi	and sheepshead minnows. Ecotoxicology and Environmental Safety 5(2):202-210.						
Template:	Aquate Dioconcentration							
HERO ID:	789995							
			EXTRACTIO	ON				
Parameter		Data						
CASRN and Test Material		84-74-2; DBP						
Confidentiality, Type, and G	Juideline	None; Experimental; other: Not repo	orted					
Solvent, Reactivity, Storage,	, Stability	NR; NR; NR; NR						
Radiolabel, Source, State, P	urity	Carboxy-labeled C-14 dibutlylphtha	late (9.98 mCi/mmole)	); California Bionuclear Corporation (Sun Valley, California, labelled); Monsanto Com-				
		pany (St. Louis, MO, unlabeled); NH	R; NR Notes: Mix of la	abelled and unlabeled compounds				
Test Organism and Test Org	anism Details	Brown shrimp, Penaecus aztecus; Co	ollected from Galvestor	on Bay, Texas				
Lipid Content, Test Tempera	ature, pH, and Depu-	Not reported; Not reported; Not reported;	orted; Not applicable					
Media Type, TOC, and Salin	nity	other: Not reported: 20 to 30 0/00						
Dissolved Oxygen, Conduct	tivity, and Hardness	Not reported; Not reported						
Exposure Route, Elimination	n, and Nominal Mea-	Water; Not applicable; Nominal 100 ppb (10 ppb labelled, 0 ppb unlabeled) and 500 ppb (10 ppb labelled, 490 ppb unlabeled)						
surements Test Type, Test Temperature	e, and Test Condition	static; Not reported; Test solution allowed to equilibrate 30 minutes after dosing						
Duration, Parameter, and Sa	mpling Frequency	24 hours; Not Reported; Once						
Concentration		100 - 500 ppb						
Analytical Method and Ana	lytical Details	GC with electron capture detector and liquid scintillation counting; Organism samples homogenized 2x in Sorval Omni-Mixer with chloro-						
•		gorm:methanol, filtered, extracts combined;						
Rate Constant and Results p	er Recovery	Not reported; 90%						
Statistics, Basis, and Calculation	ation Basis	3-way ANOVA with General Linear Model; n=2; BCF not significantly different for species studies (p > F=0.5201), but was significantly different						
Deculta Value and Deculta D	Nataila	between phthalate esters studied (p > F=0.0179) and concentrations studied (p > F=0.0198); Whole organism; steady state						
Results value and Results D	Jetans	$DCF=2.9\pm0.1$ (100 pp0) and 50.0±5.4 (500 pp0); Biodegradability index (ratio of metabolites to unmetabolized diester, average of exposures):						
Metabolites, Reference, an	d Results Reference	Average of 100 and 500 ppb exposures: 6.7% unmetabolized, 19.1% monoester, 20.5% phthalic acid, 44.9% polar metabolites, 8.8% in residue;						
Substance	Not reported; Not reported							
			EVALUATIO					
Domain		Metric	EVALUATIO. Rating	Comments				
Domain 1: Test Substance	<u>به</u>	meure	Raung	Comments				
Bomain 1. Test Substance	Metric 1.	Test Substance Identity	High	The test substance was identified by name				
	Metric 2:	Test Substance Purity	Medium	The test substance was identified by name.				
		546544466 Fully	mountil					
Domain 2: Test Design								

 Metric 3:
 Study Controls
 Medium
 A baseline organism measurement was not conducted, control group was not explicitly included.

 Metric 4:
 Test Substance Stability
 High
 Test substance ratio of labelled to unlabeled compound and nominal concentrations were reported.

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		contin	ued from prev	vious page					
Study Citation:	Wofford, H. W., W and sheepshead m	Wofford, H. W., Wilsey, C. D., Neff, G. S., Giam, C. S., Neff, J. M. (1981). Bioaccumulation and metabolism of phthalate esters by oysters, brown shrimp, and sheepshead minnows. Ecotoxicology and Environmental Safety 5(2):202-210.							
OECD Harmonized	Aquatic Bioconcentration								
Template:	780005								
	189993								
р .			EVALUATIO	N					
Domain Domain 2: Test Conditi	iona.	Metric	Rating	Comments					
Domain 5. Test Conditi	Metric 5:	Test Method Suitability	High	The test method was appropriate for the test substance					
	Metric 6:	Testing Conditions	Medium	Only salinity was reported no other testing conditions were included					
	Metric 7:	Testing Consistency	High	Test set up was consistent across study groups					
	Metric 8:	System Type and Design	High	The system was allowed to equilibrate and was capable of maintaining test substance concentrations.					
Domain 4: Test Organi	sms								
Domain 1. Test organi	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.					
	Metric 10:	Sampling Methods	Medium	Organism species and source were reported, no other characteristics included.					
Domain 5: Outcome As	ssessment								
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining bioaccumula- tion.					
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate, focused on the correct media, and were collected at an acceptable frequency.					
Domain 6: Confoundin	Metric 13:	Confounding Variables	Medium	The organisms were collected from the wild and may have had pre-accumulated the test substance; the organisms were allowed to equilibrate to the laboratory for 4 days but no constraint descented to the substance.					
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No effects to organism health were reported.					
		*							
Domain 7: Data Presen	tation and Analysis Metric 15:	Data Reporting	Medium	The analytical method was reported and appropriate; percent recovery was reported.					
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were described and applied appropriately.					
Domain & Other									
Domain 8. Other	Metric 17:	Verification or Plausibility of Results	Medium	The results were acceptable based on the method however a lipid normalized value was not reported and no control or baseline measurements were reported for the organism which were collected from the natural environment; BCF may be incorrectly higher if not corrected for baseline concentrations.					
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.					
<b>Overall Quali</b>	ty Determina	ation	High						

Study Citation:	Wofford, H. W., W	Wofford, H. W., Wilsey, C. D., Neff, G. S., Giam, C. S., Neff, J. M. (1981). Bioaccumulation and metabolism of phthalate esters by oysters, brown shrimp,					
OECD Harmonized	and sheepshead minnows. Ecotoxicology and Environmental Safety 5(2):202-210. Aquatic Bioconcentration						
Template: HERO ID:	789995						
	107770	Εντραστιολι					
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, Type, and C	Juideline	None; Experimental; other: Not reported					
Solvent, Reactivity, Storage	, Stability	NR; NR; NR					
Radiolabel, Source, State, P	Purity	Carboxy-labeled C-14 dibutlylphthalate (9.98 mCi/mmole); California Bionuclear Corporation (Sun Valley, California, labelled); Monsanto Com- pany (St. Louis, MO, unlabeled); NR; NR Notes: Mix of labelled and unlabeled compounds					
Test Organism and Test Org	anism Details	Sheepshead minnow, Cyprinodon variegatus; Collected from Galveston Bay, Texas					
Lipid Content, Test Temper	ature, pH, and Depu-	Not reported; Not reported; Not reported; Not applicable					
ration Time Media Type TOC and Sali	nity	other: Not reported: 20 to 30 0/00					
Dissolved Oxygen, Conduct	tivity and Hardness	Not reported; Not reported					
Exposure Route, Eliminatio	n, and Nominal Mea-	Water: Not applicable: Nominal 100 ppb (10 ppb labelled, 0 ppb unlabeled) and 500 ppb (10 ppb labelled, 490 ppb unlabeled); data reported for					
surements	,	100 ppb only					
Test Type, Test Temperature	e, and Test Condition	static; Not reported; Test solution allowed to equilibrate 30 minutes after dosing					
Comments Duration, Parameter, and Sa	ampling Frequency	24 hours; Not Reported; Once					
Concentration		100 - 500 ppb					
Analytical Method and Analytical Details		GC with electron capture detector and liquid scintillation counting; Organism samples homogenized 2x in Sorval Omni-Mixer with chloro- gorm:methanol, filtered, extracts combined;					
Rate Constant and Results per Recovery		Not reported; 90%					
Statistics, Basis, and Calculation Basis		3-way ANOVA with General Linear Model; BCF not significantly different for species studies ( $p > F=0.5201$ ), but was significantly different between phthalate esters studied ( $p > F=0.0179$ ) and concentrations studied ( $p > F=0.0198$ ); Whole organism; steady state					
Results Value and Results D	Details	BCF=11.7 (100 ppb) and NR (500 ppb); Biodegradability index (ratio of metabolites to unmetabolized diester): 5.85					
Metabolites, Reference, an Substance	d Results Reference	13.0% unmetabolized, 28.2% monoester, 47.8% phthalic acid, 11.0% in residue; Not reported; Not reported					

	EVALUATION						
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	Medium	The test substance source but not purity was reported.			
Domain 2: Test Design							
	Metric 3:	Study Controls	Medium	A baseline organism measurement was not conducted, control group was not explicitly included.			
	Metric 4:	Test Substance Stability	High	Test substance ratio of labelled to unlabeled compound and nominal concentrations were reported.			
Domain 3: Test Condition	ons						

Continued on next page ...

#### ... continued from previous page **Study Citation:** Wofford, H. W., Wilsey, C. D., Neff, G. S., Giam, C. S., Neff, J. M. (1981). Bioaccumulation and metabolism of phthalate esters by oysters, brown shrimp, and sheepshead minnows. Ecotoxicology and Environmental Safety 5(2):202-210. **OECD Harmonized** Aquatic Bioconcentration **Template: HERO ID:** 789995 **EVALUATION** Domain Metric Rating Comments Metric 5: Test Method Suitability High The test method was appropriate for the test substance. Metric 6: **Testing Conditions** Medium Only salinity was reported, no other testing conditions were included. Metric 7: Testing Consistency High Test set up was consistent across study groups. Metric 8: System Type and Design High The system was allowed to equilibrate and was capable of maintaining test substance concentrations. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology N/A The metric is not applicable to this study type. Metric 10: Sampling Methods Medium Organism species and source were reported, no other characteristics included. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology was appropriate for determining bioaccumulation. Metric 12: High Test Substance Purity Sampling methods were appropriate, focused on the correct media, and were collected at an acceptable frequency. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables Medium The organisms were collected from the wild and may have had pre-accumulated the test substance; the organisms were allowed to equilibrate to the laboratory for 4 days but no control/baseline concentrations were reported. Values for 500 ppb exposure were not reported and no explanation was given for why. Metric 14: Health Outcomes Unrelated to High No effects to organism health were reported. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium The analytical method was reported and appropriate; percent recovery was reported. Lipid normalized BCF or lipid content were not reported. Metric 16: Statistical Methods and High Statistical methods were described and applied appropriately. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of Medium The results were acceptable based on the method however a lipid normalized value was not reported and no control or baseline measurements were reported for the organism Results which were collected from the natural environment; BCF may be incorrectly higher if not corrected for baseline concentrations. Metric 18: QSAR Models N/A The metric is not applicable to this study type. **Overall Quality Determination** High

Study Citation: OECD Harmonized Template: HERO ID:	Yan, H., Ye, C., Yin, C. (1995). Kinetics of phthalate ester biodegradation by Chlorella pyrenoidosa. Environmental Toxicology and Chemistry 14(6):931- 938. Aquatic Bioconcentration					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, Type, and G	Buideline	None; Experimental; other: Non-guideline study evaluating the concentration of test substance in water and algae				
Solvent, Reactivity, Storage,	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	urity	NR; NR; NR				
Test Organism and Test Org	anism Details	Chlorella pyrenoidosa; From the institute of Hydrobiology, Academia Sinica, China				
Lipid Content, Test Tempera	ature, pH, and Depu-	Not reported; 24°C; 7.0; Not reported				
ration Time Media Type TOC and Salir	nity	other: Not reported: Not reported				
Dissolved Oxygen Conduct	tivity and Hardness	Not reported: Not reported: Not reported				
Exposure Route Elimination	n and Nominal Mea-	algae grown in media containing test substance: Not reported: measured				
surements	n, and rominal wea	argae grown in media containing test substance, rive reported, medsared				
Test Type, Test Temperature	e, and Test Condition	other; 24°C; medium-PES solution				
Comments Duration Parameter and Sa	mpling Frequency	96 hours, other, 1 time				
Concentration		7 mg/l				
Analytical Method and Analytical Details		HPLC: Not applicable:				
Rate Constant and Results per Recovery		Not applicable: 81 5%				
Statistics Basis and Calculation Basis		graph of accumulation data presented; whole body w.w.; other				
Results Value and Results D	Details	BCF=4077: changed over course of time and algae growth				
Metabolites, Reference, an Substance	d Results Reference	Not reported; Not reported; Not reported				

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Substa	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity were not reported but was identified by analytical
				means.
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Controls were included containing media without algae.
	Metric 4:	Test Substance Stability	Medium	Some details regarding the test substance stability, homogeneity, preparation and storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.

Domain 3: Test Conditions

Continued on next page ...

#### ... continued from previous page **Study Citation:** Yan, H., Ye, C., Yin, C. (1995). Kinetics of phthalate ester biodegradation by Chlorella pyrenoidosa. Environmental Toxicology and Chemistry 14(6):931-938. **OECD Harmonized** Aquatic Bioconcentration Template: **HERO ID:** 1316261 **EVALUATION** Metric Comments Domain Rating Metric 5: Test Method Suitability High This metric met the criteria for high confidence as expected for this type of study. Metric 6: **Testing Conditions** High This metric met the criteria for high confidence as expected for this type of study. Metric 7: Testing Consistency Medium Details were omitted; however, the lack of data is not likely to hinder the interpretation of the results. Metric 8: System Type and Design Medium Details were omitted; however, the lack of data is not likely to hinder the interpretation of the results. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology N/A The metric is not applicable to this study type. Metric 10: Sampling Methods Medium The test organism source was reported. The species is not routinely used for similar study types. Domain 5: Outcome Assessment Metric 11: Test Substance Identity Medium Details were omitted; however, the lack of data is not likely to hinder the interpretation of the results. Metric 12: Test Substance Purity Medium Some sampling details were omitted; however, the lack of data is not likely to hinder the interpretation of the results. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables High Sources of variability and uncertainty in the measurements were reported. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting High This metric met the criteria for high confidence as expected for this type of study. Metric 16: Statistical Methods and High This metric met the criteria for high confidence as expected for this type of study. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of High The study results were reasonable. Results QSAR Models Metric 18: N/A The metric is not applicable to this study type. **Overall Quality Determination** High

Study Citation: OECD Harmonized	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment. Terrestrial Bioconcentration					
Template: HERO ID:	5676112					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Not Reported				
Confidentiality, EndPoint, T	ype,	none; bioaccumulation: terrestrial; qualitative; other: not specified				
Guideline Solvent, Reactivity, Storage, Stability		Not Reported; Not Reported; Not Reported; Not Reported				
Radiolabel, Source, State, P	urity	Not Reported; Not Reported; Not Reported; Not Reported				
Test Organism and Test Org	anism Details	Not Reported; Not Reported				
Lipid Content, Test Tempera	ature, pH, and Depu-	Not Reported; Not Reported; Not Reported; Not Reported				
ration Time Moisture, TOC, and Test Conditions Comments		Not Reported; Not Reported; Not Reported				
Nominal Measured and Tim	e Plateau	Not Reported; Not Reported				
Duration, Parameter, and Sampling Frequency		Not Reported; Not Reported; Not Reported				
Analytical Method and Analytical Details		Not Reported; Not Reported;				
Results Value, Result Type, and Results Standard		dose-dependent uptake of di-n-butyl phthalate from soil observed in corn, soybean, and wheat seedlings; Not Reported; Not Reported				
Deviation Calculation Basis and Basis		Not Reported; Not Reported				
Elimination, Metabolites, K Statistics	inetic Parameter, and	Not Reported; Not Reported; Not Reported; Not Reported				

			EVALUATION				
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified.			
	Metric 2:	Test Substance Purity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
Domain 2: Test Design							
	Metric 3:	Study Controls	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
	Metric 4:	Test Substance Stability	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
Domain 3: Test Condition	ons						
	Metric 5:	Test Method Suitability	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
	Metric 6:	Testing Conditions	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.			
Continued on next page							

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HERO ID: 5676112 Table: 1 of 1

	continued from previous page			
Study Citation:	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.			
OECD Harmonized	Terrestrial Bioconcentration			
Template:	5676110			
HERO ID:	30/0112			
<b>D</b>		H	EVALUATION	
Domain		Metric	Rating	Comments
	Metric /:	Testing Consistency	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 8:	System Type and Design	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
Domain 4: Test Organis	sms			
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study.
	Metric 10:	Sampling Methods	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
Domain 5: Outcome As	ssessment			
	Metric 11:	Test Substance Identity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 12:	Test Substance Purity	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
Domain 6: Confoundin	g/Variable Control			
	Metric 13:	Confounding Variables	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study.
Domain 7: Data Presen	tation and Analysis			
	Metric 15:	Data Reporting	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	Limited detail reported in this secondary source; additional detail may be in source cited.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study.
<b>Overall Quality Determination</b>			Medium	

\* Related References: Source cited: Shea et al 1982 HERO ID 790006 (not in distiller at time of extraction)
Study Citation: OECD Harmonized	Cai, Q. Y., Xiao, P. Y., Zhao, H. M., Lü, H., Zeng, Q. Y., Li, Y. W., Li, H., Xiang, L., Mo, C. H. (2017). Variation in accumulation and translocation of di-n-butyl phthalate (DBP) among rice (Oryza sativa L.) genotypes and selection of cultivars for low DBP exposure. Environmental Science and Pollution Research 24(8):7298-7309. Terrestrial Bioconcentration			
HERO ID:	3515116			
		EXTRACTION		
Parameter		Data		
CASRN and Test Material		84-74-2; DBP		
Confidentiality, EndPoint, T	ype,	None; bioaccumulation: terrestrial; Experimental; other: Not reported		
Guideline Solvent Reactivity Storage	Stability	A cetone: NR · NR · NR		
Radiolabel, Source, State, Pi	urity	NA: Tianiin Chemical Reagent Factory. China: Liquid: >98.5%		
Test Organism and Test Orga	anism Details	7 non-hybrid cultivars and 13 hybrid of rice grown in Guangdong Province, China; 15 seedlings (3 plants/pot)		
Lipid Content, Test Tempera	ature, pH, and Depu-	Not reported; Not reported; Not reported; Not reported		
ration Time Moisture, TOC, and Test Conditions Comments Nominal Measured and Time Plateau		Flooded conditions, 2-3 cm water above soil surface; 30.2 g/kg organic matter; Study conducted with 4 replicates. Seedlings transplanted to pots with contaminated soil mixture and maintained in a glass greenhouse 20 mg/kg dw in soil; Not reported		
Duration, Parameter, and Sa	mpling Frequency	Ripening stage; Not Reported; Tillering, jointing, flowing, and ripening life stages		
Analytical Method and Analytical Details		GC-MS in selective ion monitoring mode, fused-silica capillary column used for separation. Detection limit: 2.5 ug/kg; Samples extracted by ultrasonic-assisted extraction following USEPA method 3450C. Recovery (plant): 80.8 - 90.3%;		
Results Value, Result Type, and Results Standard Deviation		Approx. 0.105 - 0.4 (root), 0.02 - 0.14 (stem), 0.1 - 0.495 (leaf), and 0.005 - 0.255 (grain); BCF; Not Reported		
Calculation Basis and Basis	inetic Parameter and	steady state; organ d.w. Not reported: Not reported: Not applicable: ANOVA performed using Statistical Analysis System v. 8.2		
Elimination, Metabolites, Kinetic Parameter, and Statistics		The reported, the reported, the applicable, Alvo vA performed using Statistical Analysis System v. 6.2		

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
	Metric 2:	Test Substance Purity	High	The test substance source and purity was reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	Medium	Controls were not explicitly included, however background pollutant analysis in soil was reported (0.19 mg/kg)	
	Metric 4:	Test Substance Stability	Medium	Test substance preparation was reported, storage conditions were not reported.	
Domain 3: Test Condition	ons				
	Metric 5:	Test Method Suitability	High	The method was suitable for the test substance.	
	Metric 6:	Testing Conditions	Medium	Temperature, pH, and study duration in days were not reported, soil characteristics were reported.	
Continued on next page					

		contin	ued from pre	vious page		
Study Citation:	Cai, Q. Y., Xiao, di-n-butyl phthala	Cai, Q. Y., Xiao, P. Y., Zhao, H. M., Lü, H., Zeng, Q. Y., Li, Y. W., Li, H., Xiang, L., Mo, C. H. (2017). Variation in accumulation and translocation of di-n-butyl phthalate (DBP) among rice (Oryza sativa L.) genotypes and selection of cultivars for low DBP exposure. Environmental Science and Pollution				
	Research 24(8):72	298-7309.				
OECD Harmonized	Terrestrial Biocon	ncentration				
Template:						
HERO ID:	3515116					
		I	EVALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 7:	Testing Consistency	High	Study conducted consistently across samples and study groups.		
	Metric 8:	System Type and Design	High	Equilibrium was established and the system was capable of maintaining test substance concentrations.		
Domain 4: Test Organis	sms					
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.		
	Metric 10:	Sampling Methods	High	Test organism strains were reported and obtained from a reliable source (universities in China)		
Domain 5: Outcome As	sessment					
	Metric 11:	Test Substance Identity	Medium	The outcome assessment addressed the outcomes of interest but study authors did not calculate BCFs.		
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate.		
Domain 6: Confounding	v/Variable Control					
Domain 0. Comoundang	Metric 13.	Confounding Variables	High	Variability in measurements was addressed by statistical methods		
	Metric 14:	Health Outcomes Unrelated to	High	No differences in organism health or attrition were reported		
		Exposure	8			
Domain 7: Data Present	tation and Analysis					
	Metric 15:	Data Reporting	Medium	Raw data only reported graphically. Limits of detection and extraction recovery re- ported. Analytical method appropriate. Lipid content not reported.		
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods reported and conducted appropriately.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	High	The results were reasonable.		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.		
<b>Overall Quali</b>	ty Determin	ation	High			

Study Citation:	Cai, Q., Mo, C., Wu, Q., Zeng, Q. (2008). Polycyclic aromatic hydrocarbons and phthalic acid esters in the soil-radish (Raphanus sativus) system v					
OFCD Harmonized	sewage sludge and compost application. Bioresource Technology 99(6):1830-1836.					
Tomplata:	Terresular Dioconcentration					
HERO ID:	698314					
	0,0011					
_		EXTRACTION				
Parameter		Data				
CASRN and Test Material	l	84-74-2; Dibutyl phthalate				
Confidentiality, EndPoint, Type, Guideline		None; bioaccumulation: terrestrial; Experimental; other: BCF determined for radishes grown in a mixture of soil, sewage sludge, and sludge compost				
Solvent, Reactivity, Storag	ge, Stability	Extracted from plant with ether and acetone/DCM; NR; NR				
Radiolabel, Source, State, Purity		NA; Sewage sludge from Datansha Wastewater Treatment Plant in Guangzhou, China, and sludge compost source not reported; Solid; NA Notes: Composite stock standard solution 1000 µg/mL, 99.8% purity was used				
Test Organism and Test Organism Details		other; Raphanus sativus - radish				
Lipid Content, Test Temperature, pH, and Depuration Time		Not reported; Not reported; 5.4, 6.5, and 7.2 per media respectively; Not applicable				
Moisture, TOC, and Test C	Conditions Comments	70% water holding capacity; 4.6, 173, 235 g/kg per media respectively; Mixture of soil, sewage sludge, and sludge compost				
Nominal Measured and Time Plateau		control (100% soil), application rates of 10, 20, and 40 g/kg soil of sewage sludge (3.7 mg/kg DBP), and application rate of 10 g/kg soil sludge compost (0.76 mg/kg DBP); Not reported				
Duration, Parameter, and Sampling Frequency		64 days; other; Once, at study termination				
Analytical Method and Analytical Details		Gas chromatography - mass spectrometry; Limits of detection reported in other study;				
Results Value, Result Type, and Results Standard Deviation		0.19 (shoot), 0.16(root); BCF; Not Reported				
Calculation Basis and Bas	is	steady state; organ d.w.				
Elimination, Metabolites, Kinetic Parameter, and Statistics		Not reported; Not reported; Not reported; Not reported				

	EVALUATION					
Domain		Metric	Rating	Comments		
Domain 1: Test Substance	e					
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.		
	Metric 2:	Test Substance Purity	High	The test substance source was reported, in addition to the source and purity of internal standards		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	A concurrent negative control (soil growth medium only) was included and tested valid.		
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported and appropriate for the study.		
Domain 3: Test Conditio	ns					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Test conditions were reported and appropriate for the method. Some reporting omissions during the study included plant lipid content and soil parameters such as CEC, however this is not expected to have a significant impact on study results.		
Continued on next page						

		continu	ued from pre	vious page			
Study Citation: OECD Harmonized	Cai, Q., Mo, C., sewage sludge an Terrestrial Biocor	Cai, Q., Mo, C., Wu, Q., Zeng, Q. (2008). Polycyclic aromatic hydrocarbons and phthalic acid esters in the soil-radish (Raphanus sativus) system with sewage sludge and compost application. Bioresource Technology 99(6):1830-1836. Terrestrial Bioconcentration					
Template:							
HERO ID:	698314						
		Ι	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 7:	Testing Consistency	High	Test conditions were consistent across study groups and were reported.			
	Metric 8:	System Type and Design	High	The study system was assumed to be at equilibrium and capable of maintaining sub- stance concentrations.			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.			
	Metric 10:	Sampling Methods	High	Test organism information was reported and is routinely used for similar study types.			
Domain 5: Outcome As	ssessment	Track Carbonnes Identitat	TT: -1-				
	Metric 11:	Test Substance Identity	High	interest.			
	Metric 12:	Test Substance Purity	High	The study used sampling methods that address the outcomes of interest and are widely accepted.			
Domain 6: Confoundin	g/Variable Control						
Domain 0. Comoundan	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty were accounted for in data evaluation and were not likely to influence the outcome assessment.			
	Metric 14:	Health Outcomes Unrelated to	High	There were multiple study groups and there were no reported differences among the			
		Exposure		study groups in organism attrition.			
Domain 7: Data Presen	tation and Analysis						
	Metric 15:	Data Reporting	Medium	Analytical detection limits for the test substance were reported in other studies, and the lipid content of the test organism was not reported, however these omissions are not expected to significantly impact the study results.			
	Metric 16:	Statistical Methods and	High	Statistical methods and calculations were applied appropriately.			
		Kinetic Calculations					
Domain & Other							
Domain 8: Other	Metric 17:	Verification or Plausibility of	High	The results were plausible.			
		Results	e				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Ouali</b>	tv Determin	ation	High				
•	•		<del>0</del> -				

\* Related References: Cited in ECHA

Study Citation:	Chi, J., Gao, J. (20	15). Effects of Potamogeton crispus Lbacteria interactions on the removal of phthalate acid esters from surface water. Chemosphere		
OECD Harmonized	Terrestrial Bioconc	entration		
Template:	2510707			
HERO ID:	2510797			
		EXTRACTION		
Parameter		Data		
CASRN and Test Material		84-74-2; Dibutyl phthalate		
Confidentiality, EndPoint, Type,		None; bioaccumulation: terrestrial; Experimental; other: Removal of phthalate acid esters from surface water in a plant-water system study		
Guideline Salvant Basstivity Starson Stability		Absolute athenol: NP: stored in a refrigerator ( $A$ deg. $C$ ) prior to use: NP		
Delicity Reactivity, Storage, Stability		NDs Compared a solutions and a render to also play to day. The		
Radiolabel, Source, State, Purity		NK, signa, sock solutions prepared in absolute cutation (2 g/L); 99% Notes: DBP		
Test Organism and Test Organism Details		ouner; Potamogeton crispus L. (ponaweed)		
Lipid Content, Test Temperature, pH, and Depu-		Not reported; Not reported; 7.9 (before) 7.7 (after); Not reported		
ration Time Moisture, TOC, and Test Conditions Comments		Not reported; Not reported; Surface water from Haihe River (not autoclaved)		
Nominal Measured and Tim	e Plateau	Measured: Not reported		
Duration, Parameter, and Sa	mpling Frequency	10 days; other; Not reported		
Analytical Method and Ana	lytical Details	GC-FID; MDL: 1 ug/L (water), 0.01 mg/kg (plant, fresh wt basis); average recovery: 96.3% (water), 94.1% (plant);		
Results Value, Result Type.	and Results Standard	4.43-8.04 L/kg (Plant concentration factor): BCF: Not Reported		
Deviation				
Calculation Basis and Basis		other; not specified		
Elimination, Metabolites, Kinetic Parameter, and Statistics		21.4% of DBP transferred from water to plants; 5.1% was retained in the plant and 94.9% was degraded.; Not reported; Plant uptake: 0.052/d, plant release: 0.010/d, microbial degradation in water: 0.133/d, plant degradation: 0.945/d; Data compared by ANOVA; comparisons of means by Duncan's test; significance value $P < 0.05$		

	EVALUATION				
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	Medium	Controls were included to assess non-autoclaved water and P. crispus, non-autoclaved water and no P. crispus, and an abiotic control with autoclaved water and no P. crispus.	
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported.	
Domain 3: Test Condition	ons				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	Medium	There were omissions in testing conditions and monitoring thereof; however, sufficient data were reported to determine that the deviations and omissions were not likely to have a substantial impact on study results.	
	Metric 7:	Testing Consistency	High	Test conditions were consistent. The conditions of the exposure were documented.	
Continued on next page					

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		contin	ued from prev	vious page			
Study Citation:	Chi, J., Gao, J. (2 119:59-64.	2015). Effects of Potamogeton crispus L	bacteria intera	ctions on the removal of phthalate acid esters from surface water. Chemosphere			
OECD Harmonized	Terrestrial Biocor	Terrestrial Bioconcentration					
Template:	2510707						
HERO ID:	2510797						
Damain		] Matria	EVALUATIO	N			
Domain	Matric 8:	Metric System Type and Design	Madium	Comments			
	Metric 8.	System Type and Design	Wiedium	impact on study results.			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.			
	Metric 10:	Sampling Methods	Medium	axenic P. crispus was rinsed with sterile distilled water and placed in the remaining flasks with non-autoclaved water sample for 3 d; P. crispus containing a consortium of associated microorganisms was used for the study; therefore biodegradation and/or uptake via bacteria cannot be not ruled out.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.			
Domain 7. Data Present	tation and Analysis	•					
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency and percent recovery were reported.			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the datasets.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	Medium	The results are reasonable.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Quali</b>	ty Determin	ation	High				

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Study Citation:	Hu, X. Y., Wen, B., Zhang, S., Shan, X. Q. (2005). Bioavailability of phthalate congeners to earthworms (Eisenia fetida) in artificially contaminated soils.						
<b>OECD Harmonized</b>	Terrestrial Bioconcentration						
Template:							
HERO ID:	481534						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Di-n-butyl phthalate					
Confidentiality, EndPoint, Type,		None; bioaccumulation: terrestrial; Experimental; other: Biota-to-soil accumulation factor (BSAF) at steady state conditions					
Solvent, Reactivity, Storage, Stability		NR; NR; NR					
Radiolabel, Source, State, Purity		NR; AccuStandard Inc (New Haven, CT, USA); NR; pesticide grade Notes: DBP					
Test Organism and Test Organism Details		Eisenia fetida - [Annelida]; Earthworms from Agricultural University of China (Beijing, China)					
Lipid Content, Test Temperature, pH, and Depu-		Not reported; 22°C; Soil 1 = 7.58; Soil 2= 8.28; 24 hours					
nation Time Moisture, TOC, and Test Conditions Comments		40% water holding capacity; organic matter: Soil 1 = 1.35 Soil 2 = 4.53%; 5.0, 10.0, 20.0, 40.0 and 50.0 mg/kg added to 2 Chinese agricultural					
Nominal Macaunad and Tim	a Diataon	and forest soils					
Nominal Measured and Time Plateau		Not reported; 15 days was selected to assess the near equilibrium relationship between the concentrations of phinalates in soils and those in earthworms.					
Duration, Parameter, and Sa	mpling Frequency	15 days; other; At 5, 10, 15, 20, and 30 days worms were sampled for uptake kinetics.					
Analytical Method and Analytical Details		GC-ECD; LOD = 10.29 ug/kg;					
Results Value, Result Type, and Results Standard		0.307 (soil 1); 0.242 (soil 2); BSAF; Not Reported					
Deviation Calculation Basis and Basis		steady state: not specified					
Elimination, Metabolites, K Statistics	inetic Parameter, and	BSAF = ku/keku: 0.041/day Ke: 0.136/day (soil 1) ku: 0.033/day Ke: 0.138/day (soil 2); Not reported; ku: uptake rate constant (d-1). Ke: elimination rate constant (d-1).; Not reported					

			EVALUATION	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.		
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.		
Domain 2: Test Design	Domain 2: Test Design					
	Metric 3:	Study Controls	Medium	Concurrent control groups were not included; however, the lack of data was not likely to have a substantial impact on study results.		
	Metric 4:	Test Substance Stability	High	The test substance stability, homogeneity and preparation were reported, and were appropriate for the study		
Domain 3: Test Conditi	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.		
Continued on next page						

## ... continued from previous page **Study Citation:** Hu, X. Y., Wen, B., Zhang, S., Shan, X. Q. (2005). Bioavailability of phthalate congeners to earthworms (Eisenia fetida) in artificially contaminated soils. Ecotoxicology and Environmental Safety 62(1):26-34. **OECD Harmonized** Terrestrial Bioconcentration **Template: HERO ID:** 481534 **EVALUATION** Domain Metric Rating Comments Metric 8: System Type and Design High The test system was appropriate. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology N/A The metric is not applicable to this study type. Metric 10: Sampling Methods High The test organism information was reported. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology addressed or reported the intended outcome of interest. Metric 12: Test Substance Purity High Some sampling details were omitted but this was unlikely to impact the study results. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables N/A The metric is not applicable to this study type. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting High This metric met the criteria for high confidence as expected for this type of study. Statistical Methods and Metric 16: High Some detail lacking; however that statistical analysis reported is acceptable. Kinetic Calculations Domain 8: Other Verification or Plausibility of Metric 17: High The study results were reasonable. Results Metric 18: **QSAR** Models N/A The metric is not applicable to this study type. **Overall Quality Determination** High

Study Citation:	Hu, X. Y., Wen, B., Zhang, S., Shan, X. Q. (2005). Bioavailability of phthalate congeners to earthworms (Eisenia fetida) in artificially contaminated soils.					
<b>OECD Harmonized</b>	d Terrestrial Bioconcentration					
Template:						
HERO ID:	481534					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Di-n-butyl phthalate				
Confidentiality, EndPoint, T	Type,	None; bioaccumulation: terrestrial; Experimental; other: Biota-to-soil accumulation factor (BSAF) at steady state conditions				
Guideline		מו מו מו מו				
Solvent, Reactivity, Storage, Stability						
Radiolabel, Source, State, Purity		NR; Accustandard Inc (New Haven, CI, USA); NR; pesticide grade Notes: DBP				
Test Organism and Test Organism Details		Eisenia fetida - [Annelida]; Earthworms from Agricultural University of China (Beijing, China)				
Lipid Content, Test Temperature, pH, and Depu-		Not reported; 22°C; Soil 1 = 7.58; Soil 2= 8.28; 24 hours				
ration Time						
Moisture, TOC, and Test Conditions Comments		40% water holding capacity; organic matter: Soli I = 1.55 Soli 2 = 4.55%; 5.0, 10.0, 20.0, 40.0 and 50.0 mg/kg added to 2 Chinese agricultural				
Nominal Measured and Tim	ne Plateau	and forest solis Not reported: 15 days was selected to assess the near equilibrium relationship between the concentrations of phthalates in soils and those in				
		earthworms				
Duration, Parameter, and Sampling Frequency		15 days; other; At 5, 10, 15, 20, and 30 days worms were sampled for uptake kinetics.				
Analytical Method and Ana	lytical Details	GC- $ECD$ ; $LOD = 10.29  ug/kg$ ;				
Results Value, Result Type,	and Results Standard	0.23-30 (soil 1): 0.18-0.23 (soil 2): range from 5 test concentrations: BSAF: Not Reported				
Deviation						
Calculation Basis and Basis	1	steady state; not specified				
Elimination, Metabolites, Kinetic Parameter, and Statistics		BSAF = Cworm/Csoil^s (s = 1.05); Not reported; linear regression analysis of logCworm versus logCsoil; Not reported				

	EVALUATION						
Domain		Metric	Rating	Comments			
Domain 1: Test Substa	ince						
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.			
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.			
Domain 2: Test Design	1						
	Metric 3:	Study Controls	Medium	Concurrent control groups were not included; however, the lack of data was not likely to have a substantial impact on study results.			
	Metric 4:	Test Substance Stability	High	The test substance stability, homogeneity and preparation were reported, and were appropriate for the study			
Domain 3: Test Condi	tions						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.			
	Metric 8:	System Type and Design	High	The system was appropriate.			

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		continu	ed from pre	vious page				
Study Citation:	Hu, X. Y., Wen, B Ecotoxicology and	Hu, X. Y., Wen, B., Zhang, S., Shan, X. Q. (2005). Bioavailability of phthalate congeners to earthworms (Eisenia fetida) in artificially contaminated soils. Ecotoxicology and Environmental Safety 62(1):26-34.						
<b>OECD Harmonized</b>	Terrestrial Biocon	centration						
Template:								
HERO ID:	481534							
		E	VALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 4: Test Organis	sms							
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	High	The test organism information was reported.				
Domain 5: Outcome As	ssessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	Some sampling details were omitted but this was unlikely to impact the study results.				
Domain 6: Confounding	g/Variable Control							
·	Metric 13:	Confounding Variables	N/A	The metric is not applicable to this study type.				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.				
		Exposure						
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.				
	Metric 16:	Statistical Methods and	High	Some detail lacking; however that statistical analysis reported is acceptable.				
		Kinetic Calculations						
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Quali	ty Determina	ation	High					

Study Citation:	Ji, L. L., Deng, L.,	P (2016). Influence of carbon nanotubes on dibutyl phthalate bioaccumulation from contaminated soils by earthworms.						
OECD Harmonized	Terrestrial Bioconc	Terrestrial Bioconcentration						
Template:	2502772							
HERO ID:	3502662							
		EXTRACTION						
Parameter		Data						
CASRN and Test Material		84-74-2; DBP						
Confidentiality, EndPoint, T	ype,	None; bioaccumulation: terrestrial; Experimental; other: Not reported						
Guideline	Stability	A astone 2.02 mms1/L ND. ND.						
D l' 1 1 1 0 0 0 0	, Stability	Acetone, 2.92 mmol/L; NK; NK; NK						
Radiolabel, Source, State, P	urity	NA; ITC, Snangnai, China; Liquia; >9/%						
Test Organism and Test Organism Details		Eisenia fetida - [Annelida]; $n = 10$ Obtained from agricultural field in Jurong, Jiangsu Province, China, domesticated in plastic box > 7 d before experiment						
Lipid Content, Test Temper ration Time	ature, pH, and Depu-	Not reported; Room temperature; Not reported; 24 hours						
Moisture, TOC, and Test Co	onditions Comments	Not reported; Not reported; Soil samples collected from Rugao Jiangsu Province spiked with the test solution and thoroughly mixed, organisms						
		added and jars closed with poriferous in foil cap, systems kept in the dark without additional feeding. Experiments run in triplicate.						
Nominal Measured and Tim	ne Plateau	65 mg/kg in soil (measured); Not reported						
Duration, Parameter, and Sa	impling Frequency	21 days; Not Reported; 3, 7, 14, and 21 d						
Analytical Method and Ana	lytical Details	HPLC-UV vis; Dried soil example extracted by rotary mixed and ultrasonic extraction into methanol; dried organism powder samples extracted by ultrasonic extraction into methanol, filtered before analysis;						
Results Value, Result Type, and Results Standard		0.460; BSAF; Not Reported						
Deviation								
Calculation Basis and Basis		kinetic; not specified						
Elimination, Metabolites, K	inetic Parameter, and	Elimination by organism in soil rate constant: $0.310 \pm 0.074$ / d; Not reported; Uptake of pollutant from soil rate constant: $0.143 \pm 0.020$ g/g d;						
Statistics		inot reported						

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substar	ice					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance was reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	A concurrent control was included, the results of which were not explicitly reported; this is not expected to have a significant impact on study results.		
	Metric 4:	Test Substance Stability	Medium	Test substance stock concentration and preparation into soil was reported, storage condi- tions were not reported.		
Domain 3: Test Conditi	ons					
	Metric 5:	Test Method Suitability	High	The method was suitable for the test substance.		
	Metric 6:	Testing Conditions	Medium	Many test conditions were not reported (pH, temperature, soil moisture).		
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples and study groups.		
Continued on next page						

		continu	ued from pre	vious page				
Study Citation: OECD Harmonized Template:	Ji, L. L., Deng, L., iP (2016). Influence of carbon nanotubes on dibutyl phthalate bioaccumulation from contaminated soils by earthworms. Terrestrial Bioconcentration							
HERO ID:	3502662							
		I	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 8:	System Type and Design	High	Equilibrium was established and the system was capable of maintaining test substance concentrations.				
Domain 4: Test Organis	sms							
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	Medium	Test organism species and non-commercial source were reported, no other organism details were reported.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the outcomes of interest.				
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and rates were able to be calculated.				
Domain 6: Confounding	g/Variable Control							
·	Metric 13:	Confounding Variables	High	Variability was addressed through statistical measures between samples.				
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No differences in organism health were reported.				
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	Medium	No raw data included, extraction efficiency and limits of quantification not reported, an- alytical procedures section had grammatical errors and was not clear. Lipid normalized value was not reported.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Kinetic calculations were described and applied appropriately.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The results were reasonable.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
<b>Overall Quali</b>	ty Determin	ation	High					

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Study Citation:	Li, Y.,an, Huang, G., Gu, H.,ua, Huang, Q., Lou, C., Zhang, L.,ei, Liu, H. (2018). Assessing the Risk of Phthalate Ester (PAE) Contamination in Soils and						
<b>OECD Harmonized</b>	centration						
Template:	5041214						
HERO ID:	5041214						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; DnBP					
Confidentiality, EndPoint,	Туре,	None; bioaccumulation: terrestrial; Experimental; other: Not applicable; bioaccumulation in soil-grain systems					
Solvent, Reactivity, Storag	ve. Stability	NA· NR· NR					
Radiolabel, Source, State,	Purity	NA; Reclaimed water from Gaobeidian Sewage Treatment Plant and groundwater; NA; NA Notes: Analytical standard obtained from Beijing					
		Bailingwei Technologies Co. Ltd. Beijing, China, mixture of 6 PAEs each at 2000 mg/L					
Test Organism and Test Or	rganism Details	Winter wheat, Triticum aestivum L.; Varieties: Jimai (2015 only), Zhongmai, Shimai, Nongda, Shifu, Lunxuan (2016 only)					
Lipid Content, Test Tempe	erature, pH, and Depu-	Not reported; 11.0 - 12.0°C (mean annual); 7.2 - 7.7 (reclaimed water), 7.6- 8.3 (groundwater); Not applicable					
Moisture, TOC, and Test C	Conditions Comments	Not reported; Not reported; Plants irrigated at depth 75 - 160 mm with reclaimed water, groundwater or a 1:1 mixture of reclaimed water and					
		groundwater four times for the 2015 harvest and 6 times for the 2016 harvest					
Nominal Measured and Tin	me Plateau	PAE concentration 2.63 - 3.43 ug/L (reclaimed water), 2.01 - 2.03 ug/L (groundwater); Resulting DnBP in topsoil(2015 and 2016): 2.15 and 2.53 (reclaimed), 3.09 and 3.28 (mix), 2.32 and 3.61 (groundwater) mg/kg; Not applicable					
Duration, Parameter, and S	Sampling Frequency	Planting until Harvest: October 2014 to June 2015 and October 2015 to June 2016; Not Reported; Once, crop harvest					
Analytical Method and Analytical Details		GC-MS operated on electron impact and selective ion monitoring mode; LOD 0.032 - 0.191 ug/kg; Soil Soxhlet extracted with acetone and methyl alcohol, grain Soxhlet extracted with n-hexane; extracts dehydrated and concentrated, flowed through anhydrous Na2SO4, concentrated under N2 stream and by rotary evaporator; recovery 70-120%;					
Results Value, Result Type, and Results Standard		0.89 and 0.42 (reclaimed water), 0.80 and 0.33 (mixed water), 0.91 and 0.43 (ground water); BCF; Not Reported					
Deviation							
Calculation Basis and Basi	18	steady state; edible fraction					
Elimination, Metabolites, Kinetic Parameter, and Statistics		Not applicable; Not reported; Not applicable; IBM SPSS Statistics software package and Microsoft Excel; ANOVA and LSD and 5% level to determine significant differences; no significant effects of reclaimed groundwater					

EVALUATION							
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	High	The source of the reclaimed water and groundwater was reported.			
Domain 2: Test Design	Domain 2: Test Design						
	Metric 3:	Study Controls	Medium	Controls were not explicitly included.			
	Metric 4:	Test Substance Stability	Medium	Irrigation water preparation or storage was not reported.			
Domain 3: Test Condition	ons Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
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## ... continued from previous page **Study Citation:** Li, Y., an, Huang, G., Gu, H., ua, Huang, Q., Lou, C., Zhang, L., ei, Liu, H. (2018). Assessing the Risk of Phthalate Ester (PAE) Contamination in Soils and Crops Irrigated with Treated Sewage Effluent. Water 10(8):999. **OECD Harmonized** Terrestrial Bioconcentration **Template: HERO ID:** 5041214 **EVALUATION** Domain Metric Rating Comments Metric 6: Testing Conditions Medium Characteristics of the irrigation water were reported (pH), soil moisture and other characteristics were not reported but this is not likely to impact study results. Metric 7: Testing Consistency High Test conditions were consistent across study groups. System Type and Design Metric 8: High Agricultural field studies can be assumed to be in dynamic equilibrium. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology N/A The metric is not applicable to this study type. High Metric 10: Sampling Methods Test organism species and variety was reported, height and grain yield at harvest reported. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology was suitable for the determination of bioaccumulation factors Metric 12: Test Substance Purity High Sampling methods analyzed appropriate phases and one-time sampling at harvest was appropriate for the study. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables High Varieties of plant had comparable accumulation of the test substance, no other notable uncertainties or variation was reported. Metric 14: Health Outcomes Unrelated to High No significant differences in plant height or grain yield among varieties or study groups was reported. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium The analytical method was appropriate, extraction recovery and limits of detection were reported. BCF was not lipid normalized and lipid content was not reported. Metric 16: Statistical Methods and High Statistical methods were described and applied appropriately. Kinetic Calculations Domain 8: Other Verification or Plausibility of Metric 17: High The results were reasonable based on the method and comparable to previous studies. Results Metric 18: **OSAR** Models N/A The metric is not applicable to this study type. **Overall Quality Determination** High

Study Citation:	Li, Y.,an, Huang, G., Gu, H.,ua, Huang, Q., Lou, C., Zhang, L.,ei, Liu, H. (2018). Assessing the Risk of Phthalate Ester (PAE) Contamination in Soils and Crops Irrigated with Treated Sewage Effluent. Water 10(8):999.							
OECD Harmonized	Terrestrial Bioconc	Terrestrial Bioconcentration						
Template: HERO ID:	5041214							
		EXTRACTION						
Parameter		Data						
CASRN and Test Material		84-74-2; DnBP						
Confidentiality, EndPoint, T	Гуре,	None; bioaccumulation: terrestrial; Experimental; other: Not applicable; bioaccumulation in soil-grain systems						
Guideline Solvent Reactivity Storage	Stability	NA · NR · NR						
Radiolabel, Source, State, F	Purity	NA, NK, NK, NK, NK, NK, NK, NK, NK, NK, NK						
Test Organism and Test Org	ganism Details	Summer maize, Zea mays L.; Varieties: Jiyuan, Jingdan, Xinyu, Tianyumi, and Nianyumi						
Lipid Content, Test Temper	ature, pH, and Depu-	Not reported; 11.0 - 12.0°C (mean annual); 7.2 - 7.7 (reclaimed water), 7.6- 8.3 (groundwater); Not applicable						
Moisture, TOC, and Test Co	onditions Comments	Not reported; Not reported; Plants irrigated at depth 50 - 130 mm with reclaimed water, groundwater or a 1:1 mixture of reclaimed water and groundwater once per month						
Nominal Measured and Tim	ne Plateau	PAE concentration 2.63 - 3.43 ug/L (reclaimed water), 2.01 - 2.03 ug/L (groundwater); Resulting DnBP in topsoil: 2.60 (reclaimed), 2.15 (mix), 2.01 (groundwater) mg/kg; Not applicable						
Duration, Parameter, and Sa	ampling Frequency	Planting until Harvest: June 2015 to September 2015; Not Reported; Once, crop harvest						
Analytical Method and Analytical Details		GC-MS operated on electron impact and selective ion monitoring mode; LOD 0.032 - 0.191 ug/kg; Soil Soxhlet extracted with acetone and methyl alcohol, grain Soxhlet extracted with n-hexane; extracts dehydrated and concentrated, flowed through anhydrous Na2SO4, concentrated under N2 stream and by rotary evaporator; recovery 70-120%;						
Results Value, Result Type, and Results Standard Deviation		1.03 (reclaimed water), 0.94 (mixed water), 1.01 (ground water); BCF; Not Reported						
Elimination Metabolites K	inetic Parameter and	steauy state; eutote fraction						
Statistics		determine significant differences; no significant effects of reclaimed groundwater						
		EVALUATION						

			EVALUATIO	N	
Domain		Metric	Rating	Comments	
Domain 1: Test Substa	nce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
	Metric 2:	Test Substance Purity	High	The source of the reclaimed water and groundwater was reported.	
Domain 2: Test Design					
-	Metric 3:	Study Controls	Medium	Controls were not explicitly included.	
	Metric 4:	Test Substance Stability	Medium	Irrigation water preparation or storage was not reported.	
Domain 3: Test Condit	ions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	Medium	Characteristics of the irrigation water were reported (pH), soil moisture and other char- acteristics were not reported but this is not likely to impact study results.	
	Metric 7:	Testing Consistency	High	Test conditions were consistent across study groups.	
Continued on next page					

Study Citation:	Li, Y.,an, Huang, G., Gu, H.,ua, Huang, Q., Lou, C., Zhang, L.,ei, Liu, H. (2018). Assessing the Risk of Phthalate Ester (PAE) Contamination in Soils and Crops Irrigated with Treated Sewage Effluent Water 10(8):909							
OECD Harmonized	Terrestrial Bioconcentration							
Template:								
HERO ID:	5041214							
		Ι	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 8:	System Type and Design	High	Agricultural field studies can be assumed to be in dynamic equilibrium.				
Domain 4: Test Organisi	ms							
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	High	Test organism species and variety was reported, height and grain yield at harvest re- ported.				
Domain 5: Outcome Ass	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was suitable for the determination of bioaccumu- lation factors				
	Metric 12:	Test Substance Purity	High	Sampling methods analyzed appropriate phases and one-time sampling at harvest was appropriate for the study.				
Domain 6: Confounding	Wariable Control							
Domain of Contouriding	Metric 13:	Confounding Variables	High	Varieties of plant had comparable accumulation of the test substance, no other notable uncertainties or variation was reported.				
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No significant differences in plant height or grain yield among varieties or study groups was reported.				
Domain 7: Data Present	ation and Analysis							
	Metric 15:	Data Reporting	Medium	The analytical method was appropriate, extraction recovery and limits of detection were reported. BCF was not lipid normalized and lipid content was not reported.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were described and applied appropriately.				
Domain 8: Other	Metric 17:	Verification or Plausibility of	High	The results were reasonable based on the method and comparable to previous studies.				
		Results	0	I I I I I I I I I I I I I I I I I I I				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				

Study Citation:	LUA, (2016). Phthalate esters in soil, plastic film, and vegetable from greenhouse vegetable production bases in Beijing, China: Concentrations, sources,						
<b>OECD Harmonized</b>	Terrestrial Bioconcentration						
Template:							
HERO ID:	3350219						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2: DnBP					
Confidentiality, EndPoint, Guideline	Туре,	None; bioaccumulation: terrestrial; Field study; other: Not reported					
Solvent, Reactivity, Storag	ge, Stability	NA; NR; Soil and plastic film samples stored in aluminum bags, all samples stored at -20°C; NR					
Radiolabel, Source, State, Purity		NR; Greenhouse vegetable production bases in Changping, Shunyi, and Yanqing, China; NA; NA Notes: Standard mixture of 15 PAEs at a concentration of 1000 mg/L obtained from O2SI, Inc., Charleston, South Carolina					
Test Organism and Test Or	rganism Details	Onion, celery, pepper, tomato, bitter gourd, eggplant, and long podded cowpea; $n = 16$					
Lipid Content, Test Tempe ration Time	erature, pH, and Depu-	Not reported; Not reported; 7.07 (range: 6.12 - 8.54); Not reported					
Moisture, TOC, and Test C	Conditions Comments	Not reported; soil organic matter 24.4 g/kg (range: 4.37 - 75.2 g/kg); Plant and soil samples collected from greenhouse vegetable production facilities to determine potential transfer and bioaccumulation of PAEs from plastic mulching film used at the facility.					
Nominal Measured and Tir	me Plateau	n=60; average measured 0.44 mg/kg; Not applicable					
Duration, Parameter, and S	Sampling Frequency	Not reported; Not Reported; May - July 2014					
Analytical Method and Analytical Details		GC-MS in electron impact and selective ion monitoring modes; Detection limit 0.00023 - 0.0008 mg/L; Freeze dried soil and vegetable samples ground and homogenized, extracted 2x into acetone:hexane, concentrated by rotary evaporator, extracts cleaned on a glass column; recovery 79.3-108.6%:					
Results Value, Result Type	e, and Results Standard	1.14; BCF; Not Reported					
Deviation Calculation Basis and Basi	is	steady state; edible fraction					
Elimination, Metabolites, Kinetic Parameter, and Statistics		Not applicable; Not reported; Not applicable; Pearson correlation matric $p < 0.05$ and $p < 0.01$					

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	High	The sample and analytical standard sources were reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	Procedural blanks were included and at appropriate levels.		
	Metric 4:	Test Substance Stability	High	The sample storage conditions and preparation were reported and appropriate.		
Domain 3: Test Conditions						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	Medium	Some testing conditions were not reported (temperature, moisture, duration).		
	Metric 7:	Testing Consistency	High	Samples were collected, processed, and analyzed consistently.		
Continued on next page						

HERO ID: 3350219 Table: 1 of 1

		contin	ued from pre-	vious page				
Study Citation:	LUA, (2016). Phthalate esters in soil, plastic film, and vegetable from greenhouse vegetable production bases in Beijing, China: Concentrations, sources,							
OECD Harmonized	and risk assessmer Terrestrial Biocon	and risk assessment. Science of the Total Environment 568:1037-1043. Terrestrial Bioconcentration						
Template:								
HERO ID:	3350219							
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 8:	System Type and Design	High	Equilibrium was established and test systems were capable of maintaining substance concentrations.				
Domain 4: Test Organis	ms							
C C	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	Medium	Test organism reported by common name only, mass and life stage not reported.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the outcomes of interest.				
	Metric 12:	Test Substance Purity	High	Sampling methods addressed the outcomes of interest and used accepted approaches.				
Domain 6: Confounding	z/Variable Control							
c	Metric 13:	Confounding Variables	High	Variability was addressed in data evaluation.				
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No differences in organism health or attrition were reported.				
Domain 7: Data Present	ation and Analysis							
	Metric 15:	Data Reporting	Low	BCFs were calculated by reviewer. Organism concentrations not separated by species, lipid content not reported, data range not reported (median and max only). Limits of detection and extraction recovery reported, the analytical method was appropriate.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods reported and appropriate.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The detected concentrations were comparable to previous studies.				
	Metric 18:	Results OSAR Models	N/A	The metric is not applicable to this study type				

Study Citation: OECD Harmonized	Citation:       Ma, T. T., Christie, P., Luo, Y. M., Teng, Y. (2013). Phthalate esters contamination in soil and plants on agricultural land near an electronic waste recycle site. Environmental Geochemistry and Health 35(4):465-476.         Harmonized       Terrestrial Bioconcentration         ID:       1597686						
Template: HERO ID:							
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Di-n-butyl phthalate					
Confidentiality, EndPoint, ' Guideline	Туре,	None; bioaccumulation: terrestrial; Experimental; other: BCF in plants					
Solvent, Reactivity, Storage, Stability		NR; NR; The dried soil samples were grinded and sieved through a 60-mesh screen and the plant samples were homogenized in liquid nitrogen prior to storage at -20C for subsequent analysis; NR					
Radiolabel, Source, State, Purity		NR; A mixed standard purchased from AccuStandard, Inc., (1mg/mL) composed of DMP, DEP, BBP, DnBP, DEHP, DnOP, was used for analytical purposes; NR; NR Notes: NR					
Test Organism and Test Or	ganism Details	other; agricultural plant material					
Lipid Content, Test Tempe	erature, pH, and Depu-	Not reported; 25C; soil $pH = 5.56$ ; Not reported					
ration Time Moisture, TOC, and Test Conditions Comments		Not reported; 36.5 g/kg; Plots of vegetable and plants (VP - Vegetable Plot, C-carrot, CL-carrot leaves, CFL-cauliflower leaves, R-radish, RL- Radish leaves; GP: green manure plots in which the alfalfa(Medicago sativa L.)) were grown using soils treated with a mixed standard of PAEs and planted by broadcast sowing (GP-B) or drilling (GP-D)					
Nominal Measured and Tir	me Plateau	Measured; Not reported					
Duration, Parameter, and S	ampling Frequency	Not reported; Not Reported; 110 samples of paddy soil and plant material were collected in winter 2010 from an electronic waste dismantling site in Taizhou city, China.					
Analytical Method and Analytical Details		GC-MS; following a modification of USEPA method 8270C (1996); MDL: 68-135 ug/kg; IDL: 0.11-0.35 ug/L; recovery rates in spiked soils at 100 ug/kg were 75.8-107.61% blanks included:					
Results Value, Result Type Deviation Calculation Basis and Basi	, and Results Standard	DnBP: Approximate BCFs for plants under different treatments (taken from bar graph): VP-R = 209, VP-CF = 180, VP-C = 152, VP-PL = 114, VP-RL = 153, VP-CFL = 55, VP-CL = 77, GP-D = 40, GP-B = 45; BCF; Not Reported steady state; not specified					
Elimination, Metabolites, Kinetic Parameter, and Statistics		Not reported; Not reported; Not reported; data were processed with Microsoft Excel 2003 and the SPSS v.14.0 software package; level of signifi- cance (p<0.05)					

EVALUATION							
Domain		Metric	Rating	Comments			
Domain 1: Test Substance	e						
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.			
	Metric 2:	Test Substance Purity	High	The source was reported; purity was omitted, however, there are sufficient analytical detail.			
Domain 2: Test Design							
	Metric 3:	Study Controls	High	Controls were appropriate for this type of study.			
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported.			
Domain 3: Test Condition	ns						

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## Terrestrial Bioconcentration ...continued from previous page

Study Citation:	Ma, T. T., Christie, P., Luo, Y. M., Teng, Y. (2013). Phthalate esters contamination in soil and plants on agricultural land near an electronic waste recycling					
OFCD Harmonized	site. Environment	tal Geochemistry and Health 35(4):465-4	76.			
Template:	Terrestrial Diocon	lectifiation				
HERO ID:	1597686					
			EVALUATIO	Ň		
Domain		Metric	Rating	Comments		
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	Medium	There were omissions in testing condition reporting but the omissions were not likely to have a substantial impact on study results.		
	Metric 7:	Testing Consistency	High	Test conditions across samples or study groups were not reported, but these discrepan- cies were not likely to have a substantial impact on study results.		
	Metric 8:	System Type and Design	High	The system type and design were capable of appropriately maintaining substance con- centrations.		
Domain 4: Test Organis	sms					
C C	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.		
Domain 5. Outcome As	a a com ant					
Domain 5: Outcome As	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of		
	Methe 11.	Test Substance identity	mgn	interest.		
	Metric 12:	Test Substance Purity	Medium	Details regarding sampling methods were not fully reported, but the omissions were not likely to have a substantial impact on study results.		
Domain 6: Confoundin	Wariable Control					
Domain 0. Comounding	Metric 13:	Confounding Variables	Low	Sources of variability and uncertainty in the measurements and were not considered or		
		C C		accounted for in data evaluation resulting in some uncertainty.		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.		
Domain 7: Data Present	tation and Analysis					
Domain 7. Data 110501	Metric 15:	Data Reporting	Medium	Data were reported in a bar graph.		
	Metric 16:	Statistical Methods and	High	Details regarding statistical methods were reported.		
		Kinetic Calculations	6			
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.		
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.		
<b>Overall Quali</b>	ty Determin	ation	High			

Study Citation: OECD Harmonized	Ma, T., Luo, Y., Christie, P., Teng, Y., Liu, W. (2012). Removal of phthalic esters from contaminated soil using different cropping systems: A field s European Journal of Soil Biology 50:76-82. Terrestrial Bioconcentration					
HERO ID:	5522239					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Di-n-butyl phthalate				
Confidentiality, EndPoint, Type, Guideline Solvent, Reactivity, Storage, Stability		None; bioaccumulation: terrestrial; Experimental; other: Phytoremediation of phthalates with alfalfa monoculture (A), alfalfa and E. splendors intercropping (AE), alfalfa and S. plumbizincicola intercropping (AS), and alfalfa, E. splendors and S. plumbizincicola intercropping (AES) NR; NR; NR; NR				
Radiolabel, Source, State, Purity		NR; AccuStandard, Inc., New Haven, CT; A mixed standard solution of six phthalate esters (1 mg/mL) and the internal standard benzyl benzoate solution (5 mg/mL); NR Notes: DBP				
Test Organism and Test Org	anism Details	other; Alfalfa: Medicago sativa L. (A), E. splendors (E), S. plumbizincicola (S)				
Lipid Content, Test Temperation Time	ature, pH, and Depu-	Not reported; Average temperature ranged from 14 to 23C; 5.56; Not reported				
Moisture, TOC, and Test Co	onditions Comments	Not reported; organic matter 36.5 g/kg; Paddy soil, a sandy loam, classified as a Hortic Anthrosol. Silt, clay, and sand 52.7%, 17.2%, and 30.1%. Soil porosity 39.67%.				
Nominal Measured and Tim	ne Plateau	Measured; Not reported				
Duration, Parameter, and Sa	mpling Frequency	2 years of cropping; other; Soil and shoots of individual plant species of each treatment were sampled over one month				
Analytical Method and Analytical Details		GC-MS following a modification of USEPA method 8270C with Agilent 7890GC-5975 MSD GC-MS.; Recoveries in spiked soils ranged from 75.88 and 107.61%; instrument detection limits ranged from 0.11-0.35 ug/L, method detection limits ranged from 68-135 ug/kg;				
Results Value, Result Type, Deviation Calculation Basis and Basis	and Results Standard	Cat is the residual concentration, Cap is the individual concentration of the target compound in plant shoot samples; See elimination (data too large for this field); BCF; Not Reported BCF = Cap/Cat; other				
Elimination, Metabolites, K Statistics	inetic Parameter, and	BCF - approximation from bar graph (treatment condition), summing all plant species = 78 (A), 55 (AS-S), 75 (AS-A), 58 (AE-E), 83 (AE-A), 38 (AES-S), 44 (AES-E), 62 (AES-A); Not reported; Not reported; $p < 0.05$				

	EVALUATION						
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name			
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.			
Domain 2: Test Design							
	Metric 3:	Study Controls	Medium	Controls were not explicitly included in the study.			
	Metric 4:	Test Substance Stability	Medium	Test substance preparation was minimally described.			
Domain 3: Test Condition	ons						
	Metric 5:	Test Method Suitability	Medium	Non-guideline field study with limited detail.			
	Metric 6:	Testing Conditions	Medium	Test conditions were not fully reported in the study.			
	Metric 7:	Testing Consistency	High	Available test conditions were consistent across replicates and study groups.			
Continued on next page							

		continu	ued from pre	vious page			
Study Citation:	Ma, T., Luo, Y., C	Ma, T., Luo, Y., Christie, P., Teng, Y., Liu, W. (2012). Removal of phthalic esters from contaminated soil using different cropping systems: A field study.					
<b>OECD Harmonized</b>	European Journal of Soil Biology 50:76-82. Terrestrial Bioconcentration						
Template:							
HERO ID:	5522239						
		I	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 8:	System Type and Design	High	Field study; therefore, equilibrium is assumed.			
Domain 4: Test Organis	ms						
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.			
	Metric 10:	Sampling Methods	High	Test organism species reported.			
Domain 5: Outcome As	sessment						
Domain 5. Outcome As	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the outcomes of interest.			
	Metric 12:	Test Substance Purity	Medium	Sampling methods addressed the outcomes of interest and used widely accepted approaches			
Domain 6: Confounding	Variable Control						
Domain of Confounding	Metric 13:	Confounding Variables	Medium	Sources of variability and uncertainty were not explicitly considered in data evaluation			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.			
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	High	Data reporting was appropriate.			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Quality assurance and quality controls were described.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	Medium	The results were reasonable.			
	Metric 18:	Results QSAR Models	N/A	This metric is not applicable to this type of study.			
<b>Overall Qualit</b>	ty Determin	ation	High				

Study Citation: OECD Harmonized	Overcash, M. R., Weber, J. B. (1986). Behavior of organic compounds in land treatment systems with the presence of municipal sludge. :125-131. Terrestrial Bioconcentration				
HERO ID:	5243691				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2: DnBP			
Confidentiality, EndPoint, Type, Guideline Solvent, Reactivity, Storage, Stability		None; bioaccumulation: terrestrial; Experimental; other: Guideline not specified, greenhouse study on the North Carolina State University campus (35.8 N, 78.6 W) NR: NR: NR			
Radiolabel, Source, State, Purity		14C-labelled compounds and nonlabelled compounds used, no further details; NR; NR; NR			
Test Organism and Test Or	ganism Details	other; Altona soybeans (Glycine max [L.] Merr.); Average height: $5.2 \pm 1.1$ cm (immature plant), $23 \pm 3$ cm (mature plant)			
Lipid Content, Test Tempe	rature, pH, and Depu-	Not reported; 80°F; 5.0; Not reported			
Moisture, TOC, and Test C	Conditions Comments	60% (relative humidity); 1.5%; Test substance uniformly mixed with the top 15 cm of soil			
Nominal Measured and Tir	me Plateau	0.22 mg/kg dry wt loading rate; 220 ppb; Not reported			
Duration, Parameter, and S	ampling Frequency	Until plant maturity; other; Not reported			
Analytical Method and Analytical Details		Extracted liquid analyzed with scintillation spectrometer; total 14C determined in Harvey Biological Oxidizer; trapped carbon dioxide analyzed with scintillation spectrometer; Soil and plant extraction with hexane:acetone 1:1;			
Results Value, Result Type	, and Results Standard	Average uptake: 1,000 (immature plants), 280 (mature plants) ppb extractable C14; at soil concentration: 220 ppb; Not Reported; Not Reported			
Calculation Basis and Basi	s	other; other			
Elimination, Metabolites, Kinetic Parameter, and Statistics		Not Reported; Not reported; First order loss coefficient from soil: 0.10 / day; Not Reported			

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substand	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity were not reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	Concurrent controls were not explicitly included but they're not required for uptake studies.		
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported and appropriate for the study.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	The test conditions were reported and appropriate.		
	Metric 7:	Testing Consistency	High	The test conditions were consistent across replicates and study groups.		
	Metric 8:	System Type and Design	High	Equilibrium was established and the system type and design were capable of appropri- ately maintaining the substance.		
Continued on next page						

continued from previous page							
Study Citation: OECD Harmonized	Overcash, M. R., Terrestrial Biocon	Overcash, M. R., Weber, J. B. (1986). Behavior of organic compounds in land treatment systems with the presence of municipal sludge. :125-131. Terrestrial Bioconcentration					
HERO ID:	5243691						
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.			
	Metric 10:	Sampling Methods	Medium	The test organism species is routinely used for similar study types however organism weight was not reported.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	Medium	The relation of the measured plant concentrations to soil uptake were not well reported.			
	Metric 12:	Test Substance Purity	High	Sampling methods and approaches addressed the outcome assessment.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	Medium	Variability between study groups was qualitatively accounted for in the outcome assess- ment, but not numerically with statistics.			
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No differences in organism attrition or health were reported.			
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	Medium	Lipid normalized BCF was not reported, target chemical concentrations difficult to make meaningful.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetics were described briefly.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	Medium	Difficult to determine if results are reasonable.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.			
Overall Quali	ty Determina	ation	High				

Study Citation:	Sablayrolles, C., N	Sablayrolles, C., Montréjaud-Vignoles, M., Benanou, D., Patria, L., Treilhou, M. (2005). Development and validation of methods for the trace determina-					
OFCD Harmonized	tion of phthalates in sludge and vegetables. Journal of Chromatography A 1072(2):233-242.						
Template.	Terresultar Diocono						
HERO ID:	789400						
		EXTRACTION					
Parameter		Data					
CASPN and Test Material		Not Paportad: Not Paportad					
Confidentiality EndPoint	Type	Not Reported, Not Reported					
Guideline	Type,	None, concentrations in plant materials, experimental, other					
Solvent, Reactivity, Storag	ge, Stability	NR; NR; NR					
Radiolabel, Source, State,	Purity	None; Cluzeau Info Labo (France); NR; NR					
Test Organism and Test Or	rganism Details	tomato plants (Lycopersicum esculentum var Rondello F1); roots, leaves, fruits tested					
Lipid Content, Test Tempe	erature, pH, and Depu-	not reported; not reported; not reported; not reported					
ration Time							
Moisture, TOC, and Test C	Conditions Comments	not reported; not reported; plant containers inside a temperature and humidity regulated plant house dosed with pure substance					
Nominal Measured and Ti	me Plateau	not reported; not reported					
Duration, Parameter, and S	Sampling Frequency	not reported; other; not reported					
Analytical Method and Analytical Details		GC-MS; limit of detection 0.003 ug/mL; quantification limit 0.01 ug/mL;					
Results Value, Result Type	e, and Results Standard	995 (roots); 50 (leaves); $<10$ (fruit) ug/kg dry matter; $<10$ (sap) ug/kg fresh matter; concentration; $\pm10$ (roots); $\pm6$ (leaves) ug/kg dry matter					
Deviation Calculation Basis and Basi	is	other other					
Elimination Matchalitaa	18 Vinatia Danamatan and	one, one, one state and some some state and some state and the source of					
Elimination, Metabolites, Kinetic Parameter, and Statistics		not reported; not reported; not reported					

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substa	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and molecular formula.
	Metric 2:	Test Substance Purity	High	The source or purity of the test substance was reported.
Domain 2: Test Design	1			
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
Domain 3: Test Condit	ions			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	Uninformative	Testing conditions were not reported and data provided were insufficient to interpret results.
	Metric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported, but these dis- crepancies were not likely to have a substantial impact on study results.
			Continued on next page	

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		CO	ntinued from previous pag	e				
Study Citation:	Sablayrolles, C tion of phthalat	Sablayrolles, C., Montréjaud-Vignoles, M., Benanou, D., Patria, L., Treilhou, M. (2005). Development and validation of methods for the trace determina- tion of phthalates in sludge and vegetables. Journal of Chromatography A 1072(2):233-242. Terrestrial Bioconcentration						
OECD Harmonized	Terrestrial Bioc							
Template:	700400							
HERO ID:	/89400							
			EVALUATION					
Domain		Metric	Rating	Comments				
	Metric 8:	System Type and Design	Medium	Equilibrium was not established or reported but this was not likely to have a substantial impact on study results				
Domain 4: Test Organi	isms							
	Metric 9:	Outcome Assessment Methodology	Low	The test organism, species, or inoculum source are not routinely used for similar study types or were not appropriate for the evaluation of the specific outcome(s) of interest or route.				
	Metric 10:	Sampling Methods	Low	The test organism, species, or inoculum source are not routinely used for similar study types or were not appropriate for the evaluation of the specific outcome(s) of interest or route.				
Domain 5: Outcome A	ssessment							
	Metric 11:	Test Substance Identity	Low	Deficiencies in the outcome assessment methodology of the assessment or reporting were likely to have a substantial impact on results.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed.				
Domain 6: Confoundir	ng/Variable Contro	1						
2 onian of comoundi	Metric 13:	Confounding Variables	N/A	The metric is not applicable to this study type.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7: Data Preser	ntation and Analysi	is						
	Metric 15:	Data Reporting	Low	Concentrations of the target chemical or transformation product(s), extraction efficiency, percent recovery, or mass balance were not measured or reported, preventing meaningful interpretation of study results.				
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis or kinetic calculations were not conducted or were not described clearly.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
<b>Overall Qual</b>	ity Determi	ination	Uninformative					

Study Citation: OECD Harmonized Template: HERO ID:	Sablayrolles, C., Montréjaud-Vignoles, M., Benanou, D., Patria, L., Treilhou, M. (2005). Development and validation of methods for the trace determina- tion of phthalates in sludge and vegetables. Journal of Chromatography A 1072(2):233-242. Terrestrial Bioconcentration 789400				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		Not Reported; Not Reported			
Confidentiality, EndPoint, T	ype,	None; concentrations in plant materials; experimental; other			
Guideline	Ct-1:1:t	חזג חזג חו			
Solvent, Reactivity, Storage	, Stability				
Radiolabel, Source, State, P	urity	None; Cluzeau Info Labo (France); NR; NR			
Test Organism and Test Org	anism Details	tomato plants (Lycopersicum esculentum var Rondello F1); roots, leaves, fruits tested			
Lipid Content, Test Temper	ature, pH, and Depu-	not reported; not reported; not reported; not reported			
ration Time Moisture TOC and Test Co	onditions Comments	not reported: not reported: plant containers inside a temperature and humidity regulated plant house dosed with sludge tea			
Nominal Measured and Tim	e Plateau	not reported, not reported			
Duration Parameter and Sa	mpling Frequency	not reported; not reported			
Analytical Method and Ana	lytical Details	GC-MS: limit of detection 0.003 ug/mL: quantification limit 0.01 ug/mL:			
Results Value Result Type and Results Standard		<10 (roots): $<10$ (leaves): $<10$ (fruit) ug/kg dry matter: $<10$ (san) ug/kg fresh matter: concentration: not applicable			
Deviation					
Calculation Basis and Basis other; other		other; other			
Elimination, Metabolites, K	inetic Parameter, and	not reported; not reported; not reported; not reported			
Statistics					

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substa	ance			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and molecular formula.
	Metric 2:	Test Substance Purity	High	The source or purity of the test substance was reported.
Domain 2: Test Design	n			
c.	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
Domain 3: Test Condi	tions			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	Uninformative	Testing conditions were not reported and data provided were insufficient to interpret results
	Metric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported, but these dis- crepancies were not likely to have a substantial impact on study results.
	Metric 8:	System Type and Design	Medium	Equilibrium was not established or reported but this was not likely to have a substantial impact on study results
			Continued on next page	

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		00	ontinued from previous page	2				
Study Citation:	Sablayrolles, C tion of phthalat	Sablayrolles, C., Montréjaud-Vignoles, M., Benanou, D., Patria, L., Treilhou, M. (2005). Development and validation of methods for the trace determina- tion of phthalates in sludge and vegetables. Journal of Chromatography A 1072(2):233-242.						
OECD Harmonized	Terrestrial Bioc	Terrestrial Bioconcentration						
Template: HFRO ID:	789400							
	707100							
Domain		Metric	EVALUATION Rating	Comments				
		mette	ituing	Commons				
Domain 4: Test Organia	sms							
	Metric 9:	Outcome Assessment Methodology	Low	The test organism, species, or inoculum source are not routinely used for similar study types or were not appropriate for the evaluation of the specific outcome(s) of interest or route.				
	Metric 10:	Sampling Methods	Low	The test organism or species is not routinely used for similar study types.				
Domain 5: Outcome As	Ssessment Matria 11:	Tost Substance Identity	Low	Deficiencies in the outcome accessment methodology of the accessment or reporting				
	Methe II.	Test Substance Identity	LOW	were likely to have a substantial impact on results.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed.				
Dennein (; Cenferredin	- Maniahla Cantura							
Domain 6: Confoundin	Metric 13:	Confounding Variables	N/A	The metric is not applicable to this study type				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.				
		Exposure						
Domain /: Data Presen	Matric 15:	S Data Penorting	Low	Concentrations of the terrat chemical or transformation product(a) extraction officiancy				
	Methe 13.	Data Reporting	Low	percent recovery, or mass balance were not measured or reported, preventing meaningful interpretation of study results.				
	Metric 16:	Statistical Methods and	Low	Statistical analysis or kinetic calculations were not conducted or were not described				
		Kinetic Calculations		clearly.				
Domain 8: Other								
Domain 8. Other	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Quali	ty Determi	nation	Uninformative					

Study Citation: OECD Harmonized	Sun, J., Wu, X., Ga Terrestrial Biocond	., Gan, J. (2015). Uptake and metabolism of phthalate esters by edible plants. Environmental Science & Technology 49(14):8471-8478. concentration			
HERO ID:	5555815				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material	l	84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, Type, Guideline		None; bioaccumulation: terrestrial; Experimental; other: Bioconcentration Factor (BCF) values in edible plants			
Bodiolobal Source State	Burity	stock solutions prepared in n-nexane; NR; stored in amore glass viais at $-20^{\circ}$ C; NR			
Test Organism and Test Organism Details		Lactuca sativa L.; Seedlings of Romaine lettuce (Lactuca sativa L.) and Quinault strawberry (Fragaria x ananassa.) with two to four leaves and seeds of Little Finger carrot (Daucus carota Var. Sativus) were purchased from the Certified Plant Growers (Temecula, CA)			
Lipid Content, Test Tempe ration Time	erature, pH, and Depu-	Not applicable; 26°C (carrot cell suspension); Not reported; Not reported			
Moisture, TOC, and Test C	Conditions Comments	65% relative humidity; Not reported; plants cultivated in sand spiked with target chemical and hydroponic nutrient solution			
Nominal Measured and Tir	me Plateau	nominal spiked concentration: 500 $\mu$ g/kg; Not reported			
Duration, Parameter, and S	Sampling Frequency	28 days; DT50; 0, 2, 24, 48, and 120 h			
Analytical Method and Analytical Details		Extraction with hexane/DCM, then centrifuged at 3000 rpm for 30 min. Residual extracted with fresh solvent. GC-MS; LOD: calculated as 3x the signal-to-noise level from the low-level spiked samples; surrogate recoveries ranged from 75-110%; no DnBP detected in blanks;			
Results Value, Result Type, and Results Standard Deviation		Lettuce leaf $0.26\pm0.01$ ; strawberry leaf $0.34\pm0.08$ ; carrot leaf $1.09\pm0.21$ ; lettuce root $0.77\pm0.09$ ; strawberry root $2.61\pm0.42$ ; carrot root $4.78\pm0.59$ ; BCF; Not Reported			
Calculation Basis and Basi	is	Not Reported; edible and non-edible plant biomass			
Elimination, Metabolites, Kinetic Parameter, and Statistics		transformation in a carrot cell suspension followed second-order kinetics with a reaction rate constant $k = 2E-6$ /ng·h corresponding to a half-life of 112h; apparent dissipation observed in all groups, including spiked planted samples and unplanted controls; DnBP decreased by 65.3-73.2% in planted media, concentrations remaining in controls suggested some degradation may have also occurred in these systems.; Not reported; transformation; Origin Pro (v.8.0; OriginLab, Northampton, MA); one-way ANOVA: significance level 0.05			

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.		
	Metric 2:	Test Substance Purity	Medium	The analytical standard source was reported, purity was not reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	Procedural (or method) blanks and sample duplicate were run with every 10 monitoring samples. No plasticware was used.		
	Metric 4:	Test Substance Stability	High	The test substance/sample preparation was reported and appropriate.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	Medium	Limited test conditions were disclosed but may be reported in supplemental information.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent across the study groups.		
Continued on next page						

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		contin	ued from pre	vious page			
Study Citation: OECD Harmonized	Sun, J., Wu, X., G Terrestrial Biocon	Sun, J., Wu, X., Gan, J. (2015). Uptake and metabolism of phthalate esters by edible plants. Environmental Science & Technology 49(14):8471-8478. Terrestrial Bioconcentration					
HERO ID:	5555815						
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 8:	System Type and Design	High	Equilibrium is assumed in this type of study.			
Domain 4: Test Organis	sms						
U	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.			
	Metric 10:	Sampling Methods	High	Test organisms were reported.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	Medium	Limited details were provided on the derivation of the bioconcentration factors. Media concentrations were reported in supplemental info.			
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcomes of interest.			
Domain 6: Confoundin	g/Variable Control						
	Metric 13:	Confounding Variables	Medium	Authors indicated enhanced dissipation likely due to plant uptake and plant-facilitated microbial degradation.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Domain 7: Data Presen	tation and Analysis						
	Metric 15:	Data Reporting	Medium	Some details omitted; however, Supplemental Information may provide data.			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistic methods were described and address the datasets.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.			
Overall Quali	ty Determina	ation	High				

Study Citation: OECD Harmonized	<ul> <li>Teil, M. J., Tlili, K., Blanchard, M., Labadie, P., Alliot, F., Chevreuil, M. (2014). Polychlorinated biphenyls, polybrominated diphenyl ethers, and phthalates in roach from the Seine River Basin (France): Impact of densely urbanized areas. Archives of Environmental Contamination and Toxicology 66(1):41-57.</li> <li>Terrestrial Bioconcentration</li> </ul>				
HERO ID:	2149497				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, T	ype,	None; bioaccumulation: terrestrial; Experimental; other: Bioaccumulation based on concentrations of contaminants in roaches, waters and sedi-			
Guideline	0, 1, 11,	ments in the Seine River and Orge River			
Solvent, Reactivity, Storage	, Stability	Isooctane; NK; NK; NK			
Radiolabel, Source, State, P	urity	NR; Superco (via Sigma-Aldrich, St. Quentin Fallavier, France); Solution of 6 standards in isooctane; DMP, DEP, DnBP, BBP, DEHP, DnOP; NR			
Test Organism and Test Org	anism Details	other; Rutilus rutilus (Cyprinidae; roach)			
Lipid Content, Test Temper	ature, pH, and Depu-	Not reported; Not reported; Not reported; Not reported			
ration Time					
Moisture, TOC, and Test Co	onditions Comments	Not reported; Not reported; BAF based on environmental monitoring			
Nominal Measured and Tim	ne Plateau	Measured; Not reported			
Duration, Parameter, and Sa	impling Frequency	Not reported; other; Not reported			
Analytical Method and Ana	lytical Details	GC-MS; detected in blanks: DnBP ( $\leq 11$ ng), BBP ( $\leq 52$ ng), DEHP ( $\leq 10$ ng);			
Results Value, Result Type, and Results Standard		not able to evaluate BAF from data reported in Fig 4; numerical value in graph is not precise, greater than zero and much less than 50,000; BAF;			
Deviation Calculation Basis and Basis		Not Reported			
Elimination Matabalitas K	inatia Daramatar and	ouici, noi specificu Nat ranortad: Nat ranortad: Nat ranortad: Nat ranortad			
Statistics	mene rarameter, allu	Not reported, Not reported, Not reported			
		EVALUATION			

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Subst	tance			
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
	Metric 2:	Test Substance Purity	Medium	The test substance source was reported; however, the purity was not reported.
Domain 2: Test Desig	gn			
	Metric 3:	Study Controls	Low	Controls were not included in this study.
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
Domain 3: Test Cond	litions			
	Metric 5:	Test Method Suitability	Medium	Not a standard BAF method; this study was a monitoring investigation.
	Metric 6:	Testing Conditions	N/A	This metric is not applicable to this type of study.
	Metric 7:	Testing Consistency	N/A	This metric is not applicable to this type of study.
			Continued on next page	

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PUBLIC RELEASE DRAFT May 2025 Terrestrial Bioconcentration

		col	ntinued from previous page	2				
Study Citation:	Teil, M. J., Tlili, in roach from th	Teil, M. J., Tlili, K., Blanchard, M., Labadie, P., Alliot, F., Chevreuil, M. (2014). Polychlorinated biphenyls, polybrominated diphenyl ethers, and phthalates in roach from the Seine River Basin (France): Impact of densely urbanized areas. Archives of Environmental Contamination and Toxicology 66(1):41-57.						
<b>OECD Harmonized</b>	Terrestrial Bioc	Terrestrial Bioconcentration						
Template:								
HERO ID:	2149497							
			EVALUATION					
Domain		Metric	Rating	Comments				
	Metric 8:	System Type and Design	N/A	This metric is not applicable to this type of study.				
Domain 4: Test Organi	isms							
U	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	Medium	The test organism is not routinely used for similar study types.				
Domain 5: Outcome A	ssessment							
	Metric 11:	Test Substance Identity	Medium	There was incomplete reporting of outcome assessment methods.				
	Metric 12:	Test Substance Purity	High	The sampling methods were appropriate for this type of study.				
Domain 6: Confoundir	ng/Variable Control							
	Metric 13:	Confounding Variables	N/A	This metric is not applicable to this type of study.				
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to this type of study.				
		Exposure						
Domain 7: Data Preser	ntation and Analysi	s						
	Metric 15:	Data Reporting	Low	Concentrations of the target chemical and analytical extraction efficiency and LOD were not reported preventing meaningful interpretation of study results				
	Metric 16:	Statistical Methods and	High	The statistical methods reported were appropriate.				
		Kinetic Calculations	C	1 11 1				
Domain 8: Other	Metric 17:	Verification or Plausibility of	Uninformative	Quantitative results are not explicit				
	wieure 17.	Results	Uninformative	Quantitative resurts are not explicit.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
	• • •		TT • Ø 4•					
Overall Qual	ity Determi	nation	Uninformative					

Study Citation: OECD Harmonized Template: HERO ID:	<ul> <li>Wang, A. (2014). Effect of spiked phthalic acid esters on dissipation efficiency of Potamogeton crispus L. in the rhizosphere of surface sediments from the Haihe River, China. Journal of Soils and Sediments 14(1):243-250. Terrestrial Bioconcentration</li> <li>3110319</li> </ul>			
		EXTRACTION		
Parameter		Data		
CASRN and Test Material Confidentiality, EndPoint, T Guideline Solvent, Reactivity, Storage Radiolabel, Source, State, P Test Organism and Test Org Lipid Content, Test Temper ration Time Moisture, TOC, and Test Co Nominal Measured and Tim Duration, Parameter, and Sa Analytical Method and Ana Results Value, Result Type, Deviation	Type, , Stability Purity ganism Details ature, pH, and Depu- onditions Comments are Plateau umpling Frequency lytical Details and Results Standard	<ul> <li>84-74-2; Dibutyl phthalate</li> <li>None; other; Experimental; other: Dissipation of DEHP in rhizosphere and non-rhizosphere of Potamogeton crispus L. (P. crispus ) using a microcosm with river sediment; uptake and accumulation of phthalic acid esters by plantfrom sediments</li> <li>Acetone (dried before experiment); NR; NR; NR</li> <li>No; NR; NR; NR Notes: DBP</li> <li>other; Potamogeton crispus L.</li> <li>Not reported; sediment organic carbon 2.41%; Spiked and non-spiked (control) sediments</li> <li>Measured; Not reported</li> <li>17 days; other; Sediments and plants were sampled after 17 days</li> <li>GC-MS; GC equipped with an Agilent 5975 MS detector and a HP-5 MS capillary column coated with 0.25 μm of film 5% phenyl methyl siloxane; LOD: 10 ng/g (sediment samples), 20 ng/g (plant samples); recovery: 95.0% (sediment), 92.8% (plants);</li> <li>root bioconcentration RCF: 9.60±0.8 (control; lower conc in found sediment) 1.75±0.2 (spiked; higher conc found in sediment); stems and leaves bioconcentration RCF: 7.40±1 (black concentration RCF); Not Server and the sediment of the sediment) is the Reported of the sediment of the sediment is the second of the sediment is the second of the sediment in the sediment is the sediment in the sediment in the sediment is the second of the sediment in the sediment in the sediment is the sediment in the sediment in the sediment in the sediment is the second of the sediment in the sediment in the sediment is the sediment in the sediment is the sediment in the se</li></ul>		
Calculation Basis and Basis Elimination, Metabolites, K Statistics	inetic Parameter, and	other; not specified Notes: plant roots were damaged in spiked system; Not reported; Not reported; Not reported		

	EVALUATION							
Domain		Metric	Rating	Comments				
Domain 1: Test Substan	ice							
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.				
	Metric 2:	Test Substance Purity	Low	The test substance source and purity were not reported.				
Domain 2: Test Design								
	Metric 3:	Study Controls	High	Appropriate control groups included for this type of study.				
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation and storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.				
Domain 3: Test Conditi	ons							
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	Low	Limited details on testing conditions were reported.				
	Metric 7:	Testing Consistency	High	The test conditions were consistent across study groups.				
Continued on next page								

		contin	ued from prev	vious page				
Study Citation:	Wang, A. (2014). Effect of spiked phthalic acid esters on dissipation efficiency of Potamogeton crispus L. in the rhizosphere of surface sediments from the Haibe River. China. Journal of Soils and Sediments 14(1):243-250.							
OECD Harmonized Template:	Terrestrial Bioconcentration							
HERO ID:	3110319							
EVALUATION								
Domain		Metric	Rating	Comments				
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.				
Domain 4: Test Organism	18							
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	High	The test species was reported.				
Domain 5: Outcome Asso	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of				
	Meule II.	Test Substance Identity	mgn	interest.				
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.				
Demain (, Canfanadina)								
Domain 6: Confounding/	Metric 13:	Confounding Variables	Medium	Other loss processes; histic/abistic ware addressed with limited datail				
	Metric 14.	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.				
	ineuro i i.	Exposure	1 1/1	The metric is not applicable to any study type.				
Domain /: Data Presenta	Metric 15:	Data Peporting	Madium	This matrix mat the criterie for madium confidence as expected for this type of study.				
	Meure 15.	Data Reporting	Medium	analytical details were omitted.				
	Metric 16:	Statistical Methods and	N/A	The metric is not applicable to this study type.				
		Kinetic Calculations						
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
	D ( )		TT+ 1					
<b>Overall Quality</b>	y Determina	ation	High					

Study Citation:	Wang, A., Chi, J.,i	e (2012). Phthalic acid esters in the rhizosphere sediments of emergent plants from two shallow lakes. Journal of Soils and Sediments				
OFCD Harmonized	12(7 (Aug 2012)):1189.					
Tomplata	Terrestriar Diocon					
HERO ID:	1450450					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2: Dibutyl phthalate				
Confidentiality, EndPoint, Type,		None; bioaccumulation: terrestrial; Experimental; other: Field study Qingnian Lake and Aiwan Lake in Tainjin, China				
Solvent, Reactivity, Storage, Stability		NR: NR: NR				
Radiolabel, Source, State, Purity		NR; NR; NR				
Test Organism and Test Organism Details		other; P. australis and Typha orientalis; root systems collected				
Lipid Content, Test Temperature, pH, and Depu-		Not reported; Not reported; Not reported; Not reported				
ration Time						
Moisture, TOC, and Test Conditions Comments		Not reported; Not reported; Sediment and root samples collected; Root bioconcentration factor (RBF) is calculated as the ratio of lipid-normalized				
Nominal Measured and Ti	me Plateau	measured. Not reported				
Duration Parameter and Sampling Frequency		Not reported: Not Reported: roots sampled on May 18, 2010				
Analytical Method and Analytical Details		GC-MS: MDL = $20 \text{ ng/g}$ : average recovery = $98.3\%$ in sediments, $94.1\%$ in roots;				
Results Value, Result Type, and Results Standard		2.11 to 9.32; RBF; Not Reported				
Deviation		· · · •				
Calculation Basis and Basis		Not Reported; Not Reported				
Elimination, Metabolites, Kinetic Parameter, and Statistics		Not reported; Not reported; Data compared using analysis of variance, comparisons of means carried out using Duncan's test; significance value $p < 0.05$ . All analyses performed using SPSS 13.0 for Windows				

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
	Metric 2:	Test Substance Purity	Medium	The analytical standard source and purity were not reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	Low	Controls were not included.
	Metric 4:	Test Substance Stability	High	The field sample preparation and storage conditions were reported.
Domain 3: Test Condition	ons			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	Medium	There were omissions in sample site conditions; however, sufficient data were reported to determine that the deviations and omissions were not likely to have a substantial impact on study results.
	Metric 7:	Testing Consistency	N/A	This metric is not applicable to this study type.
Continued on next page				

		contin	ued from prev	vious page			
Study Citation: W	Wang, A., Chi, J., ie (2012). Phthalic acid esters in the rhizosphere sediments of emergent plants from two shallow lakes. Journal of Soils and Sediments 12(7 (Aug 2012)):1189						
<b>OECD Harmonized</b> Te	Terrestrial Bioconcentration						
Template:							
<b>HERO ID:</b> 14	150450						
EVALUATION							
Domain		Metric	Rating	Comments			
М	letric 8:	System Type and Design	High	Equilibrium is assumed in a monitoring study.			
Domain 4: Test Organisms M	etric 0.	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type			
M	etric 10.	Sampling Methods	Medium	I imited detail reported for test organisms			
141	lettle 10.	Sampling Methods	Wiedium	Enniced detail reported for lest organisms.			
Domain 5: Outcome Assessi	ment						
М	etric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.			
М	letric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest.			
Domain 6: Confounding/Vai	riable Control	Confounding Variables	Uich	Courses of verichility and uncertainty not identified			
M	letric 13.	Health Outcomes Unrelated to	N/A	This matrices of variability and uncertainty not identified.			
111	leuric 14.	Exposure	IN/A	This metric is not applicable to this type of study.			
Domain 7: Data Presentation	n and Analysis						
М	letric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency and percent recovery were reported.			
М	letric 16:	Statistical Methods and	High	Statistical methods or kinetic calculations were clearly described and address the			
		Kinetic Calculations		datasets.			
Domain 8: Other							
М	etric 17:	Verification or Plausibility of	Medium	The results are reasonable.			
М	letric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Quality</b>	Determina	ation	High				
Study Citation:	Asakura, H., Mats	ura, H., Matsuto, T., Tanaka, N. (2007). Analytical study of endocrine-disrupting chemicals in leachate treatment process of municipal solid waste					
-------------------------------------------------	------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--	--	--
OECD Harmonized	(MSW) landfill site Adsorption and De	rption and Desorption					
Template: HERO ID:	698293						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, Type, Guide	eline	none; Field study; other: Partitioning between leachate and suspended sediment in leachate treatment facilities of municipal solid waste landfills					
Solvent, Reactivity, Storage	e, Stability	extracted with hexane; NR; sealed brown glass bottles; bottled prewashed 2x with acetone and dichloromethane; NR					
Radiolabel, Source, State, P	Purity	NA; 5 facilities treating leachate form municipal solid waste landfills; Liquid; NA Notes: source and purity of analytical standards not reported					
Sampling Frequency, Sar	npling Details, and	4 times, 4 times, 1 time, 1 time, and 1 time per facility respectively; Sequential first aeration treatment (sites 1-5), biological treatment (sites 2-5),					
Number of Replicates	er and Test Details	coagulation and sedimentation (sites 1-5) and activated carbon adsorb (site 4); Not reported					
pii, iest temperature, built	ei, and Test Details	reported Measured leachate and suspended sediment concentrations					
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported; TOC: 385 - 436, 77 - 165, 58-151, 147-401, 33 - 36 mg C/L per site respectively; Not reported					
Bulk Density and Matrix De	etails	Not reported; Not reported					
Media, Recovery, and Statis	stics	suspended sediment in landfill leachate; Not reported; Not reported					
Transformation Products, E	quilibrium	Not reported; Not Reported; Not Reported					
Adsorption Details, and Eq	uilibrium Desorption						
Details							
sults and Percent Adsorptic	erence Substance Ke-	Not applicable; Not applicable; Not reported					
Adsorption Coefficient Tyr	be Adsorption Coef-	Not Reported: Not Reported: Not Reported					
ficient Results. Adsorption Coefficient Results							
Comments, and Adsorption							
Desorption Type							
Partition Coefficient Type	and Partition Coeffi-	$\log \text{Kp} = 4.4$ (ratio of suspended sediment to the filtrate); Influent (median): 5.5 ug/L1st aeration (median): 5.2 ug/Lbiological treatment (median):					
cient Results	and Dartition Cooff	4.6 ug/LCS treatment (median): 4.1 ug/LACA treatment (median): 5.7 ug/L					
cient Results	and Partition Coem-	suspended matter-water, internal value					
Mass Balance		Concentration in suspended sediment not reported					

			EVALUATION	N
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
	Metric 2:	Test Substance Purity	Medium	A general description of the test substance source was provided, and purity is not an applicable metric for field studies; the source and purity of analytical standards was not reported.
Domain 2: Test Design	Metric 3:	Study Controls	N/A	Field studies do not require negative controls.
			Continued on next p	age

#### ... continued from previous page **Study Citation:** Asakura, H., Matsuto, T., Tanaka, N. (2007). Analytical study of endocrine-disrupting chemicals in leachate treatment process of municipal solid waste (MSW) landfill sites. Environmental Sciences 14(2):79-87. **OECD Harmonized** Adsorption and Desorption **Template: HERO ID:** 698293 **EVALUATION** Domain Metric Rating Comments Metric 4: Test Substance Stability High The test substance preparation and storage was reported and appropriate for the study. Domain 3: Test Conditions Metric 5: Test Method Suitability High The test method was suitable for the test substance. Metric 6: **Testing Conditions** High Sample characteristics were analyzed and reported and were appropriate for the study. Metric 7: Testing Consistency High Test conditions were consistent across sample groups. Metric 8: System Type and Design High Field studies are assumed to be at equilibrium. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology N/A The metric is not applicable to this study type. Metric 10: Sampling Methods N/A This metric is not applicable to the study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology addressed or reported the intended outcome(s) of interest. Test Substance Purity Metric 12: High The study used sampling methods that are acceptable and address the outcomes of interest. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables High Reported sources of variability were not likely to influence the outcome assessment. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to the study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium Target chemical concentrations and mass balance were reported; extraction efficiency was not reported but is not expected to have a significant impact on study results. Metric 16: Statistical Methods and High Statistical methods applied to the datasets were appropriate. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of High The study results were reasonable. Results QSAR Models Metric 18: N/A The metric is not applicable to this study type. **Overall Quality Determination** High

Study Citation:	Bauer, M. J., Herrmann, R. (1998). Dissolved organic carbon as the main carrier of phthalic acid esters in municipal landfill leachates. Waste Management						
OFCD Harmonized	& Research 16(5):446-454. Adsorption and Desorption						
Template:	Ausorption and De						
HERO ID:	1333362						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl phthalate					
Confidentiality, Type, Guide	eline	None; experimental; other					
Solvent, Reactivity, Storage	, Stability	methanol; NR; NR; NR					
Radiolabel, Source, State, P	urity	Not Reported; Aldrich; not reported; Not Reported					
Sampling Frequency, Sampling Details, and		landfill leachates; disposal years 1954-1994; Bavaria, Germany; Not Reported; Not Reported					
pH. Test Temperature, Buffer, and Test Details		sampling pH 7.1-9.0; not applicable (field samples); not applicable (field samples); Not Reported					
Matrix. Clay Silts and Organic Carbon, and CEC		other; suspended solids 3.6-691.9 mg/L; not applicable (field samples)					
Bulk Density and Matrix De	etails	not applicable (field samples); DOC 33-1626 mg/L					
Media, Recovery, and Statis	tics	Not Reported; not reported; Not Reported					
Transformation Products, Ed	quilibrium	not reported; field samples assumed to be in equilibrium; field samples assumed to be in equilibrium					
Adsorption Details, and Eq	uilibrium Desorption						
Details							
Reference Substance, Reference Substance, Reference	rence Substance Re-	not applicable (field samples); not applicable (field samples); Not Reported					
Adsorption Coefficient Typ	e Adsorption Coef-	Not Reported: Not Reported: Not Reported: Not Reported					
ficient Results. Adsorption Coefficient Results							
Comments, and Adsorption							
Desorption Type							
Partition Coefficient Type a	and Partition Coeffi-	Not Reported; Dissolved phase DBP concentration 0.1-62.7 ug/L; suspended solids DBP concentrations 3.5-126.0 ug/g.					
cient Results	and Partition Cooff	Not Papartad: 2.06% of DPD (of altholic goid actors) was found in the colution alogs of 26 municipal landfill logalates					
cient Results	and Partition Coem-	Not Reported; 5-90% of DBP (of prinanc acid esters) was found in the solution phase of 26 municipal landnil leachates.					
Mass Balance		not reported					

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.
	Metric 2:	Test Substance Purity	High	The source or purity of the test substance was reported.
Domain 2: Test Design	Metric 3: Metric 4:	Study Controls Test Substance Stability	N/A Medium	The metric is not applicable to this study type. The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
			Continued on next page	

		continu	ed from previous	page
Study Citation:	Bauer, M. J., Herr & Research 16(5)	mann, R. (1998). Dissolved organic carbo	n as the main carrie	er of phthalic acid esters in municipal landfill leachates. Waste Management
<b>OECD Harmonized</b>	Adsorption and D	esorption		
Template:				
HERO ID:	1333362			
		H	EVALUATION	
Domain		Metric	Rating	Comments
Domain 3: Test Condition	ns			
	Metric 5:	Test Method Suitability	N/A	The metric is not applicable to this study type.
	Metric 6:	Testing Conditions	Low	Site specific, not all conditions were reported.
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to this study type.
	Metric 8:	System Type and Design	High	Equilibrium was established.
Domain 4: Test Organism	18			
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Asso	essment			
	Metric 11:	Test Substance Identity	Medium	There was incomplete reporting of outcome assessment methods; however, such differ- ences or absence of details were not likely to be severe or have a substantial impact on the study results.
	Metric 12:	Test Substance Purity	Low	Details regarding sampling methods were not fully reported.
Domain 6: Confounding/	Variable Control			
	Metric 13:	Confounding Variables	N/A	The metric is not applicable to this study type.
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.
		Exposure		
Domain 7: Data Presenta	tion and Analysis			
	Metric 15:	Data Reporting	Low	There was insufficient data reported.
	Metric 16:	Statistical Methods and	Low	Statistical analysis or kinetic calculations were not conducted or were not described
		Kinetic Calculations		clearly.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality	y Determin	ation	Medium	

Study Citation:	Chai, X., Hao, Y., Z	Zhao, X.,in, Liu, G., Zhu, Y	K., Ji, R., Wu, J., un, Tong, H., Zhao, Y. (20	12). Abiotic association of phthalic acid esters with humic acid of			
OECD Harmonized	a sludge landfill. Frontiers of Environmental Science & Engineering 6(6):7/8-783. Adsorption and Desorption						
Template: HERO ID:	5618886						
			EXTRACTION				
Parameter		Data					
CASRN and Test Material		not reported; di-n-butyl phth	alate				
Confidentiality, Type, Guidel	ine	none; experimental; other: n	on-guideline: abiotic association with humic ac	ids			
Solvent, Reactivity, Storage,	Stability	stock solution in methanol; I	NR; NR; NR				
Radiolabel, Source, State, Pu	ırity	Uniformly-ring 14C-labeled	DBP; Hartmann Analytic GmbH (Braunschwe	ig, Germany); NR; NR Notes: 60 μg/L			
Sampling Frequency, Sampling Number of Peplicates	pling Details, and	not reported; not reported; n	ot reported				
pH, Test Temperature, Buffer	r, and Test Details	3.0, 7.0, 9.0; sludge pH 7.24 labeled DBP with HA from	ysis equilibrium technique was used to assess the association of 14C-				
Matrix, Clay Silts and Organ	ic Carbon, and CEC	other; >15% organic conten	en; oxidation-reduction potential = $-150$ to $400$ mV				
Bulk Density and Matrix Details		not reported; Humic acid isolated from sludge (with the landfill time of 0, 60, 150 days Long Gang Wastewater Treatment Plant		0, 150 days identified as Ha, Hb, Hc respectively) collected at the Bai			
Media, Recovery, and Statist	ics	not specified; not reported; not reported					
Transformation Products, Eq Adsorption Details, and Equ Details	uilibrium ilibrium Desorption	not reported; not reported; n	ot reported				
Reference Substance, Reference Substance Re- sults, and Percent Adsorption Adsorption Coefficient Type, Adsorption Coef- ficient Results, Adsorption Coefficient Results Comments, and Adsorption		control cells without HA included; results show that %14C-labeled DBP in both sides of the membrane = 49.95% and 50.05% after 24 therefore, the radioactivity was equally distributed on both sides of the membrane when HAs were absent.; not reported not reported; not reported; not reported; not reported					
Partition Coefficient Type and Partition Coefficient Results		Strength of association with humic substances was reported as partition coefficient: KsubA (L/kg); association intensity: log partition coefficient KsubA) = $3.00\pm0.04$ , $2.74\pm0.02$ , and $2.10\pm0.02$ at pH 3, 7, and 9, respectively; Hb association intensity (log partition coefficient KsubA) = $3.05\pm0.03$ , $2.96\pm0.01$ , and $2.53\pm0.02$ at pH 3, 7, and 9, respectively at Hb molecular weight of 10,000; Hb association intensity (log partition coefficient KsubA) = $3.00\pm0.04$ , $2.74\pm0.02$ , and $2.10\pm0.02$ at pH 3, 7, and 9, respectively at Hb molecular weight of 100 Daltons; Hc association intensity (log partition coefficient KsubA) = $3.00\pm0.04$ , $2.74\pm0.02$ , and $2.10\pm0.02$ at pH 3, 7, and 9, respectively at Hb molecular weight of 100 Daltons; Hc association intensity (log partition coefficient KsubA) = $3.12\pm0.03$ , $2.93\pm0.01$ , and $2.53\pm0.02$ at pH 3, 7, and 9, respectively at Hb molecular weight of 100 Daltons; Hc association intensity (log partition coefficient KsubA) = $3.12\pm0.03$ , $2.93\pm0.01$ , and $2.53\pm0.02$ at pH 3, 7, and 9, respectively at Hb molecular weight of 100 Daltons; Hc association intensity (log partition coefficient KsubA) = $3.12\pm0.03$ , $2.93\pm0.01$ , and $2.53\pm0.02$ at pH 3, 7, and 9, respectively at Hb molecular weight of 100 Daltons; Hc association intensity (log partition coefficient KsubA) = $3.12\pm0.03$ , $2.93\pm0.01$ , and $2.53\pm0.02$ at pH 3, 7, and 9, respectively at Hb molecular weight of 100 Daltons; Hc association intensity (log partition coefficient KsubA) = $3.12\pm0.03$ , $2.93\pm0.01$ , and $2.53\pm0.02$ at pH 3, 7, and 9, respectively at Hb molecular weight of 100 Daltons; Hc association intensity (log partition coefficient KsubA) = $3.12\pm0.03$ , $2.93\pm0.01$ , and $2.53\pm0.02$ at pH 3, 7, and 9, respectively at Hb molecular weight of 100 Daltons; Hc association intensity (log partition coefficient KsubA) = $3.02\pm0.03$ , $2.93\pm0.01$ , and $2.53\pm0.02$ , $2.93\pm0.01$ , and $2.53\pm0.02$ , $2.93\pm0.01$ , and $2.53\pm0.02$ , $2.93\pm0.01$ , $2.93\pm0.01$ , $2.93\pm0.02$ , $2.93\pm0.01$ , $2.93\pm0.02$ , $2.93\pm0.02$ , $2.93\pm0.02$					
Partition Coefficient Phase a cient Results Mass Balance	and Partition Coeffi-	humic acid/diluted solutions not reported	; Values are means of three determinations at ea	juilibrium time.			
			EVALUATION				
Domain		Metric	Rating	Comments			

Domani		Metrie	Rung	connients
Domain 1: Test Substanc	e			
	Metric 1: Metric 2:	Test Substance Identity Test Substance Purity	High High	The test substance was identified clearly. The source of the test substance was reported
	metrie 2.	Test Substance Turity	mgn	The source of the test substance was reported.

PUBLIC RELEASE DRAFT May 2025 Adsorption and Desorption

HERO ID: 5618886 Table: 1 of 1

		contir	ued from prev	vious page		
Study Citation:	Chai, X., Hao, Y.,	Zhao, X.,in, Liu, G., Zhu, Y., Ji, R., Wu	, J.,un, Tong, H	I., Zhao, Y. (2012). Abiotic association of phthalic acid esters with humic acid of		
OECD Harmonized	a sludge landfill. Frontiers of Environmental Science & Engineering 6(6):778-783. Adsorption and Desorption 5618886					
HERO ID:						
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 2: Test Design						
	Metric 3: Metric 4:	Study Controls Test Substance Stability	High Medium	Appropriate control was included. Limited detail regarding test substance stability, homogeneity, preparation and storage conditions; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.		
Domain 3: Test Conditio	ns					
	Metric 5: Metric 6:	Test Method Suitability Testing Conditions	High Medium	The test method was suitable. There were omissions in specific testing conditions; however, sufficient data were re- ported to determine that the omissions were not likely to have a substantial impact on study results.		
	Metric 7:	Testing Consistency	High	Reported test conditions were consistent.		
	Metric 8:	System Type and Design	High	The system type and design were appropriate.		
Domain 4: Test Organisr	ns					
	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported and the test organism, species, or inoculum are routinely used for similar study types and appropriate (e.g., aerobic microorganisms used for anaerobic biodegradation study) for the study method or route		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.		
Domain 5: Outcome Ass	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.		
	Metric 12:	Test Substance Purity	Medium	Limited detail regarding sampling methods.		
Domain 6: Confounding	/Variable Control Metric 13:	Confounding Variables	High	All reported variability or uncertainty was not likely to influence the outcome assess-		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.		
Domain 7: Data Presenta	ntion and Analysis Metric 15:	Data Reporting	Medium	Extraction efficiency, percent recovery, or mass balance were not reported		
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Calculations were clearly described.		
Domain 8: Other						
		Conti	nued on next p	Dage		

		con	tinued from prev	vious page				
Study Citation:	Chai, X., Hao,	Chai, X., Hao, Y., Zhao, X., in, Liu, G., Zhu, Y., Ji, R., Wu, J., un, Tong, H., Zhao, Y. (2012). Abiotic association of phthalic acid esters with humic acid of						
<b>OECD Harmonized</b>	Adsorption and	Desorption	Engineering 0(0).					
Template:	-	-						
HERO ID:	5618886							
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
<b>Overall Qualit</b>	ty Determi	nation	High					

Study Citation:Chen, H., Mao, W., Shen, Y., Feng, W., Mao, G., Zhao, T., Yang, L., Yang, L., Meng, C., Li, Y., Wu, X. (2019). Distribution, source, and environment of phthalate esters (PAEs) in water, suspended particulate matter, and sediment of a typical Yangtze River Delta City, China. Environment Science and Pollution Research 26(24):24609-24619.OECD HarmonizedAdsorption and Desorption						
Template: HERO ID:	5635050					
	3033030	EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Bis-n-butyl phthalate				
Confidentiality, Type, Guid	eline	None; Experimental; other: Partition coefficients (Kd) based on water, suspended particulate matter (SPM) and sediment samples from 15 locations in the Yunliang River, Ancient Canal, Beijing-Hangzhou Grand Canal of Zhenjiang NR, NR, stored away from light at 4°C. NR				
Radiolabel, Source, State, F	Purity	NR: Sigma-Aldrich (USA): NR: >98% Notes: DBP				
Sampling Frequency, San Number of Replicates	mpling Details, and	Not applicable; Water, suspended particulate matter, and sediment samples collected in June 2017 (wet season) and January 2018 (dry season); 15 samples each, 45 samples total				
pH, Test Temperature, Buff	er, and Test Details	reported in supplemental information; Annual mean temp of location = 15.5°C (subtropical monsoon climate); Not reported; Monitoring of natural water, SPM, and sediment				
Matrix, Clay Silts and Orga	inic Carbon, and CEC	Not Reported; Not reported; reported in SI				
Bulk Density and Matrix D	etails	Not reported; natural sediment and SPM				
Media, Recovery, and Statis	stics	natural water; Recoveries for all PAEs tested ranged from $81.7\pm9.2\%$ to $111.9\pm6.8\%$ for the spiked water samples, ranged from $85.6\pm5.1$ to $102.3\pm9.7\%$ for spiked SPM samples, and ranged from $80.5\pm7.8$ to $107.6\pm10.3\%$ for spiked sediment samples; OriginPro 9.0 software and SPSS 16.0 for data analysis; Independent t-tests $p \le 0.05$				
Transformation Products, E Adsorption Details, and Eq	Equilibrium Juilibrium Desorption	Not reported; Not reported; Not reported				
Reference Substance, Refe sults, and Percent Adsorptio	erence Substance Re- on	Not reported; Not reported				
Adsorption Coefficient Type, Adsorption Coef- ficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type		Kd1: partition coefficient SPM:water; Kd2: partition coefficient sediment:water; Kd1 = $0.87 \text{ L/g}$ , Kd2 = $0.34 \text{ L/g}$ (average wet season); Kd1 = $0.35 \text{ L/g}$ , Kd2 = $0.67 \text{ L/g}$ (average dry season); Not reported; Not reported				
Partition Coefficient Type	and Partition Coeffi-	Not reported; Not reported				
cient Results Partition Coefficient Phase cient Results	and Partition Coeffi-	suspended matter-water; sediment-water				
cient Results Mass Balance		Not reported				

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Substanc	e			
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.
Domain 1. Test Substanc	Metric 1: Metric 2:	Test Substance Identity Test Substance Purity	High High	The test substance was identified clearly. The source and purity of the test substance were reported.

Domain 2: Test Design

HERO ID: 5635050 Table: 1 of 1

### ... continued from previous page

Study Citation:	Chen, H., Mao, W., Shen, Y., Feng, W., Mao, G., Zhao, T., Yang, L., Yang, L., Meng, C., Li, Y., Wu, X. (2019). Distribution, source, and environmental risk assessment of phthalate esters (PAEs) in water, suspended particulate matter, and sediment of a typical Yangtze River Delta City. China. Environmental				
OECD Harmonized Template:	Science and Pollu Adsorption and D	ition Research 26(24):24609-24619. Jesorption	icu particulaic		
HERO ID:	5635050				
		]	EVALUATIO	Ň	
Domain		Metric	Rating	Comments	
	Metric 3:	Study Controls	N/A	This metric is not applicable to this type of study.	
	Metric 4:	Test Substance Stability	N/A	This metric is not applicable to this type of study.	
Domain 3: Test Conditi	ons				
	Metric 5:	Test Method Suitability	High	The test method was suitable.	
	Metric 6:	Testing Conditions	Medium	Limited details; additional information may be found in SI	
	Metric 7:	Testing Consistency	N/A	This metric is not applicable to this type of study.	
	Metric 8:	System Type and Design	High	Equilibrium is assumed in field studies.	
Domain 4: Test Organis	sms				
Domain 1. Test organi	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.	
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.	
Domain 5: Outcome As	ssessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.	
	Metric 12:	Test Substance Purity	N/A	This metric is not applicable to this type of study.	
Domain 6: Confoundin	g/Variable Control				
	Metric 13:	Confounding Variables	High	Sources of variability were addressed and statistical analysis was described	
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to this type of study.	
		Exposure			
Domain 7: Data Presen	tation and Analysis				
	Metric 15:	Data Reporting	High	Adequate data reporting.	
	Metric 16:	Statistical Methods and	High	Methods were reported.	
		Kinetic Calculations	6		
Domain 8: Other					
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.	
	Metric 18:	Results QSAR Models	N/A	This metric is not applicable to this type of study.	
Overall Ouali	tv Determin	ation	High		

Study Citation:	Fang, C. R., Long	Fang, C. R., Long, Y. Y., Shen, D. S. (2014). Sorption behavior of dibutyl phthalate and dioctyl phthalate by aged refuse. Environmental Science and						
OECD Harmonized	Adsorption and De	21(12):7641-7649. esorption						
Template: HERO ID:	2510820							
		EXTRACTION						
Parameter		Data						
CASRN and Test Material		84-74-2; Dibutyl phthalate						
Confidentiality, Type, Guid	leline	None; Experimental; other: Sorption kine	tics and batch equ	ilibrium sorption/desorption experiments				
Solvent, Reactivity, Storage	e, Stability	Methanol; NR; kept in the refrigerator; N	R					
Radiolabel, Source, State, I	Purity	NR; Tianjin Siyou Co; 100 mg/L stock distilled water and addition of 0.02% sodi	solution; $\geq 99\%$ lium azide: methan	Notes: DBP; stock solution diluted to appropriate test concentrations with sterilized of was less than $2\%$ in tests.				
Sampling Frequency, Sa Number of Replicates	mpling Details, and	intervals over 48 hrs; liquid-phase sample Tests performed in triplicate	e concentrations r	neasured; solution added to solids and shaken, liquor phase concentrations measured;				
pH, Test Temperature, Buff	fer, and Test Details	refuse 1: 7.23, refuse 2: 7.47; 25°C; Not 10,000 r/min for 10 min	reported; flasks w	ere shaken at 200 r/min for 24hrs (based on initial sorption kinetics) andcentrifuged at				
Matrix, Clay Silts and Orga	anic Carbon, and CEC	Not Reported; refuse 1: 17.5% moisture,	refuse 2: 20.6% m	noisture; refuse 1: 74.5 cmol/kg, refuse 2: 69.6 cmol/kg				
Bulk Density and Matrix D	Details	Specific surface area - refuse 1: 4.42 m2/g collected from Hangzhou Tianziling land	g, refuse 2: 4.16 m fill; Bacteria popu	2/g; Two aged refuse samples, refuse 1 (aged 5 years) and refuse 2 (aged 8 years) were lation:refuse 1: 4.24E10 CFU/g, refuse 2: 3.97E10 CFU/g				
Media, Recovery, and Stati	istics	0.7 µg/g DBP for initial sorption kinetics; 0.05 g refuse and 150 mL of DBP at concentrations of 4.0-40.0 µg/L; 84.2-98.7%; Not reported						
Transformation Products, E Adsorption Details, and Ec	Equilibrium quilibrium Desorption	Not reported; apparent sorption equilibrium was reached after 12 h; sorption first-order rate constants for one-compartment modeling were 23.096/h and 26.282/h, and two-compartment modeling were 1.2E4/h, 11.978/h and 1.22E4/h, 13.689/h, for refuse 1 and 2, respectively; Not reported						
Details Reference Substance, Refe	erence Substance Re-	Not reported; Not reported; sorption capa	city reached 99.7	and 99.1% of the equilibrium sorption capacity at 0.5 h on refuse 1 and 2, respectively				
Adsorption Coefficient Ty ficient Results, Adsorption Comments, and Adsorption Desorption Type	pe, Adsorption Coef- n Coefficient Results	Not reported; Not reported; Freundlich model - refuse 1: 1.11E4, refuse 2: 4.81E3						
Partition Coefficient Type cient Results Partition Coefficient Phase cient Results Mass Balance	and Partition Coeffi- e and Partition Coeffi-	<ul> <li>log Koc; c = aqueous phase concentration; Freundlich: Refuse 1 (c = 0.005, 0.01, and 0.05): 4.32, 4.24, 4.05; Refuse 2 (c = 0.005, 0.01, and 0.05): 4.27, 4.22, 4.11; DA: Refuse 1 (c = 0.005, 0.01, and 0.05): 4.10, 3.88, 3.30; Refuse 2 (c = 0.005, 0.01, and 0.05): 4.05, 3.82, 3.18</li> <li>ffi-sediment-water; Freundlich model and Dubinin–Astakhov (DA) model; the DA model was noted to have a better effect in the range of apparent equilibrium concentration Not reported</li> </ul>						
			EVALUATIO	Ň				
Domain		Metric	Rating	Comments				
Domain 1: Test Substan	ice							
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.				
Metric 2:		Test Substance Purity	High	The test substance source and purity were reported.				
Domain 2: Test Design								
	Metric 3:	Study Controls	High	Controls were included.				

		contin	ued from pre	vious page				
Study Citation:	Fang, C. R., Long Pollution Researc	Fang, C. R., Long, Y. Y., Shen, D. S. (2014). Sorption behavior of dibutyl phthalate and dioctyl phthalate by aged refuse. Environmental Science and Pollution Research 21(12):7641-7649.						
OECD Harmonized	Adsorption and Desorption							
Template:	2510920							
HERO ID:	2510820							
- ·		1	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported.				
Domain 3: Test Conditi	one							
Domain 5. Test Conditi	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance				
	Metric 6:	Testing Conditions	High	Testing conditions were reported				
	Metric 7:	Testing Consistency	High	Test conditions were consistent				
	Metric 8:	System Type and Design	High	Equilibrium was established				
			ingi					
Domain 4: Test Organis	sms							
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	ssessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcomes of interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcomes of interest.				
Demain (+ Cenferrelin								
Domain 6: Confounding	g/variable Control	Confounding Variables	Iliah					
	Metric 15:	Confounding variables	nigii	and accounted for in data evaluation; two-compartment first-order models) were considered better than the one-compartment model; the DA model had a better effect in the range of apparent equilibrium concentration.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	High	Data reporting was appropriate.				
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical analyses methods were not reported; however, sufficient data were provided to conduct an independent statistical analysis.				
Damain 9. Other								
Domain 8: Other	Metric 17.	Verification or Plausibility of	Medium	The study results are reasonable				
		Results	wiediulli	The study results are reasonable.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
<b>Overall Quali</b>	ty Determin	ation	High					

Study Citation: H	Fang, C., Long, Y., Shen, D. (2015). Degradation and adsorption behavior of dibutyl phthalate in methanogenic phase refuse. Environmental Engineering					
a OECD Harmonized	Adsorption and Desorption					
Template:						
HERO ID: 2	2914646					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		Not Reported; dibutyl phthalate				
Confidentiality, Type, Guidelin	ne	no; experimental; other: batch equilibrium approach				
Solvent, Reactivity, Storage, S	Stability	NR; NR; NR				
Radiolabel, Source, State, Puri	ity	NR; Tianjin Siyou Co. (Tianjin, China); NR; Reagent grade, >/= 99%				
Sampling Frequency, Sampl Number of Replicates	ling Details, and	not reported; not reported; 3				
pH, Test Temperature, Buffer, Matrix, Clay Silts and Organic	and Test Details	7; 25 C; 0.02% sodium azide to inhibit bacterial growth; DBP solutions of 40.0–400.0 $\mu$ g/L and 0.5 g refuse were placed into a series of 250 mL conical flasks; flasks were shaken at 200 rpm and 25°C for 24 h; Once equilibrium had been reached, the supernatant was used for DBP analysis. other; not reported; 79.4 ±1.7 cmol/Kg				
Bulk Density and Matrix Deta	ils	not reported; methanogenic phase refuse; % moisture = $62.3\% \pm 0.3$ ; Volatile Suspended Solids = $14.7\% \pm 0.3$ ; Specific surface area = $4.58 \pm 0.78$ m <sup>2</sup> / <sub>2</sub> g; Biodegradable Materials = $13.4\% \pm 0.6$ ; population of microorganisms: $7.59\% \pm 0.07$ bacteria lg CFU/g, $6.72\% \pm 0.10$ fungi lg CFU/g, and $5.5\% \pm 0.09$ actinomycetes lg CFU/g; Redox enzyme activities: $434.5 \pm 48.6$ dehydrogenase (mg TF/g dw, $12$ h), $14.2 \pm 1.6$ hydrogen peroxidase (mL KMnO4/g dw, 1 h), and $4.9 \pm 1.2$ polyphenol oxidase (mg purple gall pigment/g dw, 2 h)				
Media, Recovery, and Statistic	28	difference in initial DBP and equilibrium concentration in the liquid phase was the adsorption capacity of the refuse. For the desorption experiments, the supernatant from the adsorption experiments was removed and 150 mL of background solution ( $0.02\%$ sodium azide in sterilized distilled water) was added to the solid phase, after which the samples were shaken for 24 h, at which time the DBP concentrations in the liquid phase were measured.; from refuse and the liquid phase were $82.5\%$ – $99.1\%$ and $84.2$ – $98.7\%$ , respectively.; r2 absorption = $0.9861$ ; r2 desorption = $0.9811$				
Transformation Products, Equi Adsorption Details, and Equil	ilibrium librium Desorption	Not Reported; Not Reported; Not Reported				
Reference Substance, Reference sults, and Percent Adsorption	nce Substance Re-	background samples containing refuse and no DBP and controls containing sample but no refuse were run under the same conditions and the results were considered in the final calculations; Not Reported; Not Reported				
Adsorption Coefficient Type, ficient Results, Adsorption C Comments, and Adsorption Desorption Type	Adsorption Coef- Coefficient Results	Koc; Koc = $1.31E+4$ ; free energy change $\Delta G$ value: $-23.5$ kJ/mol. $\Delta G = -RT * \ln(Koc)$ and Koc = Kf/Foc * 100, where: T is the solution temperature (K); R is the gas constant (8.314E-3 kJ/mol K); Koc is the carbon normalized partition coefficient; Kf is the Freundlich adsorption coefficient ( $[\mu g/g]/[\mu g/L]n$ ); foc is the organic carbon fraction of the refuse (%). the negative value of $\Delta G$ indicates that the adsorption of DBP on refuse is spontaneous. In addition, the $\Delta G$ value was less than 40 kJ/mol, indicating that the adsorption of DBP on refuse was a physical reaction; Qe = Kf * ce(^n) where Qe is the equilibrium adsorption capacity of DBP on refuse ( $\mu g/kg$ ); ce is the equilibrium concentration of DBP in the liquid phase ( $\mu g/L$ ); Kf is the Freundlich adsorption coefficient ( $[\mu g/kg]/[\mu g/L]n$ ) in the desorption formula, instead of Kf,des; n is the nonlinear exponent, expressed as n-ads and n-des in the adsorption and desorption models, respectively. The n-ads of DBP adsorption on refuse in the Freundlich model was 0.772 which is significantly less than 1, indicating that the adsorption point of organics is not uniform, several mechanisms may exist during adsorption. The nonlinear characteristic adsorption (Jiang et al., 2012). Desorption hysteresis article action is the hyperterion formed as the most important factor in nonlinear adsorption (Jiang et al., 2012). Desorption hysteresis				
Partition Coefficient Type and	d Partition Coeffi-	desorption = 9.17E+3 Not Reported				
cient itesuits		Continued on next page				

		conti	inued from prev	vious page			
Study Citation:	Fang, C., Long, Y. and Management	, Shen, D. (2015). Degradation and ads Journal 14(3):709-717.	sorption behavio	r of dibutyl phthalate in methanogenic phase refuse. Environmental Engineering			
<b>OECD Harmonized</b>	Adsorption and Desorption						
Template:							
HERO ID:	2914646						
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Partition Coefficient Phase	and Partition Coeffi-	Not Reported; Not Reported					
cient Results Mass Balance		Not Reported					
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	High	The source or purity of the test substance was reported.			
Domain 2: Test Design							
2 onnani 21 Teor 2 eorgi	Metric 3:	Study Controls	High	Background samples containing refuse and no DBP and controls containing sample but			
		-	U	no refuse were run under the same conditions and the results were considered in the final			
	Matric 1.	Test Substance Stability	Madium	calculations The test substance stability homogeneity preparation or storage conditions were not			
	Metric 4.	Test Substance Stability	Wedium	reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.			
Domain 3: Test Conditio	ons Matria 5:	Test Method Suitability	Uiah	The test method was suitable for the test substance			
	Metric 6:	Testing Conditions	Medium	There were reported deviations or omissions in testing conditions (e.g. temperature was			
	Wietrie 0.	Testing Conditions	Wiedium	not constant or was not in a standard range for the test but, results can be extrapolated			
				to approximate appropriate temperatures); however, sufficient data were reported to			
				determine that the deviations and omissions were not likely to have a substantial impact on study results			
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups			
	Metric 8:	System Type and Design	High	Equilibrium was established. The system type and design (i.e., static, semi-static, and			
				flow-through; sealed, open) were capable of appropriately maintaining substance con- centrations.			
Domain 4. Test Organis	ms						
Domain 4. Test Organis	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
		* ¥		** ••*			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	Medium	he outcome assessment methodology addressed or reported the intended outcome(s) of interest.			
		Cont	inued on next p	bage			

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continued from previous page								
Study Citation:	Fang, C., Long, and Managemer	Fang, C., Long, Y., Shen, D. (2015). Degradation and adsorption behavior of dibutyl phthalate in methanogenic phase refuse. Environmental Engineering						
OECD Harmonized Template:	Adsorption and	Adsorption and Desorption						
HERO ID:	2914646							
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 12:	Test Substance Purity	Medium	Minor limitations were identified in sampling methods of the outcome(s) of interest were reported (i.e., the sampling intervals were such that a half-life or other rate could be determined and/or pathways could be defined); however, the limitations were not likely to have a substantial impact on results.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups (if applicable) were considered and accounted for in data evaluation				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7: Data Presen	tation and Analysi	S						
	Metric 15:	Data Reporting	Medium	The target chemical, extraction efficiency, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Results	High	Reported values were consistent with related physical chemical properties (e.g., consid- ering KOW, pKa, vapor pressure, etc.).				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Quali	ty Determi	nation	High					

Study Citation: OECD Harmonized	Fang, C., Long, Y., uY, Shen, D. S. (2015). The influences of different organic fractions in refuse on the sorption and bioavailability of dibutyl phthalate. Chemistry and Ecology 31(6):539-549. Adsorption and Desorption					
Template: HERO ID:	3036175					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, Type, Guide	eline	None; Experimental; other: Batch experiment for the determination of sorption of DBP using whole refuse (WR), and humic acid (HA) and humic (HU) separated from aged-refuse.				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	urity	NR; Tianjin Siyou Co. (Tianjin, China); NR; ≥99% Notes: DBP				
Sampling Frequency, Sampling Details, and Number of Replicates		Not reported; Concentration was measured several times over 24-48 hrs; 3				
pH, Test Temperature, Buffe	er, and Test Details	7-8; 25C; Not reported; Sorption kinetics and sorption isotherm experiments were run in flasks shaken at 200 rpm				
Matrix, Clay Silts and Organic Carbon, and CEC		Not Reported; HA: $4.26\pm0.01\%$ nitrogen, $53.47\pm2.54\%$ carbon, $6.90\pm0.01\%$ hydrogen; HU: $0.14\pm0.03\%$ nitrogen, $8.98\pm0.16\%$ carbon, $1.59\pm0.03\%$ hydrogen; WR: $0.43\pm0.04\%$ nitrogen, $11.25\pm0.11\%$ carbon, $2.05\pm0.01\%$ hydrogen; Not reported				
Bulk Density and Matrix De	etails	Not reported; Refuse sample that had been in the Hangzhou Tianziling landfill for 10 yrs.				
Media, Recovery, and Statis	tics	Not reported; DBP recovery rates = 84.2-98.7%; Not reported				
Transformation Products, Ed Adsorption Details, and Eq	quilibrium uilibrium Desorption	Not reported; At 8 h, the sorption capacity of HU for DBP had reached 99.3% of the equilibrium sorption capacity but the sorption capacities of HA and whole refuse had reached 88.4 and 97.5% of the equilibrium sorption capacities, respectively; Not reported				
Details Reference Substance, Refe	rence Substance Re-	Not reported; Not reported; Kinetics (ug/g/h): initial sorption rate = 132.11 (HA) 192.05 (WR) 236.43 (HU); fast reaction average sorption rate = $0.99$ (HA) 1.26 (WR) 1.48 (HU); overall average sorption rate = $0.57$ (HA) 0.68 (WR) 0.86 (HU)				
Adsorption Coefficient Typ	e Adsorption Coef-	Linear model Kd: $2.812$ (HA) $3.054$ (WR) $3.275$ (HI): Kd at $2.5$ w/L $= 10.057$ (HA) $12.301$ (WR) $15.341$ (HI): Kd at $15$ w/L $= 45.202$ (HA)				
ficient Results Adsorption Coefficient Results 5		50.325 (WR). 56.108 (HU): the difference between initial and equilibrium concentration in the liquid phase was defined as the sorotion capacity:				
Comments, and Adsorption $HA = 4.421 \text{ n} = 0.860$ , WR = 5.543 n = 0.815, HU = 7.443 n = 0.744 (( $\mu$ g g-1)/( $\mu$ g g-1)/({\mu}g g-1)/( $\mu$ g g-1)/( $\mu$ g-1)/		HA = 4.421 n = 0.860, WR = 5.543 n = 0.815, HU = 7.443 n = 0.744 ( $(\mu g g - 1)/(\mu g L - 1)^n$ )				
Desorption Type						
Partition Coefficient Type	and Partition Coeffi-	Not reported; Not reported				
cient Results Partition Coefficient Phase	and Partition Coeffi-	Not reported; the difference between the initial and equilibrium concentration in supernatant defined as sorption capacity (isotherm)				
cient Results Mass Balance		Not Reported				

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.		
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Concurrent controls were not included, however this is not expected to limit the interpre- tation of the results.		
Continued on next page						

		contin	ued from prev	vious page				
Study Citation:	Fang, C., Long, Y Chemistry and Ec	Fang, C., Long, Y., uY, Shen, D. S. (2015). The influences of different organic fractions in refuse on the sorption and bioavailability of dibutyl phthalate. Chemistry and Ecology 31(6):539-549.						
UECD Harmonized	Adsorption and D	Adsorption and Desorption						
HERO ID:	3036175							
			FVAL HATIO	N				
Domain		Metric	Rating	Comments				
	Metric 4:	Test Substance Stability	Medium	Minimal details on test substance preparation, storage conditions, and homogeneity were reported.				
Domain 3: Test Condition	ons							
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	Medium	Limited soil/matrix characteristics were reported.				
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples and study groups.				
	Metric 8:	System Type and Design	High	Equilibrium was established and the system was capable of maintaining test substance concentrations.				
Domain 4: Test Organis	ms							
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the outcomes of interest.				
	Metric 12:	Test Substance Purity	High	The study used sampling methods that address the outcomes of interest and used widely accepted approaches.				
Domain 6: Confounding	v/Variable Control							
	Metric 13:	Confounding Variables	High	Variability and uncertainty were addressed appropriately by statistical techniques.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7: Data Present	ation and Analysis							
	Metric 15:	Data Reporting	High	Data reported was acceptable for this type of study.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods and partition coefficient calculations were described and applied appropriately.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The results were reasonable.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.				
Overall Qualit	ty Determina	ation	High					

Study Citation:Fang, H. H. P., Zheng, H. H. (2004). Adsorption of phthalates by activated sludge and its biopolymers. Environmental Technology 25(7):757-761.OECD HarmonizedAdsorption and DesorptionTemplate:Image: Complexity of the state o								
HERO ID:	1322128	128						
			EXTRACTION					
Parameter		Data	Linkienon					
CASPN and Test Material		84 74 2: Dibutyl phthelate						
Confidentiality Type Guid	alina	84-74-2; Dibutyi phthalate						
Solvent Reactivity Storage	e Stability	Note reported: Not reported: Not reported: N	lot reported					
Padiolabel Source State I	z, Stability	Not reported; Not reported; Not reported; N	lot reported Notes: Not reported					
Sampling Frequency Sa	mnling Details and	24 hours: After 24 hours of mixing the mi	ived liquor was filtered through	a 0.2 um membrane and residual filtrate was measured for remaining				
Number of Replicates	inpling Details, and	DEHP: Not reported	include was intered unough	a 0.2 uni memorane and residuar initiate was measured for remaining				
pH, Test Temperature, Buff	er, and Test Details	Not reported; Ambient temperature; Not rep	ported; 50mL of activated sludge	from a local municipal wastewater treatment plant was added to a 200				
		mL glass bottle and dosed with DBP. 1000	mg/L of sodium azide was added	l prior to the experiments to suppress microbial activity.				
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported; Not Reported; Not reported						
Bulk Density and Matrix D	etails	Not reported; Sludge contained 4.265 g/L of suspended solids and 3.505 g/L of volatile suspended solids.						
Media, Recovery, and Stati	stics	Activated sludge; Not reported; $\mathbb{R}^2$ for both isotherms were >0.99.						
Transformation Products, E	quilibrium	Not reported; Not reported; Not reported						
Adsorption Details, and Ed	Juniorium Desorption							
Reference Substance, Refe	erence Substance Re-	Not reported; Not reported; 100% at 0.5 to	10.0 mg/L, 80.0 to 58.8% at 50-5	500 ug/L.				
Adsorption Coefficient Tv	be. Adsorption Coef-	Freundlich and Langmuir: Freundlich para	meters: $k = 174.5$ , $n = 0.9394$ .	Langmuir parameters: Om (mg/g): 17.6, b: 0.00987.: Not Reported:				
ficient Results, Adsorption	n Coefficient Results	174.5						
Comments, and Adsorption	1							
Desorption Type								
Partition Coefficient Type	and Partition Coeffi-	not reported; not reported						
Partition Coefficient Phase	and Partition Coeffi-	Not reported; Not Reported						
cient Results Mass Balance		Not repoted						
		-						
			EVALUATION					
Domain		Metric	Rating	Comments				
Domain 1: Test Substan	ce		6					
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.				
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported, however, the omission is unlikely to have a				
				substantial impact on the study results.				
Domain 2. Test Design								
Domain 2. Test Design	Metric 3.	Study Controls	High	Blank controls were reported				
	Metric 4:	Test Substance Stability	Medium	The test substance preparation and storage conditions were not reported; however, the				
				omissions are unlikely to have a substantial impact on the study results.				

		C	ontinued from previous page					
Study Citation:	Fang, H. H. P., Zh	Fang, H. H. P., Zheng, H. H. (2004). Adsorption of phthalates by activated sludge and its biopolymers. Environmental Technology 25(7):757-761.						
OECD Harmonized	Adsorption and D	esorption						
Template:								
HERO ID:	1322128							
			EVALUATION					
Domain		Metric	Rating	Comments				
Domain 3: Test Condition	ons							
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.				
	Metric 7:	Testing Consistency	High	There were no reported changes in testing conditions across the study groups.				
	Metric 8:	System Type and Design	High	Equilibrium was established and the system was capable of maintaining substance con- centrations.				
Domain 4: Test Organis	ms							
-	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.				
Domain 5: Outcome As	sessment	<b>—</b> • • • •						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	The sampling methods were described and appropriate.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	Medium	Uncertainty was not reported in the concentration measurements; however, the omission is unlikely to have a substantial impact on the study results.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.				
Domain 7. Data Present	ation and Analysis							
Domain 7. Data Present	Metric 15.	Data Reporting	High	The analytical methods and data reporting were appropriate				
	Metric 16:	Statistical Methods and	High	The statistical analysis was appropriate				
	incure 10.	Kinetic Calculations	Ingn					
Damain 9. Other								
Domain 8: Other	Metric 17.	Varification or Plausibility of	Uich	The study regults are recorded				
	wieuric 17.	Verification of Plausionity of Desults	підп	The study results are reasonable.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.				
<b>Overall Quali</b>	ty Determin	ation	NEED TO FIX					

Study Citation:	Fromme, H., Kuchler, T., Otto, T., Pilz, K., Muller, J., Wenzel, A. (2002). Occurrence of phthalates and bisphenol A and F in the environment. Water					
OECD Harmonized	Research 36(6):142 Adsorption and De	29-1438. sorption				
Template: HERO ID:	679518					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		Not Reported; Not Reported				
Confidentiality, Type, Guide	eline	None; experimental; other				
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR				
Radiolabel, Source, State, P	Purity	ring-d4; Cambridge Isotope Laboratories; NR; 98%				
Sampling Frequency, Sampling Details, and Number of Replicates		1997 from various rivers, lakes and channels in Germany (North Rhine $\hat{a} \in \mathbb{C}^{+}$ Westphalia, Rheinland $\hat{a} \in \mathbb{C}^{+}$ Pfalz, Brandenburg and Berlin); Samples, collected in 2.5L brown glass bottles were preserved with 0.5 gL1 sodium azide to prevent microbial degradation of the analytes and either assayed immediately or first stored in the dark at 4 deg C + Not reported				
pH, Test Temperature, Buff	er, and Test Details	Not reported; Not reported; Not applicable (field study); Not Reported				
Matrix. Clay Silts and Orga	nic Carbon, and CEC	other; Not applicable (field study); Not reported				
Bulk Density and Matrix D	etails	Not reported; Not Reported				
Media, Recovery, and Statis	stics	Not Reported; 84.3-93.7% water; 102.3-117.2% sediment; Not Reported				
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption		Not reported; Not applicable (field study); Not applicable (field study)				
Reference Substance, Reference Substance Re- sults and Percent Adsorption		Not applicable (field study); Not applicable; Not Reported				
Adsorption Coefficient Type, Adsorption Coef- ficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type		Not Reported; Not Reported; Not Reported				
Partition Coefficient Type	and Partition Coeffi-	Kd = sediment concentration/water concentration; average Kd = 900 L/kg (calculated by reviewer from median concentrations)				
cient Results Partition Coefficient Phase cient Results Mass Balance	and Partition Coeffi-	sediment/water; Surface water concentrations 0.12-8.80 µg/L (median: 0.50 µg/L; 0.0005 mg/L); sediment concentrations 0.06-2.08 mg/kg dry weight (median: 0.45 mg/kg dry weight). Not applicable				
The Durance						

			EVALUATION		
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ice				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.	
Domain 2: Test Design	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.	
	Metric 4:	Test Substance Stability	Medium	The stability of the test substance in the environment was not tested, but this was un- likely to have affected the results.	
Continued on next page					

		conti	inued from previous	page
Study Citation:	Fromme, H., Kuc Research 36(6):1	chler, T., Otto, T., Pilz, K., Muller, J., V	Venzel, A. (2002). O	ccurrence of phthalates and bisphenol A and F in the environment. Water
OECD Harmonized	Adsorption and D	Desorption		
HERO ID:	679518			
	077010			
Domain		Metric	EVALUATION Rating	Comments
		hidule	Tuting	Comments
Domain 3: Test Conditi	ons			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	Medium	Some sediment and water characteristics were not reported: pH, CEC, sediment type, and temperature.
	Metric 7:	Testing Consistency	High	Samples were collected and analyzed consistently.
	Metric 8:	System Type and Design	High	Field studies are assumed to be at equilibrium.
Domain 4: Test Organis	sms			
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	recoment			
Domain 5. Outcome As	Metric 11:	Test Substance Identity	Medium	There was incomplete reporting of outcome assessment methods; however, such differ- ences or absence of details were not likely to be severe or have a substantial impact on the study results.
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and addressed the outcomes of interest.
Domain 6: Confounding	g/Variable Control	~ ~ ~ ~ ~ ~ ~ ~ ~		
	Metric 13:	Confounding Variables	Medium	There was incomplete reporting of outcome assessment methods; however, such differ- ences or absence of details were not likely to be severe or have a substantial impact on the study results.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Present	tation and Analysis			
	Metric 15:	Data Reporting	Low	There was insufficient data reported for sample sites.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetic calculations were not clearly described.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quali	ty Determin	ation	Medium	

Metric 1:

Metric 2:

Metric 3:

Metric 4:

Metric 5:

Domain 2: Test Design

Domain 3: Test Conditions

Test Substance Identity

Test Substance Stability

Test Substance Purity

Study Controls

Study Citation: OECD Harmonized	Giam, C. S., Chan, H. S., Neff, G. S., Atlas, E. L. (1978). Phthalate ester plasticizers: a new class of marine pollutant. Science 199(4327):419-421. Adsorption and Desorption					
Template:						
HERO ID:	790306					
		EXT	TRACTION			
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, Type, Guide	eline	None; Experimental; other: Not reported; Field study	in the Mississippi Delta and Gulf of Mexico			
Solvent, Reactivity, Storage	e, Stability	NA; NR; Sediment frozen in glass containers; organis	ms frozen in glass jars or aluminum foil; NR			
Radiolabel, Source, State, F	Purity	NA; Samples collected from the Mississippi Delta, G	llf coast, and open gulf; NA; NA			
Sampling Frequency, Sar	npling Details, and	Not reported; Top 10 cm of sediment collected by n	etal coring devices; Surface water samples extrac	ted from site through Amberlite XAD-2		
Number of Replicates		resin; Not reported				
pH, lest lemperature, Bull	er, and Test Details	Not reported; Not reported; Not reported; Samples collected as part of a monitoring study for the Mississippi delta region and Gulf coast.				
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported; Not reported				
Bulk Density and Matrix D	etails	Not reported; Natural sediment				
Media, Recovery, and Statis	stics	Natural water; > 90%; Not conducted				
Adaptation Details and Eq	quilibrium Decorption	NA; NA; NA				
Details	uniorium Desorption					
Reference Substance, Refe	erence Substance Re-	Blank; < 0.2 ng/L (water), < 0.1 ng/g (sediment); No	t Reported			
sults, and Percent Adsorption	on					
Adsorption Coefficient Typ	pe, Adsorption Coef-	Not Reported; No	orted			
Comments and Adsorption	Coefficient Results					
Desorption Type						
Partition Coefficient Type	and Partition Coeffi-	Kd = concentration in sediment/concentration in water; Mean Kd = $0.14 \text{ L/g}$ (Mississippi delta), $0.10 \text{ L/g}$ (Gulf coast), $0.04 \text{ L/g}$ (Open gulf)				
cient Results						
Partition Coefficient Phase	and Partition Coeffi-	sediment-water; Mississippi delta mean water conc.: 95 ng/L; mean sed. conc.: 13 ng/gGulf coast mean water conc.: 74 ng/L; mean sed. conc.:				
Cient Results		7.6 ng/gOpen gulf mean water conc.: 93 ng/L; mean sed. conc.: 3.4 ng/g				
Mass Datance		Not Reported				
		EV	LUATION			
Domain		Metric	Rating	Comments		
Domain 1: Test Substand	ce					

 Test Method Suitability
 High
 The field study method was appropriate for the chemical of interest.

 Continued on next page ...
 Continued on state and the study method was appropriate for the chemical of interest.

High

Medium

High

Medium

The pollutant of interest was identified by name.

Blanks were included and the results were reported.

The sample source was reported generally, specific sites were not reported.

Sample storage was reported, sample preparation and extraction was not reported.

		C	ontinued from previous page	9				
Study Citation: OECD Harmonized Template:	Giam, C. S., Ch Adsorption and	Giam, C. S., Chan, H. S., Neff, G. S., Atlas, E. L. (1978). Phthalate ester plasticizers: a new class of marine pollutant. Science 199(4327):419-421. Adsorption and Desorption						
HERO ID:	790306							
			EVALUATION					
Domain		Metric	Rating	Comments				
	Metric 6:	Testing Conditions	Medium	No environmental conditions or sample characteristics were reported.				
	Metric 7:	Testing Consistency	High	Samples were collected and processed consistently.				
	Metric 8:	System Type and Design	High	Field studies are assumed to be in dynamic equilibrium.				
Domain 4: Test Orgar	nisms							
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome	Assessment							
	Metric 11:	Test Substance Identity	Medium	Partition coefficients were calculated by the reviewer and not reported in the study.				
	Metric 12:	Test Substance Purity	Medium	Sample frequency was not reported, surface water samples were collected as opposed to water just above sediment.				
Domain 6: Confoundi	ing/Variable Control							
	Metric 13:	Confounding Variables	Low	Few study details reported, site specific data not reported, surface water collected.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7: Data Prese	entation and Analysi	s						
	Metric 15:	Data Reporting	Medium	The analytical method was appropriate; recovery was reported, limits of detection were not reported. Partition coefficients were calculated by the reviewer. Site specific data was not reported, data reported as averages and ranges.				
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	Statistical analysis was not applied.				
Domain 8: Other	Metric 17:	Verification or Plausibility of	Uninformative	Partition coefficients were determined by the reviewer based on average site data: site				
		Results		specific data was not reported, sample characteristics (ex. organic carbon content) were not reported, limiting the broader usefulness of these values. Additionally, the water samples were collected from the surface and may not have been close to the sediment which results in less reliable partition coefficients.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
<b>Overall Qual</b>	lity Determi	nation	Uninformative					

Study Citation:	He, F., Song, H., Fresenius Environ	Cheng, S., Liang, W.,ei, Wu, Z. (2008). Distribution of 25 semi-volatile organic compounds of two urban lakes in Wuhan, China. mental Bulletin 17(1):20-26.
Tompleter	Ausorption and De	csorption
HERO ID:	1597996	
		EXTRACTION
Parameter		Data
CASRN and Test Material		84-74-2; DnBP
Confidentiality, Type, Guid	leline	None; Experimental; other: Not reported; distribution of selected pollutants between water and suspended particulate matter (SPM) in lakes
Solvent, Reactivity, Storage	e, Stability	NA; NK; Samples stored at -20°C; NK
Sampling Frequency, Sampling Details, and Number of Replicates		April 2006; 4L surface water collected with cylinder samplers, SPM filtered on glass fiber filters and retained for analysis; Not reported
pH, Test Temperature, Buff	fer, and Test Details	Not reported; Concentrated at 25°C then freeze-dried; NA; Water and SPM samples collected from 8 sites in the Yuehu Lake (residential area) and 4 sites in the Moshuihu Lake (previously an industrial and agricultural complex area)
Matrix, Clay Silts and Orga	anic Carbon, and CEC	Not Reported; Not reported; Not reported
Bulk Density and Matrix D	Details	Not reported; Filtered suspended particulate matter from lake water
Media, Recovery, and Stati	stics	Surface lake water; 67-102% (water), 72-97% (SPM); Not reported
Transformation Products, E Adsorption Details, and Ec	Equilibrium quilibrium Desorption	Not reported; NA, field study; NA
Reference Substance, Refe	erence Substance Re-	Not reported; Not reported; Not Reported
Adsorption Coefficient Tyj ficient Results, Adsorption Comments, and Adsorption Desorption Type	pe, Adsorption Coef- n Coefficient Results	Not Reported; Not Reported; Not Reported
Partition Coefficient Type	and Partition Coeffi-	Kd = [SPM]/[water] (not reported by study authors. Calculated by the reviewer); Kd = 2.476 L/g (Yuehu Lake), 2.468 L/g (Moshuihu Lake)
cient Results Partition Coefficient Phase cient Results Mass Balance	and Partition Coeffi-	suspended matter-water; Mean Yuehu Lake water: 292.9±69.6 ng/L; Mean Moshuihu Lake water: 728.5±298.2 ng/LMean Yuehu Lake SPM: 725.1±599.8 ng/g d.w.; Mean Moshuihu Lake SPM: 1798.2±1261.1 ng/g d.w. Not Reported

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The chemical of interest was reported.		
	Metric 2:	Test Substance Purity	High	The sample source was reported; the analytical standard source was reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	Medium	Field or analytical blanks were not explicitly included.		
	Metric 4:	Test Substance Stability	High	Sample preparation and storage was reported.		

		contin	ued from pre	vious page			
Study Citation: OECD Harmonized	He, F., Song, H., Fresenius Environ Adsorption and D	He, F., Song, H., Cheng, S., Liang, W.,ei, Wu, Z. (2008). Distribution of 25 semi-volatile organic compounds of two urban lakes in Wuhan, China. Fresenius Environmental Bulletin 17(1):20-26. Adsorption and Desorption					
Template:	1	I. I.					
HERO ID:	1597996						
		1	EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 3: Test Conditio	ons						
	Metric 5:	Test Method Suitability	High	The field study method was appropriate for the chemical of interest.			
	Metric 6:	Testing Conditions	Medium	No environmental conditions or sample characteristics were reported.			
	Metric 7:	Testing Consistency	High	Samples were collected, processed, and analyzed consistently.			
	Metric 8:	System Type and Design	High	Field studies are assumed to be in dynamic equilibrium.			
Domain 4: Test Organisr	ns Metric 9 <sup>.</sup>	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
	Metale 10.	Sumpring Woulds	10/11				
Domain 5: Outcome Ass	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining partition coefficients between water and SPM.			
	Metric 12:	Test Substance Purity	Medium	Sampling methods were appropriate, sampling frequency was not reported but multiple sites per lake were sampled.			
Domain 6: Confounding	/Variable Control	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~					
	Metric 13:	Confounding Variables	Medium	The study does not report sediment or water characteristics (pH, organic matter content), which limits the usefulness of the partition coefficient as it cannot be normalized to organic carbon			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.			
		Exposure					
Domain 7: Data Prosonte	tion and Analysis						
Domani 7. Data Fresenta	Metric 15:	Data Reporting	High	The analytical method was appropriate; recovery and limits of detection were reported. Partition coefficients were calculated by the reviewer but raw data was reported in the study			
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	Statistical analysis was not conducted.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of Results	Medium	The results were reasonable based on the method and the coefficients were comparable between lakes, however the value could not be normalized to organic carbon and cannot reliably be applied to other environments.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
Overall Qualit	y Determina	ation	High				

Study Citation:	HEW, (2019). The	occurrence, composition and partiti	ioning of phthalate	e esters (PAEs) in the water-suspended particulate matter (SPM) system of Lake		
OECD Harmonized	Chaohu, China. Sc Adsorption and De	ience of the Total Environment 661:2 sorption	285-293.			
Template: HERO ID:	5433399					
			EXTRACTIO	N		
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, Type, Guid	eline	None; Experimental; other: Seasonal or	rganic-carbon norma	lized partition coefficients of DBP in water-SPM system.		
Solvent, Reactivity, Storage	e, Stability	NR; NR; Hexane and Acetone working	standards; NR			
Radiolabel, Source, State, H	Purity	NR; Field samples. Standards were obt	ained from AccuSta	ndard Inc., New Haven, Connecticut.; NR; NR		
Sampling Frequency, Sampling Details, and Number of Replicates		Water samples collected at 20 sites in Lake Chaohu, China, in summer, autumn, and winter.; 10 sites in lake, 10 sites in lake estuaries. Water depth was $>1$ m in all samples except for 6 of the winter estuary samples. Samples; Composite samples at each site were collected from 3 depths (surface intermediate and bottom water)				
pH, Test Temperature, Buff	er, and Test Details	Not reported; Not reported; None; 2L of water was filtered through GFF to collected suspended particulate matter. Not Reported; Not reported Not reported; Not reported Not Reported; Water: 74.3-102.%; SPM: 70.6-105.6%.; Not Reported Not reported; Not reported; Not reported Not reported; Not reported; Not reported				
Matrix, Clay Silts and Orga	nic Carbon, and CEC					
Bulk Density and Matrix D	etails					
Media, Recovery, and Statis	stics					
Transformation Products, E Adsorption Details, and Eq Details	quilibrium Juilibrium Desorption					
Reference Substance, Refe sults, and Percent Adsorption	erence Substance Re-					
Adsorption Coefficient Ty ficient Results, Adsorption Comments, and Adsorption Desorption Type	pe, Adsorption Coef- n Coefficient Results	Not Reported; Not Reported; Not Repo	orted; Not Reported			
Partition Coefficient Type	and Partition Coeffi-	Log Koc (Mean±SD); Summer: 2.35±0.42; Autumn: 2.38±0.78; Winter: 2.90±0.31.				
Partition Coefficient Phase	and Partition Coeffi-	Not Reported; Koc = [(Conc. In SPM)/(Conc. In water)]/(% Particulate organic carbon)				
Mass Balance	is Balance Not Reported					
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.		
	Metric 2:	Test Substance Purity	High	The test substance was measured in field samples using appropriate analytical tech-		

Domain 2: Test Design

Metric 3:	Study Controls	High Appropriate controls in the analytical method were used.
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Continued on next page ...

PUBLIC RELEASE DRAFT May 2025 Adsorption and Desorption

		conun	ued from pre	vious page		
Study Citation:	HEW, (2019). '	The occurrence, composition and partitionin	ng of phthalate	e esters (PAEs) in the water-suspended particulate matter (SPM) system of Lake		
OECD Harmonized	Adsorption and Desorption					
HERO ID:	5433399					
		J	EVALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 4:	Test Substance Stability	High	The preparation of the samples containing the test substance was reported and appropri- ate.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	Medium	Some of the test conditions were not reported; however, the omissions are unlikely to have a substantial impact on the study results.		
	Metric 7:	Testing Consistency	Medium	Testing conditions were not reported at each sampling site; however, the omissions are unlikely to have a substantial impact on the study results.		
	Metric 8:	System Type and Design	Medium	Equilibrium was not assumed, prevented by factors such as degradation, biological uptake, allogenic input, and internal PAE release. However, this does not make the study unusable.		
Domain 4: Test Organis	ms					
6	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.		
Domain 5: Outcome As	sessment					
Domain 5. Outcome His	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.		
	Metric 12:	Test Substance Purity	High	The sampling methods were reported and appropriate.		
Domain 6: Confounding	v/Variable Control	1				
	Metric 13:	Confounding Variables	High	Uncertainty in the partition coefficients was reported and unlikely to have a substantial impact on the outcome assessment.		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.		
Domain 7: Data Present	ation and Analysi	IS				
	Metric 15:	Data Reporting	High	The data reporting was appropriate and the analytical method was suitable for detection and quantification of the test substance.		
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The statistical analysis was appropriate.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.		
	M ( 10	AD Modele	NI/A	The metric is not employed to the study type		

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		continued from previous page					
Study Citation:	HEW, (2019). The occurrence, composition and partitioning of phthalate esters (PAEs) in the water-suspended particulate matter (SPM) system of Lake						
OECD Harmonized Template:	Adsorption and Desorption	AR 001.203 255.					
HERO ID:	5433399						
		EVALUATION					
Domain	Metric	Rating	Comments				
<b>Overall Qualit</b>	y Determination	High					

Study Citation:	Kao, P. H., Lee, F.	Y., Hseu, Z. Y. (2005). Sorption and biodegradation of phthalic acid esters in freshwater sediments. Journal of Environmental Science					
OFCD Harmonized	and Health, Part A:	nd Health, Part A: Toxic/Hazardous Substances & Environmental Engineering 40(1):103-115.					
Template:	Ausorption and De	sorphon					
HERO ID:	681974						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, Type, Guide	eline	None; Experimental; other: sorption isotherm determination via the batch equilibrium procedure					
Solvent, Reactivity, Storage	, Stability	NR; NR; NR					
Radiolabel, Source, State, P	Purity	NR; Sigma Company; NR; 99%					
Sampling Frequency, Sampling Details, and Number of Replicates		Not reported; 0-15 cm surface sediment samples collected from Fong-Shan River in Taiwan using Ekman grab sampler; 3					
pH, Test Temperature, Buffer, and Test Details		7.8; 25°C; Not reported; 5g sediment; 25 mL of various concentrated solutions ( $\leq$ 2.0 mg/L) test substance					
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported; 71% sand; 21% silt; 8% clay; 14.8 g/kg organic matter; 15.3 cmol/kg					
Bulk Density and Matrix De	etails	Not reported; $< 2 \text{ mm}$ sediment size					
Media, Recovery, and Statis	stics	Native sediment and test substance solution; $97.3\%$ ; $\pm 6.7\%$					
Transformation Products, E Adsorption Details, and Eq	quilibrium uilibrium Desorption	Not applicable; Not reported; desorption: 8% of adsorbed / 30 d					
Reference Substance, Refe sults, and Percent Adsorptic	rence Substance Re-	Not applicable; Not applicable; Not reported					
Adsorption Coefficient Type, Adsorption Coef- ficient Results, Adsorption Coefficient Results Comments, and Adsorption		Not Reported; Not Reported; 0.36					
Desorption Type							
Partition Coefficient Type	and Partition Coeffi-	nonlinear Freundlich model; $R^2 = 0.92$					
cient Results Partition Coefficient Phase cient Results	and Partition Coeffi-	sediment-water; Not Reported					
Mass Balance		Not Reported					

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.		
	Metric 2:	Test Substance Purity	High	The purity and source of the test substance was reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	A negative control was not required.		
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported.		
Domain 3: Test Conditions						

#### ... continued from previous page **Study Citation:** Kao, P. H., Lee, F. Y., Hseu, Z. Y. (2005). Sorption and biodegradation of phthalic acid esters in freshwater sediments. Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances & Environmental Engineering 40(1):103-115. **OECD Harmonized** Adsorption and Desorption **Template:** 681974 **HERO ID: EVALUATION** Domain Metric Rating Comments Metric 5: Test Method Suitability High The test method was suitable. Metric 6: **Testing Conditions** High Sediment type, location, particle size, background organic matter content, CEC, and pH were reported. Metric 7: Testing Consistency High Testing conditions were consistent across groups. Metric 8: System Type and Design High Equilibrium was established. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology N/A The metric is not applicable to this study type. Metric 10: Sampling Methods N/A This metric is not applicable to the study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High The outcome assessment methodology addressed or reported the intended outcome(s) of interest. Metric 12: Test Substance Purity High The study used Ekman grab samplers to collect sediment samples and GC-MS for analysis. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables High All reported variability or uncertainty was not likely to influence the outcome assessment. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to the study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting High The extraction efficiency and detection limit was reported, the analytical methods were appropriate. Metric 16: Statistical Methods and High Statistical methods were appropriate for the dataset. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of High The study results were reasonable. Results Metric 18: **OSAR** Models N/A The metric is not applicable to this study type. **Overall Quality Determination** High

Study Citation:	Kao, P. H., Lee, F.	Kao, P. H., Lee, F. Y., Hseu, Z. Y. (2005). Sorption and biodegradation of phthalic acid esters in freshwater sediments. Journal of Environmental Science					
OECD Harmonized	Adsorption and Desorption						
Template: HERO ID:	681974						
			EXTRACTIO	ION			
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, Type, Guide	eline	None; Experimental; other: sorption	isotherm determinatio	tion via the batch equilibrium procedure			
Solvent, Reactivity, Storage	, Stability	NR; NR; NR; NR					
Radiolabel, Source, State, P	Purity	NR; Sigma Company; NR; 99%					
Sampling Frequency, Sam Number of Replicates	npling Details, and	Not reported; 0-15 cm surface sedin	nent samples collected	ed from Ah-Kung-Dian River in Taiwan using Ekman grab sampler; 3			
pH, Test Temperature, Buff	er, and Test Details	7.8; 25°C; Not reported; 5g sediment; 25 mL of various concentrated solutions ( $\leq$ 2.0 mg/L) test substance					
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported; 84% sand; 5% silt; 8% clay; 25.3 g/kg organic matter; 9.13 cmol/kg					
Bulk Density and Matrix De	etails	Not reported; $< 2 \text{ mm}$ sediment size					
Media, Recovery, and Statis	stics	Native sediment and test substance solution; $97.3\%$ ; $\pm 6.7\%$					
Transformation Products, E Adsorption Details, and Eq	quilibrium uilibrium Desorption	Not applicable; Not reported; desorption: 12% of adsorbed / 30 d					
Reference Substance, Refe	rence Substance Re-	Not applicable; Not applicable; Not reported					
Adsorption Coefficient Typ ficient Results, Adsorption Comments, and Adsorption Desorption Type	e, Adsorption Coef- Coefficient Results	Not Reported; Not Reported; 1.45					
Partition Coefficient Type	and Partition Coeffi-	nonlinear Freundlich model; $R^2 =$	0.99				
Partition Coefficient Phase	and Partition Coeffi-	sediment-water; Not Reported					
cient Results Mass Balance Not Reported							
			EVALUATIO	ION			
Domain		Metric	Rating	g Comments			
Domain 1: Test Substand	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.			
	Matria 2.	Test Substance Durity	Uigh	The purity and course of the test substance was reported			

Continued on next page					
	Metric 5:	Test Method Suitability	High	The test method was suitable.	
Domain 3: Test Conditions					
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported.	
	Metric 3:	Study Controls	N/A	A negative control was not required.	
Domain 2: Test Des	sign				
	Metric 2:	Test Substance Purity	High	The purity and source of the test substance was reported.	
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.	

		continu	ied from pre	vious page				
Study Citation:	Kao, P. H., Lee, I and Health, Part A	Kao, P. H., Lee, F. Y., Hseu, Z. Y. (2005). Sorption and biodegradation of phthalic acid esters in freshwater sediments. Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances & Environmental Engineering 40(1):103-115.						
OECD Harmonized	Adsorption and Desorption							
Template:	691074							
HERO ID:	081974							
		E	VALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 6:	Testing Conditions	High	Sediment type, location, particle size, background organic matter content, CEC, and pH were reported.				
	Metric 7:	Testing Consistency	High	Testing conditions were consistent across groups.				
	Metric 8:	System Type and Design	High	Equilibrium was established.				
Domain 4: Test Organis	sms							
C	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to the study type.				
Domain 5: Outcome As	Sessment	Tost Substance Identity	High					
	Metric 11:	Test Substance Identity	пigii	interest.				
	Metric 12:	Test Substance Purity	High	The study used Ekman grab samplers to collect sediment samples and GC-MS for analy- sis.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	High	All reported variability or uncertainty was not likely to influence the outcome assessment.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.				
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	High	The extraction efficiency and detection limit was reported, the analytical methods were appropriate.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were appropriate for the dataset.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
<b>Overall Quali</b>	ty Determin	ation	High					

Study Citation:	Kao, P. H., Lee, F. Y., Hseu, Z. Y. (2005). Sorption and biodegradation of phthalic acid esters in freshwater sediments. Journal of Environmental Science							
OECD Harmonized	Adsorption and De	in, Part A: Toxic/Hazardous Substances & Environmental Engineering 40(1):103-115.						
Template:	· ·							
HERO ID:	681974							
			EXTRACTIC	ION				
Parameter		Data						
CASRN and Test Material		84-74-2: DBP						
Confidentiality, Type, Guide	eline	None; Experimental; other: sorption	isotherm determinatio	ion via the batch equilibrium procedure				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR; NR		· ·				
Radiolabel, Source, State, P	urity	NR; Sigma Company; NR; 99%						
Sampling Frequency, San Number of Replicates	npling Details, and	Not reported; 0-15 cm surface sediment samples collected from Dian-Bao River in Taiwan using Ekman grab sampler; 3						
pH, Test Temperature, Buffe	er, and Test Details	7.7; 25°C; Not reported; 5g sediment	; 25 mL of various co	concentrated solutions ( $\leq$ 2.0 mg/L) test substance				
Matrix, Clay Silts and Organ	nic Carbon, and CEC	Not Reported; 85% sand; 9% silt; 6% clay; 5.20 g/kg organic matter; 7.60cmol/kg Not reported; < 2 mm sediment size Native sediment and test substance solution; 97.3%; ±6.7%						
Bulk Density and Matrix De	etails							
Media, Recovery, and Statis	tics							
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption		Not applicable; Not reported; desorption: 6% of adsorbed / 30 d						
Reference Substance, Refe	rence Substance Re-	Not applicable; Not applicable; Not reported						
Adsorption Coefficient Typ ficient Results, Adsorption Comments, and Adsorption Desorption Type	e, Adsorption Coef- Coefficient Results	Not Reported; Not Reported; Not Re	ported; 0.25					
Partition Coefficient Type	and Partition Coeffi-	nonlinear Freundlich model; $R^2 = 0.97$						
cient Results Partition Coefficient Phase and Partition Coeffi-		sediment-water; Not Reported						
Mass Balance		Not Reported						
			EVALUATIO	ON				
Domain		Metric	Rating	Comments				
Domain 1: Test Substanc	ce							
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.				
	Metric 2:	Test Substance Purity	High	The purity and source of the test substance was reported.				

Domain 2: Test De	esign				
	Metric 3:	Study Controls	N/A	A negative control was not required.	
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported.	
Domain 3: Test Co	onditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable.	
Continued on next page					

		continu	led from pre-	vious page				
Study Citation:	Kao, P. H., Lee, I and Health, Part	Kao, P. H., Lee, F. Y., Hseu, Z. Y. (2005). Sorption and biodegradation of phthalic acid esters in freshwater sediments. Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances & Environmental Engineering 40(1):103-115.						
OECD Harmonized	Adsorption and Desorption							
Template:								
HERO ID:	681974							
		F	VALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 6:	Testing Conditions	High	Sediment type, location, particle size, background organic matter content, CEC, and pH were reported.				
	Metric 7:	Testing Consistency	High	Testing conditions were consistent across groups.				
	Metric 8:	System Type and Design	High	Equilibrium was established.				
Domain 4: Test Organis	sms							
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to the study type.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.				
	Metric 12:	Test Substance Purity	High	The study used Ekman grab samplers to collect sediment samples and GC-MS for analy- sis.				
Domain 6: Confounding	2/Variable Control							
	Metric 13:	Confounding Variables	High	All reported variability or uncertainty was not likely to influence the outcome assessment.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.				
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	High	The extraction efficiency and detection limit was reported, the analytical methods were appropriate.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were appropriate for the dataset.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Qualit	ty Determin	ation	High					

Study Citation:	Li, R., Liang, J., D Marine Pollution B	Li, R., Liang, J., Duan, H., Gong, Z. (2017). Spatial distribution and seasonal variation of phthalate esters in the Jiulong River estuary, Southeast China. Marine Pollution Bulletin 122(1-2):38-46.				
OECD Harmonized	Adsorption and De	sorption				
HERO ID:	3859571					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, Type, Guide	eline	None; Experimental; other: Not reported; field study				
Solvent, Reactivity, Storage	, Stability	NA; NR; Water samples stored in 10 L brown glass jar at 4°C; suspended particulate matter stored in aluminum pots at 4 °C; sediment stored in brown glass jar at 4 °C; NR				
Radiolabel, Source, State, P	Purity	NA; Environmental samples from the Jiulong River estuary; NA; NA				
Sampling Frequency, Sampling Details, and Number of Replicates		August 2014 (wet season), April 2014 (normal season), dry season (January 2015); Samples collected from 15 sites along the salinity gradient in the Jiulong River estuary; Water samples 0 - 20 cm collected by stainless steel barrel, suspended particulate matter filtered through glass fibers; sediment 0 - 10 cm grab samples; Not reported				
pH, Test Temperature, Buffer, and Test Details		Not reported; Not reported; Field study				
Matrix, Clay Silts and Organ	nic Carbon, and CEC	Not Reported; Not reported; Not reported				
Bulk Density and Matrix De	etails	Not reported; Estuary suspended particulate matter				
Media, Recovery, and Statistics		Estuary water; Standard addition recovery: 77.1 - 101.9% (water), 90.3 - 101.4% (suspended particulate), 87.0 - 101.7% (sediment)Surrogate standard recoveries: 79.2±9.8% (water), 80.5±12.8% (suspended particulate), 102.4±5.9% (sediment); Log K for sediment-water or suspended particulate-water participationing had no significant relationship to alkyl chain length or log Kow of the studied PAEs				
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption		NA; NA; NA				
Reference Substance, Refe sults, and Percent Adsorption	rence Substance Re-	Analytical blank; Not reported; Not reported				
Adsorption Coefficient Typ ficient Results, Adsorption Comments, and Adsorption Desorption Type	be, Adsorption Coef- n Coefficient Results	Not Reported; Not Reported; Not Reported				
Partition Coefficient Type	and Partition Coeffi-	suspended particulate matter/water; 3240, 1760, 1170 L/kg				
Partition Coefficient Phase cient Results Mass Balance	and Partition Coeffi-	suspended matter-water; Calculated for wet, normal, and dry seasonsWater (wet, normal, dry): 0.67, 0.37, 0.54 ug/LSuspended particulate (wet, normal, dry): 2.17, 0.65, 0.63 mg/kgSediment (wet, normal, dry): 19.2, 11.5, 20.5 ug/kg NA				

EVALUATION							
Domain		Metric	Rating	Comments			
Domain 1: Test Substance							
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	High	The sample source was reported.			

Domain 2: Test Design

		contin	nued from pre	vious page					
Study Citation:	Li, R., Liang, J., Duan, H., Gong, Z. (2017). Spatial distribution and seasonal variation of phthalate esters in the Jiulong River estuary, Southeast China. Marine Pollution Bulletin 122(1-2):38-46								
OECD Harmonized	Adsorption and De	esorption							
Template:	2050571								
HERO ID:	3859571								
			EVALUATIO	N					
Domain		Metric	Rating	Comments					
	Metric 3:	Study Controls	High	Analytical blanks were included, the results were assumed to be with in an acceptable range.					
	Metric 4:	Test Substance Stability	Medium	Sample storage conditions were reported, sample preparation was reported elsewhere or in supplemental information.					
Domain 3: Test Conditi	ons								
	Metric 5:	Test Method Suitability	High	The test method is suitable for the test substance.					
	Metric 6:	Testing Conditions	Medium	No environmental conditions or characteristics of the samples were reported.					
	Metric 7:	Testing Consistency	High	Samples were collected and analyzed consistently.					
	Metric 8:	System Type and Design	High	Field studies are assumed to be at equilibrium.					
Domain 4: Test Organis	sms		27/4						
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.					
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.					
Domain 5: Outcome As	ssessment								
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the outcomes of interest.					
	Metric 12:	Test Substance Purity	Medium	Sampling methods addressed seasonal variability but the number of replicates per site was not reported.					
Domain 6: Confounding	g/variable Control	Confounding Variables	High	Variability and addressed between sites and second					
	Metric 14:	Health Outcomes Unrelated to	nign N/A	variability was addressed between sites and seasons.					
	wieuric 14:	Exposure	IN/A	The metric is not applicable to this study type.					
Domain 7: Data Presen	tation and Analysis								
	Metric 15:	Data Reporting	High	The analytical method was appropriate, extraction efficiency and limits of detection were reported,					
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Partition coefficient calculations were described and conducted appropriately.					
Domain 8: Other									
	Metric 17:	Verification or Plausibility of	Medium	The results were reasonable based on the method, however broader trends cannot be determined without reported sample characteristics					
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.					
<b>Overall Ouali</b>	tv Determina	ation	High						

Study Citation:	Li, R., Liang, J., C	Li, R., Liang, J., Gong, Z., Zhang, N., Duan, H. (2017). Occurrence, spatial distribution, historical trend and ecological risk of phthalate esters in the					
OECD Harmonized	Adsorption and De	sorption					
Template:		•					
HERO ID:	3483279						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, Type, Guide	eline	None; Experimental; other: Not reported					
Solvent, Reactivity, Storage	e, Stability	NA; NR; Water filtered, stored at 4°C; sediment stored in brown glass jar at 4°C; NR					
Radiolabel, Source, State, P	Purity	NA; 35 stations; 15 from the North River, 4 from the West River, 6 from its estuary, Jiulong River Basin, China; NA; NA Notes: Standard solution:					
		mixture of 16 PAEs at 1000 mg/L in n-hexane obtained from Dr. Ehrenstorfer, Gmbh, Augsburg, Germany					
Sampling Frequency, Sampling Details, and Number of Replicates		March 2014; 0-20 cm surface layer of water and 0-10 cm surface layer sediment; Not reported					
pH, Test Temperature, Buffer, and Test Details		Not reported; Not reported; NA; Monitoring study conducted at 35 sites in the Jiulong River Basin (North and West Rivers, and its estuary), China					
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported; Not reported; Not reported					
Bulk Density and Matrix De	etails	Not reported; Natural fluvial and estuarine sediment					
Media, Recovery, and Statis	stics	Natural fluvial and estuarine river; 77.1 - 101.9% (water), 87.0 - 101.7% (sediment); Not reported					
Transformation Products, E	quilibrium	Not reported; Not Reported; Not Reported					
Adsorption Details, and Eq	uilibrium Desorption						
Details	01 ( D						
sults and Percent Adsorptic	brence Substance Re-	Method blank; $< 0.13$ ug/L (water), $< 0.045$ mg/kg (sediment); Not Reported					
Adsorption Coefficient Tvr	be. Adsorption Coef-	Not Reported: Not Reported: Not Reported					
ficient Results, Adsorption	Coefficient Results						
Comments, and Adsorption							
Desorption Type							
Partition Coefficient Type and Partition Coeffi-		sediment/water partitioning; 97.62 (North River), 82.09 (West River), 38.46 (estuary) L/kg					
cient Results	and Dartition Cooff	adiment water, Average water concentrations, 0.42 (North Biver), 0.67 (West Biver), and 0.52 (estuard) wall Average adiment, 0.041 (North					
cient Results	and Partition Coem-	scument-water, Average water concentrations: 0.42 (NOTH KIVET), 0.07 (West KIVET), and 0.52 (estuary) ug/LAverage sediment: 0.041 (NOTH River) 0.055 (West River) and 0.020 (estuary) mg/kg					
Mass Balance		NA					
Thus Duluice							

EVALUATION							
Domain		Metric	Rating	Comments			
Domain 1: Test Substand	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	High	The sample source was reported; the analytical standard source was reported.			
Domain 2: Test Design							
	Metric 3:	Study Controls	High	Method blanks were included and results were within an acceptable range.			
	Metric 4:	Test Substance Stability	High	Sample storage and preparation was reported and appropriate for the study.			
		contin	ued from prev	vious page			
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Study Citation:	Li, R., Liang, J., Jiulong River, Sou	Gong, Z., Zhang, N., Duan, H. (2017). utheast China. Science of the Total Enviro	Occurrence, s onment 580(El	patial distribution, historical trend and ecological risk of phthalate esters in the sevier):388-397.			
<b>OECD Harmonized</b>	Adsorption and D	esorption		, ,			
Template:							
HERO ID:	3483279						
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 3: Test Condition	ons						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	Medium	No sample characteristics for water or sediments were reported.			
	Metric 7:	Testing Consistency	High	Samples were collected, processed, and analyzed consistently.			
	Metric 8:	System Type and Design	High	Field studies are assumed to be at equilibrium.			
Domain 4: Test Organisms							
Domain 1. Test organis	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the outcomes of interest.			
	Metric 12:	Test Substance Purity	High	Samples were collected from each site only once, however 35 sites were samples which is appropriate for a monitoring study.			
Domain 6: Confounding	g/Variable Control		TT' 1				
	Metric 13:	Confounding variables	High	Trends in spatial distribution of the pollutants were discussed.			
	Metric 14:	Exposure	N/A	The metric is not applicable to this study type.			
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	High	Averages and ranges of the data were reported, recovery of surrogates was reported, limits of quantification were reported, the analytical method was appropriate.			
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	Statistical analysis was not conducted.			
Domain 8: Other	Matria 17		M. P				
	Metric 17:	Results	Medium	The results were comparable to previous studies and seem reasonable however without characteristics of the samples, little information on overall trends can be derived from them.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Qualit</b>	ty Determin	ation	High				

Study Citation:	Li, T., Yin, P., Zha	Li, T., Yin, P., Zhao, L., Wang, G., Yu, Q. J., Li, H., Duan, S. (2015). Spatial-temporal distribution of phthalate esters from riverine outlets of Pearl River			
<b>OECD Harmonized</b>	Adsorption and De	sorption			
Template:					
HERO ID:	2816369				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		Not Reported; dibutyl phthalate			
Confidentiality, Type, Guide	eline	None; experimental; other: field study			
Solvent, Reactivity, Storage	e, Stability	isooctane; NR; NR			
Radiolabel, Source, State, P	Purity	None; Dr Ehrenstorfer GmbH (Germany); standard solution containing DMP, DEP, DBP, BBP, DEHP, DnOP; 1000 mg/L Notes: DBP			
Sampling Frequency, Sampling Details, and Number of Replicates		January (dry season) and April (wet season) 2013; Water and sediment samples were collected at seven riverine outlets of the Pearl River Delta; 3			
pH, Test Temperature, Buff	er, and Test Details	not applicable; not applicable; not applicable; Not Reported			
Matrix, Clay Silts and Orga	nic Carbon, and CEC	other; not reported; not reported			
Bulk Density and Matrix De	etails	not reported; natural water-natural sediment			
Media, Recovery, and Statis	stics	not applicable; recovery 76.3-106%, RSD 10.7% (all chemicals); not reported			
Transformation Products, E Adsorption Details, and Eq	quilibrium uilibrium Desorption	not reported; not applicable; not applicable			
Details					
Reference Substance, Refe sults, and Percent Adsorptio	prence Substance Re-	surrogate standard solution DiPhenP, DPhenP and DBenzP; all surrogate recoveries were within acceptable limits; Not Reported			
Adsorption Coefficient Typ ficient Results, Adsorption Comments, and Adsorption Desorption Type	be, Adsorption Coef- n Coefficient Results	Not Reported; Not Reported; not reported			
Partition Coefficient Type cient Results	and Partition Coeffi-	sediment/water; using mean measured values; wet season: 0.96; dry season 1.59; overall 1.23			
Partition Coefficient Phase	and Partition Coeffi-	sediment-water; Calculated by [sediment]/[water]			
Mass Balance		Wet season: nd-2.04 ug/L, mean 0.55 ug/L (water); 0.15-2.50 ug/g, mean 0.53 ug/g (sediment); Dry season: 0.04-1.01 ug/L, mean 0.41 ug/L (water); 0.28-1.16 ug/g, mean 0.65 ug/g (sediment); overall: nd-2.04 ug/L, mean 0.48 ug/L (water); 0.15-2.50 ug/g, mean 0.59 ug/g (sediment)			

			EVALUATIO	Ň	
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.	
Continued on next page					

		contir	ued from pre	vious page		
Study Citation:	Li, T., Yin, P., Zh Delta in China. W	ao, L., Wang, G., Yu, Q. J., Li, H., Duan. /ater Science and Technology 71(2):183-	, S. (2015). Sp 190.	atial-temporal distribution of phthalate esters from riverine outlets of Pearl River		
OECD Harmonized	Adsorption and D	Adsorption and Desorption				
Template:	2816260					
HERU ID:	2810309					
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to have a substantial impact on study results.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	Medium	Some sediment parameters (CEC) were omitted; however, sufficient data were reported to determine that the omissions were not likely to have a substantial impact on study results		
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples.		
	Metric 8:	System Type and Design	High	The study is a field study, which is assumed to be at equilibrium.		
Domain 4: Test Organis	sms					
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.		
Domain 5: Outcome As	aggment					
Domain 5. Outcome As	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.		
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.		
Domain 6: Confounding	g/Variable Control					
	Metric 13:	Confounding Variables	High	Variability and uncertainty between replicates was accounted for.		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.		
Domain 7: Data Present	tation and Analysis					
	Metric 15:	Data Reporting	High	The target chemical concentrations were reported, analytical methods were suitable for detection and limits of detection were reported.		
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods used were appropriate.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of Results	High	Reported values were expected.		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.		

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		continued from previous page	
Study Citation:	Li, T., Yin, P., Zhao, L., Wang, G., Yu, Q. J., L	i, H., Duan, S. (2015). Spatial-tempora	l distribution of phthalate esters from riverine outlets of Pearl River
OECD Harmonized Template:	Adsorption and Desorption	/1(2).165-190.	
HERO ID:	2816369		
		EVALUATION	
Domain	Metric	Rating	Comments
<b>Overall Quali</b>	ty Determination	High	

Study Citation:	Li, X., Yin, P., Zhao, L. (2016). Phthalate esters in water and surface sediments of the Pearl River Estuary: Distribution, ecological, and human health					
OECD Harmonized	Adsorption and De	al Science and Pollution Res sorption	earch 23(19):19341-19349.			
Template: HERO ID:	3350200					
			EXTRACTION			
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, Type, Guide	eline	None; Field study; other: Not	reported			
Solvent, Reactivity, Storage	, Stability	NA; NR; Water samples filter stored at -20°C in aluminum for	ed through glass fibers, pH adjusted to 2, store bil envelopes; NR	ed at 4°C in brown glass bottles with Teflon lids; sediment samples		
Radiolabel, Source, State, P	urity	NA; Samples collected from standard mixture including DM	Humen, Jiaomen, Hongqimen, Modaomen, Ji AP, DEP, DEHP, DnOP, BBP, and DBP in isooc	timen, and Yamen estuaries in China; NA; NA Notes: Analytical tane at 19/L each, obtained from Dr. Ehrenstorfer GmbH, Germany		
Sampling Frequency, San Number of Replicates	npling Details, and	2-4 April 2013, 25-27 June 20	13, and 10-15 January 2013; Collected during f	alling tide; Not reported		
pH, Test Temperature, Buffe	er, and Test Details	Not reported; Not reported; NA; Surface sediment samples and water samples collected from 6 sites in the Pearl River Delta, China				
Matrix, Clay Silts and Organ	nic Carbon, and CEC	Not Reported; Not reported; Not reported				
Bulk Density and Matrix De	etails	Not reported; Estuarine natural sediment				
Media, Recovery, and Statis	tics	Estuarine natural water; Not reported; Pearson correlation coefficient values of concentrations in water and sediment: $p < 0.05$ , $r > = 0.779$ ,				
Transformation Products, E	quilibrium	Not reported: Not reported: NA				
Adsorption Details, and Eq	uilibrium Desorption					
Details	nun a Calentaria Da	Deceedings blanks 0.022 up/L_DED and 0.042 up/L_DEUD detected. Not Demonstrad				
sults and Percent Adsorptic	rence Substance Re-	Procedural blank; 0.022 ug/L DBP and 0.042 ug/L DEHP detected; Not Reported				
Adsorption Coefficient Typ	be, Adsorption Coef-	Not Reported: Not Reported: Not Reported: 0.96, 0.12, 1.59 g d.w./L				
ficient Results, Adsorption	Coefficient Results					
Comments, and Adsorption						
Desorption Type			<b></b>			
Partition Coefficient Type	and Partition Coeffi-	Sediment-water partition coeff	icient: spring, summer, and winter, respectively	.; Calculated based on measured sediment and water concentrations.		
Partition Coefficient Phase	and Partition Coeffi-	sediment-water; Spring average	ge (range): 0.55 (0.06-2.04) ug/L; 0.53 (0.15-2	2.50) ug/g dwSummer average (range): 8.49 (0.48-14.8) ug/L; 1.02		
cient Results		(0.056-4.66) ug/g dwWinter average (range): 0.41 $(0.042-1.01)$ ug/L; 0.65 $(0.28-1.16)$ ug/g dw				
Mass Balance		NA				
			EVALUATION			
Domain		Metric	E VALUATION Rating	Comments		
Domain 1: Tast Substans		wieute	Rating	Comments		

Domain		metric	rtating	Comments
Domain 1: Test Substand	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	High	The sample source was reported.
Domain 2: Test Design Metric 3: Study Controls High Procedural blanks were included.				
			Continued on next p	page

		contin	ued from pre	vious page	
Study Citation:	Li, X., Yin, P., Z risks. Environme	hao, L. (2016). Phthalate esters in water ntal Science and Pollution Research 23(19	and surface se 9):19341-1934	ediments of the Pearl River Estuary: Distribution, ecological, and human health 9.	
OECD Harmonized	Adsorption and E	Adsorption and Desorption			
Template:					
HERO ID:	3350200				
		]	EVALUATIO	N	
Domain		Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	Hıgh	Sample storage and preparation was reported.	
Domain 3: Test Conditi	ons				
Domain 5. Test Condition	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	Medium	No environmental conditions during sampling were reported.	
	Metric 7:	Testing Consistency	High	Samples were collected, processed, and analyzed consistently.	
	Metric 8:	System Type and Design	High	Field studies are assumed to be at equilibrium.	
D					
Domain 4: Test Organis	sms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.	
	Metric 10:	Sampling Methods	IN/A	The metric is not applicable to this study type.	
Domain 5: Outcome As	sessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the outcomes of interest.	
	Metric 12:	Test Substance Purity	High	Sampling methods addressed the outcomes of interest and used widely accepted ap-	
				proaches.	
Domain & Confounding	Wariahla Cantral				
Domain 6: Confounding	g/ variable Control Metric 13:	Confounding Variables	High	Verishility and uncertainty was addressed	
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type	
	Weute 14.	Exposure	1 1/2 1	The metric is not applicable to this study type.	
Domain /: Data Present	tation and Analysis	Data Baparting	Madium	Average and remove of the sites removed not full over late but will instance all 1.	
	Metric 15:	Data Keporting	Medium	Averages and ranges of the sites reported, not full raw data, but sufficient to calculate partitioning. Extraction recovery not reported. Limits of detection reported, analytical method was appropriate.	
	Metric 16:	Statistical Methods and	High	Statistical methods were reported and appropriate.	
		Kinetic Calculations	č	4 44 A	
Domain 8: Other					
Domain 0. Outer	Metric 17:	Verification or Plausibility of	High	The results were reasonable.	
		Results			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.	
<b>Overall Quali</b>	ty Determin	ation	High		

Study Citation:	Lu, C. (2009). Pre- 83(2):168-173.	Lu, C. (2009). Prediction of environmental properties in water-soil-air systems for phthalates. Bulletin of Environmental Contamination and Toxicology 83(2):168-173.			
OECD Harmonized	Adsorption and De	orption and Desorption			
Template: HERO ID:	807140				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; 0			
Confidentiality, Type, Guide	eline	None; QSAR; other: Quantitative Structure-Property relationship model for estimation of Koc			
Solvent, Reactivity, Storage	, Stability	Not Reported; Not Reported; Not Reported; Not Reported			
Radiolabel, Source, State, P	Purity	Not Reported; Not Reported; Not Reported; Not Reported			
Sampling Frequency, Sam Number of Replicates	npling Details, and	Not reported; Not reported; Not reported			
pH, Test Temperature, Buffe	er, and Test Details	Not reported; Not reported; Not reported; QSPR model using the Lu index, which is based on the shortest distance matrix.			
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported; Not reported; Not reported			
Bulk Density and Matrix De	etails	Not reported; Not reported			
Media, Recovery, and Statis	stics	Not reported; Not reported; Not reported			
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption		Not reported; Not reported; Not reported			
Details Reference Substance, Reference Substance Re- sults, and Parcent Advertisen		Not reported; Not reported; Not reported			
Adsorption Coefficient Type, Adsorption Coef- ficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type		- Not reported; Not reported; Not reported s			
Partition Coefficient Type and Partition Coefficient Results		Log Koc; 3.97			
Partition Coefficient Phase	and Partition Coeffi-	Not Reported; Not reported			
Mass Balance		Not reported			

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substa	ance			
	Metric 1:	Test Substance Identity	High	The test substance was identified by common name and CASRN.
	Metric 2:	Test Substance Purity	N/A	The metric is not applicable to the study type.
Domain 2: Test Design	n			
	Metric 3:	Study Controls	N/A	The metric is not applicable to the study type.
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to the study type.
Domain 3: Test Condi	tions			
			Continued on next page	

Page 511 of 720

#### ... continued from previous page **Study Citation:** Lu, C. (2009). Prediction of environmental properties in water-soil-air systems for phthalates. Bulletin of Environmental Contamination and Toxicology 83(2):168-173. **OECD Harmonized** Adsorption and Desorption **Template: HERO ID:** 807140 **EVALUATION** Domain Metric Rating Comments Metric 5: Test Method Suitability N/A The metric is not applicable to the study type. Metric 6: Testing Conditions N/A The metric is not applicable to the study type. Testing Consistency Metric 7: N/A The metric is not applicable to the study type. Metric 8: System Type and Design N/A The metric is not applicable to the study type. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology N/A The metric is not applicable to the study type. Metric 10: Sampling Methods N/A The metric is not applicable to the study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity N/A The metric is not applicable to the study type. Metric 12: Test Substance Purity N/A The metric is not applicable to the study type. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables N/A The metric is not applicable to the study type. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to the study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting N/A The metric is not applicable to the study type. Metric 16: Statistical Methods and N/A The metric is not applicable to the study type. Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of N/A The metric is not applicable to the study type. Results Metric 18: **QSAR** Models Uninformative The OSPR model failed the standard error threshold of < 0.3 and is therefore rated unacceptable.

**Overall Quality Determination** 

Uninformative

Study Citation:	Mackintosh, C. E.,	Maldonado, J. A., Ikonomou, M. G.	., Gobas, F. A. (200	06). Sorption of phthalate esters and PCBs in a marine ecosystem. Environmental		
OECD Harmonized	Adsorption and De	logy 40(11):3481-3488. esorption				
Template: HERO ID:	2158899	8899				
			EXTRACTIO	N		
Parameter		Data				
CASRN and Test Material		84-74-2; Di-n-butyl phthalate				
Confidentiality, Type, Guide	eline	None; Experimental; other: Sediment	sorption in a marine	ecosystem		
Solvent, Reactivity, Storage	e, Stability	NR; NR; Water samples were stored at	t 4 deg. C in dark; se	diment samples stored at -20 deg. C in dark; NR		
Radiolabel, Source, State, F	Purity	NR; shallow marine inlet in Vancouver	r; NR; Analytical sta	ndard: HPLC grade		
Sampling Frequency, Sar Number of Replicates	npling Details, and	Not reported; 4L water samples collec glass jars at 4 locations in False Creek	ted in amber glass be for a total of 17 sam	ottles at 4 locations in the shallow inlet; surface sediment samples collected in 250 mL ples; samples taken in triplicate		
Matrix Clay Silts and Orga	er, and Test Details	Not Peperted; 11°C; Not reported; mea	sured concentrations	s in bottom sediments, suspended sediment, and seawater monto. $AO \perp O AO'$ in suspended addiments. Not reported		
Bulk Density and Matrix D	etaile	Not reported: Samples collected from 1	False Creek Harbor i	n Vancouver		
Media Recovery and Statis	stics	Not reported: Average recovery based	on spiked internal st	andard: sea water 86+28% spring water 79+36% bottom sediment 89+12%. Standard		
inedia, needo erj, and stati		deviations are reported along with means, unless otherwise specified.				
Transformation Products, Equilibrium       Not reported; Not reported; Not reported         Adsorption Details, and Equilibrium Desorption       Not reported; Not reported; Not reported						
Reference Substance, Refe	erence Substance Re-	Spring water, used for procedural blan	pring water, used for procedural blanks, was collected from Lynn Headwater Regional Park.; Not reported; Not reported			
sults, and Percent Adsorption	on					
Adsorption Coefficient Typ	pe, Adsorption Coef-	Not reported; Not reported; Not reported; Not reported				
Comments and Adsorption	I Coefficient Results					
Desorption Type						
Partition Coefficient Type	and Partition Coeffi-	Koc; Kbs, oc = $4.52\pm0.24$ (OD), $4.90\pm0.24$ (FD); Kss, oc = $5.93\pm0.36$ (OD), $6.12\pm0.33$ (FD)				
cient Results	and Partition Coeffi-	sediment-water; Kbs.oc: organic carbon normalized bottom-sediment-water; Kss.oc: suspended sediment-water distribution: OD: operationally				
cient Results	and I artition Coeffi-	defined freely dissolved and FD: estimated truly freely dissolved				
Mass Balance		Not reported				
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substand	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.		
	Metric 2:	Test Substance Purity	High	The test substance source of sampling was reported and the purity of the internal stan-		
				dard for analysis was also reported.		
Domain 2. Test Design						
Domain 2. Test Design	Metric 3:	Study Controls	N/A	Field studies do not require negative controls		
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.		
		~				
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		continu	led from pre	vious page		
Study Citation:	Mackintosh, C. F Science & Techn	Mackintosh, C. E., Maldonado, J. A., Ikonomou, M. G., Gobas, F. A. (2006). Sorption of phthalate esters and PCBs in a marine ecosystem. Environmental Science & Technology 40(11):3481-3488.				
<b>OECD Harmonized</b>	Adsorption and I	Desorption				
Template:						
HERO ID:	2158899					
		I	EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 3: Test Conditio	ons Matria 5.	Test Method Switchility	Iliah	The sector she down with the		
	Metric 5: Metric 6:	Testing Conditions	High	This matrix met the criterie for high confidence as expected for this type of study		
	Metric 7:	Testing Consistency	High	This metric met the criteria for high confidence as expected for this type of study.		
	Metric 8:	System Type and Design	High	Field studies are assumed to be at equilibrium		
		bystem Type and Design	Ingii			
Domain 4: Test Organis	ms					
C C	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.		
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to the study type.		
Domain 5: Outcome As	Sessment	Test Substance Identity	Iliah			
	Metric 11: Metric 12:	Test Substance Identity	High	This matrix mat the aritaria for high confidence of averaged for this type of study.		
	Metric 12.	Test Substance Furity	nigli	This metric met the criteria for high confidence as expected for this type of study.		
Domain 6: Confounding	/Variable Control					
e	Metric 13:	Confounding Variables	N/A	The metric is not applicable to this type of study.		
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.		
		Exposure				
Domain 7: Data Prosant	ation and Analysis					
Domain 7. Data Fresent	Metric 15:	Data Penorting	High	This matrix mat the aritaria for high confidence as availated for this type of study		
	Metric 16:	Statistical Methods and	High	This metric met the criteria for high confidence as expected for this type of study.		
	Wietrie 10.	Kinetic Calculations	Ingn	This metre met die emeria for high connuclee as expected for this type of study.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.		
	Metric 18.	Results OSAR Models	N/A	The metric is not applicable to this study type		
	metric 10.	Kourt model?	1 1/ / 1	The metric is not applicable to this study type.		
<b>Overall Oualit</b>	t <mark>v Determ</mark> ir	nation	High			

Study Citation:	Minling, G., Xiaojun, M., Wenhua, S., Yun, Q., Lin, W. (2015). Adsorption mechanism of di-n-butyl phthalate easter on brown soil and red soil. Interna- tional Journal of Environmental Research 9(2):605-612.						
OECD Harmonized Template:	Adsorption and De	Adsorption and Desorption					
HERO ID:	5621789						
			EXTRACTIO	N			
Parameter		Data					
CASRN and Test Material	alina	84-74-2; D1-n-butyl phthalate	106 (Advartian D	Assorption Heing a Datab Equilibrium Mathad			
Solvent Reactivity Storage	Stability	standard solution in methanol: NR: sto	red at 4°C in a refrig	erator: NR			
Radiolabel Source State F	Purity	NR: Lark Technology co., Ltd. (Beijin	$\sigma$ China): NR: 96.89	% Notes: DBP			
Sampling Frequency, Sar Number of Replicates	npling Details, and	Not reported; samples were taken and	centrifuged, the supe	rnatant was filtered and analyzed; 3			
pH, Test Temperature, Buff	er, and Test Details	brown soil pH 5.53; red soil pH 5.42; 2	298K; Not reported; t	est concentrations added to glass tubes: 0.5, 1, 2, 4, 8, 16 $\mu$ g/mL			
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported; brown soil SOM 33.0 g/	/kg, 17.9% clay; red	soilSOM 14.9 g/kg, 38.3% clay; brown soil 17.2 cmol/kg; red soil 5.90 cmol/kg			
Bulk Density and Matrix D	etails	Not reported; brown soil (main minera of Shenyang and Hunan Qiyang red so	ls: hydromica and ve il experimental static	ermiculite) and red soil (main mineral:kaolinite) collected from Agricultural University on of Chinese Academy of Agricultural Sciences, respectively			
Transformation Products F	sucs Guilibrium	Not reported: 24 hrs selected as equilib	neu orium time: Not repor	rted			
Adsorption Details, and Eq	uilibrium Desorption	Not reported, 24 ms selected as equint	frum time, Not repor				
Details			1. I				
sults and Percent Adsorption	on	Not reported; lest tube without soil wa	is used to assess adso	rption to glassware; no loss observed; Not reported			
Adsorption Coefficient Typ	be, Adsorption Coef-	Kd; Brown soil: 156 (r squared = 0.869); red soil: 169 (r squared = 0.788); adsorbate distribution coefficient of the linear model; Brown soil:					
ficient Results, Adsorption	n Coefficient Results	$\log Kf 2.03$ (n= 1.208, r squared = 0.993); red soil: $\log Kf 1.75$ (n= 2.28, r squared = 0.996); affinity coefficients of Freundlich model, n = isotherm					
Comments, and Adsorption		nonlinearity index					
Partition Coefficient Type	and Partition Coeffi-	Not reported: Not reported					
cient Results		······································					
Partition Coefficient Phase	and Partition Coeffi-	soil-water; Not reported	I-water; Not reported				
Mass Balance		Not reported					
			FVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Test Substand	ce		6				
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.			
	Metric 2:	Test Substance Purity	High	The test substance source was reported.			
Domain 2: Test Design							
	Metric 3:	Study Controls	Medium	Controls were not reported; however OECD guidelines were followed.			
	Metric 4:	Test Substance Stability	High	Details regarding the test substance preparation and stock solution storage were re- ported.			
		Co	ontinued on next p	page			

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		continu	ed from prev	vious page			
Study Citation:	Minling, G., Xiao tional Journal of E	jun, M., Wenhua, S., Yun, Q., Lin, W. (20 Environmental Research 9(2):605-612.	15). Adsorpti	ion mechanism of di-n-butyl phthalate easter on brown soil and red soil. Interna-			
OECD Harmonized	Adsorption and D	Adsorption and Desorption					
Template:							
HERO ID:	5621789						
		F	VALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 3: Test Condition	ons						
	Metric 5:	Test Method Suitability	High	The test method is suitable for the test substance.			
	Metric 6:	Testing Conditions	High	Test conditions were reported and appropriate for the study type.			
	Metric 7:	Testing Consistency	High	The testing conditions were consistent across the study groups.			
	Metric 8:	System Type and Design	High	The system type was appropriate and the equilibrium time was sufficient.			
Domain 4: Test Organis	ms						
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the outcome of interest.			
	Metric 12:	Test Substance Purity	High	The sampling methods were appropriate.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	High	Standard deviations in the concentration measurements were not reported but linear correlation coefficients were reported and sufficient. Sterilized soil controls were not used but there was no reported evidence of biodegradation in the samples.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.			
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	Low	The limit of detection and percent recoveries were not reported which could potentially have an impact on the study results.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical analysis was not reported in detail but the omissions are unlikely to have a substantial impact on the study results.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of Results	Medium	The study results are reasonable.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.			
Overall Qualit	ty Determin	ation	High				

Study Citation:	Ritsema, R., Cofin	Ritsema, R., Cofino, W. P., Frintrop, P. C., Brinkman, U. A. (1989). Trace-level analysis of phthalate esters in surface water and suspended particulate				
OECD Harmonized	Adsorption and De	f capillary gas chromatography with electron-capture and mass-selective detection. Chemosphere 18(11-12):2161-2176.				
Template:						
HERO ID:	1316257					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, Type, Guid	leline	None; Calculation; other: Calculated from test substance concentration in Lake Yssel water and suspended particulate matter				
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR				
Radiolabel, Source, State, I	Purity	NR; Polyscience, Niles, IL, USA; NR; ≥98% Notes: Di-n-butyl phthalate				
Sampling Frequency, Sam	mpling Details, and	12 consecutive days; Not applicable; 6 locations				
Number of Replicates						
pH, Test Temperature, Buffer, and Test Details		Not applicable; Not applicable; Not applicable; Lake water samples collected and extracted				
Matrix, Clay Silts and Orga	anic Carbon, and CEC	Not Reported; 8.1% organic carbon in SPM; Not reported				
Bulk Density and Matrix D	Details	Not reported; suspended particulate matter from Lake Yssel water				
Media, Recovery, and Stati	stics	Lake Yssel water; 93% for suspended particulate matter and 97% from water; Not reported				
Transformation Products, E	Equilibrium	Not applicable; Authors theorize that biodegradation disturbs the water spm partitioning equilibrium; Not applicable				
Adsorption Details, and Ed	quilibrium Desorption					
Details Reference Substance Refe	erence Substance Re-	Not reported: Not reported: Not reported				
sults and Percent Adsorpti	on	Not reported, Not reported				
Adsorption Coefficient Ty	pe, Adsorption Coef-	Not applicable; Not applicable; Not applicable; Not applicable				
ficient Results, Adsorption Coefficient Results						
Comments, and Adsorption						
Desorption Type						
Partition Coefficient Type	and Partition Coeffi-	log koc; 3.8				
cient Results Partition Coefficient Phase	and Partition Coeffi-	suspended matter-water: Based on the mean PE concentrations in water and SPM log Koc (S) = $3.5\log Koc$ (Kow) = $4.0\log Koc$ (mean) = $3.8$				
cient Results	and rariabil Coeffi-	suspended matter-water, based on the mean r E concentrations in water and Sr Milog Kot $(S) = 5.5\log \text{ Kot }(Kow) = 4.000 \text{ Kot }(110 \text{ matrix}) = 5.6$				
Mass Balance		Not reported				

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	N/A	Sterile controls were not required for this study.
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.

Domain 3: Test Conditions

Continued on next page ...

PUBLIC RELEASE DRAFT May 2025 Adsorption and Desorption

HERO ID: 1316257 Table: 1 of 1

#### ... continued from previous page

Study Citation:	Ritsema, R., Cofino, W. P., Frintrop, P. C., Bri matter by means of capillary gas chromatograph	nkman, U. A. (1989). Trace-level analysis c	of phthalate esters in surface water and suspended particulate
OECD Harmonized Template:	Adsorption and Desorption	iy will election capture and mass selective a	
HERO ID:	1316257		
		EVALUATION	
Domain	Metric	Rating	Comments

		inieurie	Ituting	Comments
	Metric 5:	Test Method Suitability	Medium	There were omissions in test method detail; however, sufficient data were reported to determine that the omissions were not likely to have had a substantial impact on the study results.
	Metric 6:	Testing Conditions	Low	There were omissions in testing conditions; however, sufficient data were reported to determine that the omissions were not likely to have had a substantial impact on the study results.
	Metric 7:	Testing Consistency	Medium	Limited details were reported in testing consistency; however, sufficient data were re- ported to determine that the omissions were not likely to have had a substantial impact on the study results.
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.
Domain 4: Test Org	anisms			
Domain 4. Test Orge	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome	Assessment			
	Metric 11:	Test Substance Identity	Low	There were omissions in details; however, the omissions were not likely to have had a substantial impact on the study results.
	Metric 12:	Test Substance Purity	Medium	Details omitted; however, the lack of data is not likely to hinder the interpretation of the results.
Domain 6: Confoun	ding/Variable Control	l		
	Metric 13:	Confounding Variables	High	Sources of uncertainty were reported.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this review article.
Domain 7: Data Pres	sentation and Analysi	s		
	Metric 15:	Data Reporting	Medium	There were omissions in data reporting; however, the omissions were not likely to have had a substantial impact on the study results.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	There were omissions in the calculation details; however, sufficient data were reported to determine that the omissions were not likely to have a substantial impact on study results.
Domain 8 <sup>.</sup> Other				
2 children of ouror	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Qua</b>	ality Determi	nation	Medium	
		Contin	ued on next page	· · · ·

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PUBLIC RELEASE DRAFT May 2025 Adsorption and Desorption

HERO ID: 1316257 Table: 1 of 1

		continued from previous page					
Study Citation:	Ritsema, R., Cofino, W. P., Frintrop, P. C., Brir matter by means of capillary gas chromatograph	hkman, U. A. (1989). Trace-level analysis y with electron-capture and mass-selective	of phthalate esters in surface water and suspended particulate detection. Chemosphere 18(11-12):2161-2176.				
<b>OECD Harmonized</b>	Adsorption and Desorption						
Template:							
HERO ID:	1316257						
		EVALUATION					
Domain	Metric	Rating	Comments				

\* Related References: Cited in HSDB and ECHA

Study Citation: OECD Harmonized	Russell, D. J., Mcd Adsorption and De	uffie, B. (1986). Chemodynamic properties of phthalate esters partitioning and soil migration. Chemosphere 15(8):1003-1022. sorption			
HERO ID:	1316119				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; DBP			
Confidentiality, Type, Guide	eline	None; Experimental; other: Shake flask method for soil-water partition coefficients			
Solvent, Reactivity, Storage	, Stability	NR; NR; NR			
Radiolabel, Source, State, P	Purity	NR; Fisher Scientific, Fairlawn, NJ; NR; NR Notes: NR			
Sampling Frequency, Sampling Details, and		1 time after 24 hours; Not reported; Not reported			
pH, Test Temperature, Buffer, and Test Details		Not reported; 25±2°C; Not reported; Soil and aqueous test substance shaken in 250 mL Erlenmeyer flasks with ground glass stoppers for 24 hours and then the aqueous phase and soil phase extracts analyzed			
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported; 1.59% OC; Not reported			
Bulk Density and Matrix De	etails	NR quantitatively but discussed; Broome County, NY composite soil			
Media, Recovery, and Statis	stics	aqueous; NR quantitatively but discussed and considered by controls; Limited details			
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption		NA; formaldehyde added to inhibit biodegradation; Not applicable; Not applicable			
Reference Substance, Refe sults, and Percent Adsorption	rence Substance Re-	Not applicable; Not applicable; Not reported			
Adsorption Coefficient Type, Adsorption Coef- ficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type		Kp (partition coefficient); 22; Not applicable; Not reported			
Partition Coefficient Type and Partition Coeffi- cient Results		Koc; 1,386 (calculated from Kp)			
Partition Coefficient Phase cient Results Mass Balance	and Partition Coeffi-	soil-water; Not applicable NR quantitatively but discussed and considered by study			

			EVALUATIO	N	
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.	
	Metric 2:	Test Substance Purity	High	The test substance source was reported.	
Domain 2: Test Design					
C C	Metric 3:	Study Controls	High	A concurrent blank control was reported.	
	Metric 4:	Test Substance Stability	High	The test substance stability was considered in this study.	
Domain 3: Test Condition	ons				

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		contin	ued from pre-	vious page		
Study Citation: OECD Harmonized	Russell, D. J., Mcc Adsorption and De	Russell, D. J., Mcduffie, B. (1986). Chemodynamic properties of phthalate esters partitioning and soil migration. Chemosphere 15(8):1003-1022. Adsorption and Desorption				
Template: HERO ID:	1316119					
	1310117		EVALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 5:	Test Method Suitability	Medium	Non-guideline method used without validation of results.		
	Metric 6:	Testing Conditions	Medium	There were omissions in testing conditions; however, sufficient data were reported to determine that the omissions were not likely to have had a substantial impact on the study results.		
	Metric 7:	Testing Consistency	Medium	Testing details were omitted and had limited detail; however, the lack of data is not likely to hinder the interpretation of the results.		
	Metric 8:	System Type and Design	Medium	Details regarding the system type and design were limited; however, the omissions were not likely to have had a substantial impact on the study results.		
Domain 4: Test Organis	ms					
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.		
Domain 5: Outcome As	sassmant					
Domain 5. Outcome As	Metric 11:	Test Substance Identity	Medium	The outcome assessment methodology addressed the intended outcome of interest; however, several details were not reported quantitatively.		
	Metric 12:	Test Substance Purity	Medium	Limited detail; however, the lack of reporting not likely to have a substantial impact on study results.		
Domain 6: Confounding	g/Variable Control					
	Metric 13:	Confounding Variables	High	Test substance adsorption to glass was also investigated.		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.		
Domain 7: Data Present	ation and Analysis					
	Metric 15: Metric 16:	Data Reporting Statistical Methods and Kinetic Calculations	Medium Medium	Limited details were reported, but this was not likely to have impacted the study results. Limited details were reported, but this was not likely to have impacted the study results.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of Results	High	This metric met the criteria for high confidence as expected for this type of study.		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.		
Overall Qualit	ty Determina	ation	High			

Study Citation:	Russell, D. J., Mcc	Russell, D. J., Mcduffie, B., Fineberg, S. (1985). The effect of biodegradation on the determination of some chemodynamic properties of phthalate esters.					
OECD Harmonized	Adsorption and De	Adsorption and Desorption					
Template: HERO ID:	1315929	15929					
			EXTRACTIO	N N			
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, Type, Guide	eline	None; Experimental; other: Soil colum	n study				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR; NR					
Radiolabel, Source, State, P	Purity	NR; Fisher Scientific; NR; NR Notes:	Di-n-butyl phthalate				
Sampling Frequency, San Number of Replicates	npling Details, and	3 soils; Not Reported; 1					
pH, Test Temperature, Buffe	er, and Test Details	Not reported; Not reported; Not reported	d; soil packed into (	0.8 cm ID glass columns with a 500 ml separatory funnel attached at a constant pressure			
Matrix Clay Silts and Orga	nic Carbon and CEC	to keep the flow constant for the duration	on of the experiment	t with 1 ppm test substance.			
Bulk Density and Matrix De	ataile	0.9-1.2: Broome County (NV)	on, not reported				
Media Recovery and Statis	atics	reported as aqueous: Not reported: ave	age and standard de	viation reported			
Transformation Products E	auilibrium	Not reported. Reached after 1-hour: Not applicable					
Adsorption Details, and Eq	uilibrium Desorption	······································					
Details							
Reference Substance, Refe	rence Substance Re-	Not reported; Not reported; Not reported	ed				
Adsorption Coefficient Tyr	n Adsorption Coef-	Nat reported: Nat reported: Nat reported: Nat reported					
ficient Results. Adsorption	Coefficient Results	Not reported, Not reported, Not reported					
Comments, and Adsorption							
Desorption Type							
Partition Coefficient Type	and Partition Coeffi-	Кр; 13-33					
cient Results	and Partition Coeffi-	soil-water: calculated from influent and	l effluent concentrati	ions and number of void volumes			
cient Results	and I artition Coem-	son-water, calculated from million and	remuent concentrati	ions and number of void voidines			
Mass Balance		Not reported					
D .			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Test Substance			TT' 1				
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.			
	Metric 2:	Test Substance Purity	High	I ne test substance source was reported.			
Domain 2. Test Design							
Domain 2. Test Design	Metric 3.	Study Controls	Low	Data for study controls were not reported; however, sterile soil was used			
	Metric 4:	Test Substance Stability	High	Test substance stability was considered in this study.			

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HERO ID: 1315929 Table: 1 of 1

#### May 2025 Adsorption and Desorption

		contin	ued from pre	vious page	
Study Citation: OECD Harmonized	Russell, D. J., M Journal of Enviro Adsorption and I	cduffie, B., Fineberg, S. (1985). The effect onmental Science and Health, Part A: Envir Desorption	t of biodegrad ronmental Sci	ation on the determination of some chemodynamic properties of phthalate esters. ence and Engineering 20(8):927-941.	
Template:					
HERO ID:	1315929				
		I	EVALUATIO	N	
Domain		Metric	Rating	Comments	
Domain 3: Test Condition	ons				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate for the method.	
	Metric 7:	Testing Consistency	High	This metric met the criteria for high confidence as expected for this type of study.	
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.	
Domain 4: Test Organis	ms				
Domain 1. Test organis	Metric 9.	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type	
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.	
		1 0	~		
Domain 5: Outcome As	sessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.	
	Metric 12:	Test Substance Purity	High	The study used Ekman grab samplers to collect sediment samples and GC-MS for analy- sis.	
Domain 6: Confounding	v/Variable Control				
Domain 0. Comounding	Metric 13.	Confounding Variables	High	This metric met the criteria for high confidence as expected for this type of study	
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.	
		Exposure			
Domain 7: Data Present	ation and Analysis				
	Metric 15:	Data Reporting	Medium	Some result details were not reported; however, these omissions would not have a sub- stantial impact on interpreting study results.	
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Some statistical details were not reported; however, these omissions would not have a substantial impact on interpreting study results.	
Domain 8: Other	M · 17		TT' 1		
	Metric 17:	Verification or Plausibility of	High	The results were reasonable.	
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.	
<b>Overall Oualit</b>	ty Determin	ation	High		

\_\_\_\_

Study Citation:	Sayyad, G., Price	Sayyad, G., Price, G. W., Sharifi, M., Khosravi, K. (2017). Fate and transport modeling of phthalate esters from biosolid amended soil under corn cultivation. Journal of Hazardous Materials 323(Part A):264-273. Adsorption and Desorption					
OECD Harmonized	Adsorption and De						
Template: HERO ID:							
EXTRACTION							
Parameter		Data					
CASEN and Test Material		84-74-2. DBP					
Confidentiality Type, Guide	line	None: Experimental: other: Model de	veloped to estimated a	adsorption parameters based on experimental observations			
Solvent, Reactivity, Storage	. Stability	NA: NR: NR: NR	, enoped to estimated (				
Radiolabel Source State P	hrity	NA: Alkaline treated biosolids obtain	ed form N-Vitro Syste	ems Canada Biosolids Facility in Halifax Regional Municipality: Solid: NA			
Sampling Frequency, San	npling Details, and	May - November 2014; Prior to and	one week and one mo	the after biosolid application; Composite of 5 soil cores from center cell, diameter 2.5			
Number of Replicates	er and Test Details	cm and depth of 0-15 cm; 3 5.2 (soil) 9.4 (biosolid): Not reported	NA · I vsimeter cells	of soil established in 2009 and received alkaline treated biosolide from Halifax biosolide			
pri, rest temperature, built	ci, and iest Details	facility applied in 2012 - 2013 at 0. 7	and 28 Mg/ha, cells t	blanted with annual rve grass, treatment increased in 2014 to 28 and 42 Mg/ha			
Matrix, Clay Silts and Organ	nic Carbon, and CEC	Not Reported; 10.3% clay, 30.9% silt	, 58.9% sand, 3.4% or	ganic matter; Not reported			
Bulk Density and Matrix De	etails	1.39 mg/cm^3; Ortho-Humic Podzol soil (sandy loam), in Nova Scotia, Canada					
Media, Recovery, and Statis	stics	Alkaline treated biosolids, 67.5% dry matter, 7.17 ug/kg DBP; Not reported; HYDRUS-1D model calculated estimates on chemical transport					
		based on soil bulk density, particle analysis, saturated hydraulic conductivity, and moisture curves. Run one two models: equilibrium advection- dispersion and physical nonequilibrium advecdisp.					
Iransformation Products, Ed	quilibrium Decorption	Not reported; Not Reported; Not Reported					
Details	unionum Desorption						
Reference Substance, Refe	rence Substance Re-	Control; Not reported; Not Reported					
sults, and Percent Adsorptio	n						
Adsorption Coefficient Typ	e, Adsorption Coef-	Not Reported; Not Reported; Not Reported; 0.13 cm^3/ug					
ficient Results, Adsorption	Coefficient Results						
Comments, and Adsorption							
Partition Coefficient Type	and Partition Coeffi-	Not Reported: Not Reported					
cient Results							
Partition Coefficient Phase	and Partition Coeffi-	soil-water; Dispersion coefficient: 0.	70 cm^2/dFraction of	sorption sites assumed to be in equilibrium with solution: 0.01Freundlich exponent:			
cient Results		0.11First order sorption rate coefficie	nt for non-equilibrium	sites: 0.006/day			
Mass Balance		Not reported					
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Test Substanc	ce		2				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2.	Test Substance Purity	Medium	Sample source was reported analytical standard information was not provided			

	Metric 3:	Study Controls	Medium	A control was included but the results of the control were not reported.		
Continued on next page						

		contin	ued from prev	vious page		
Study Citation:	Sayyad, G., Price, G. W., Sharifi, M., Khosravi, K. (2017). Fate and transport modeling of phthalate esters from biosolid amended soil under corn cultivation. Journal of Hazardous Materials 323(Part A):264-273					
OECD Harmonized	Adsorption and Desorption					
Template:						
HERO ID:	3491242					
		]		N		
Domain	Matria 4.	Metric Test Substance Stability	Kating	Comments		
	Metric 4:	Test Substance Stability	Wiedrum	cation or other initial processing.		
Domain 3: Test Conditi	ions					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Soil characteristics of importance were reported, some biosolids information was re- ported.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent across study groups.		
	Metric 8:	System Type and Design	High	Equilibrium was established and the system was capable of maintaining test substance concentrations.		
Domain 4: Test Organi	sms					
C C	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.		
Domain 5: Outcome A	ssessment					
Domain 5. Outcome 74	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the outcomes of interest		
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate for model calibration.		
Domain 6: Confoundin	g/variable Control	Confounding Variables	High	Model personators (DA) mean absolute error root mean equare error) were determined		
	Metric 15:	Confounding variables	riigii	and of an appropriate range.		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.		
Domain 7: Data Presen	tation and Analysis					
	Metric 15:	Data Reporting	Medium	Sample extraction and validation methods reported in a previous study; analytical method was appropriate. No raw experimental data was reported.		
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Model was described and used appropriately.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	High	The results were appropriate.		
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.		
Overall Quali	ty Determina	ation	High			

Study Citation:	Sha, Y., Xia, X., Y.	Sha, Y., Xia, X., Yang, Z., Huang, G. H. (2007). Distribution of PAEs in the middle and lower reaches of the Yellow River, China. Environmental Monitoring and Assessment 124(1-3):277-287					
OECD Harmonized	sorption						
HERO ID:	683003						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Di-n-butyl phthalate					
Confidentiality, Type, Guide	eline	None; Field study; other: Partition coefficient between suspended matter and water samples					
Solvent, Reactivity, Storage,	, Stability	Analytical grade Carbon disulfide (CS2); NR; NR; NR					
Radiolabel, Source, State, P	urity	NR; Beijing Chemical Reagents Co.; NR; NR Notes: NR					
Sampling Frequency, San Number of Replicates	pling Details, and	Multiple samples collected, frequency not reported; Water samples taken from 0-20 cm. Grab sampler used for surface sediment samples. 2 L pre-cleaned aluminum jar used for water samples. $0.45 \ \mu$ m press filter used for suspended particle samples.; 13 sampling sites: 7 in Yellow river,					
pH, Test Temperature, Buffer, and Test Details		Not reported; Samples stored at 4°C.; Not reported; Sample clean-up done with column (40mL hexane discard, 80mL 7:3 Hexane:aether collec- tion). Particulate phase and sediment precolumn treatment: dried, ground and sieved, dissolved in CS2. After shaking, organic layer was removed (repeated 2x).					
Matrix, Clay Silts and Organ	nic Carbon, and CEC	Not Reported; TOC %: 0.17-0.28; Not reported					
Bulk Density and Matrix De	etails	Not reported; Not Reported					
Media, Recovery, and Statis	tics	Not Reported; Water samples: 85.3-105.8%; particulates: 80.9-99.4%.; Relative uncertainty of concentrations in water and suspended particles were generally less than 10%					
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption		Not reported; Not reported					
Reference Substance, Reference Substance Re- sults, and Percent Adsorption		Not reported; Not reported; Not reported					
Adsorption Coefficient Type, Adsorption Coef- ficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type		Not reported; Not reported; K $(L/kg) = 3.8x10^{3}$					
Partition Coefficient Type and Partition Coeffi-		Not reported; Not reported					
cient Results Partition Coefficient Phase cient Results	and Partition Coeffi-	suspended matter-water; Statistical correlation between TOC or particle size and DBP concertation was not found.					
Mass Balance		Not reported					

Rating	Comments
High	The test substance was identified by common nomenclature.
High	The test substances were determined by GC-FID and analyzed in analytical grade solvent.
	High High

Continued on next page ...

HERO ID: 683003 Table: 1 of 1

Study Citation:	Sha, Y., Xia, X., Yang, Z., Huang, G. H. (2007). Distribution of PAEs in the middle and lower reaches of the Yellow River, China. Environmental Monitoring and Assessment 124(1-3):277-287.						
OECD Harmonized	Adsorption and D	Adsorption and Desorption					
Template:	(02002						
HERO ID:	683003						
		I	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 3:	Study Controls	Medium	Blank controls were not reported but the omission is unlikely to have a substantial im- pact on the study results.			
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported and appropriate.			
Domain 3: Test Conditi	ons						
	Metric 5:	Test Method Suitability	High	The test method was suitable.			
	Metric 6:	Testing Conditions	Medium	Some of the sediment characteristics were not reported.			
	Metric 7:	Testing Consistency	High	No confounding variables between sample groups were noted.			
	Metric 8:	System Type and Design	High	As a field study the system was at equilibrium.			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to the study type.			
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to the study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	Medium	Sampling frequency was not reported.			
Domain 6: Confounding	z/Variable Control						
·	Metric 13:	Confounding Variables	High	Uncertainty was reported in the study.			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.			
		Exposure					
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	High	The data reporting was appropriate.			
	Metric 16:	Statistical Methods and	High	Sufficient statistical analysis was reported.			
		Kinetic Calculations	č				
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Quali</b>	ty Determin	ation	High				

Study Citation:	chromatography a Engineering 48(11	matography and flame ionization detector. Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances & Environmental gineering 48(11):1365-1377.							
OECD Harmonized	Adsorption and De	rption and Desorption							
Template: HERO ID:	1599751								
		EXTRACTION							
Parameter		Data							
CACDN I T + M-+									
CASRN and Test Material	1.								
Confidentiality, Type, Guid	- Stalilita	None; Experimental; other: Not reported; distribution of selected pollutants between river catchment water and sediment							
Solvent, Reactivity, Storage	e, Stability	NA; NR; water stored in bottles with 5 mL concentrated sulturic acid at 4°C; sediment samples stored in glass bottles at -18°C; NR							
Radiolabel, Source, State, I	Purity	NA; 7 sites in the Jukskei River catchment area, South Africa: Hartbeespoort Dam, before and after Johannesburg Water Works, Sandton/Kyalami, Malkara, Alayandra, and Druma Laka, NA, NA, NA, Natay, Analytical standard altained from Suralas, Dallafanta, DA, 00,0 to 00,5% mutity							
Sampling Frequency Sa	mpling Details and	Marboro, Alexandra, and Brunia Lake, NA; NA Notes: Analytical standard obtained from Superco, Beneforde, $A_{2}$ , $95,0$ to $99.5\%$ purity 2005 winter and summer: Water samples collected in bottles 5 cm below surface: cediment samples collected in bottles $0_{-5}$ cm below							
Number of Replicates	inpling Details, and	the surface: 3 (water): sediment NR							
pH, Test Temperature, Buff	fer, and Test Details	Not reported; Not reported; Not reported; Surface water and sediment samples collected from the banks and middles of 7 sites in the Jukskei							
I , I,,		River catchment area, South Africa: Hartbeespoort Dam, before and after Johannesburg Water Works, Sandton/Kyalami, Marlboro, Alexandra,							
		and Bruma Lake							
Matrix, Clay Silts and Orga	anic Carbon, and CEC	Not reported; Not reported; Not reported							
Bulk Density and Matrix D	oetails	Not reported; Sediment from river catchment $P_{i} = (1 - 1) P_{i} = (1 - 1) $							
Media, Recovery, and Statistics		River catchment water; $108\pm0.88\%$ (water); $117\pm4.80\%$ (sediment); One-way ANOVA and Pearson's; no significant correlation between water and sediment sample concentrations, suggesting different sources of pollutants for both phases; water concentrations affected by seasonal variation but not sediments (r = 1.00 P< 0.01)							
Transformation Products, E	Equilibrium	Not reported; NA; field study; NA; field study							
Adsorption Details, and Ec	quilibrium Desorption								
Details									
Reference Substance, Refe	erence Substance Re-	Rinsed sample bottles; $0.01\pm0.10$ to $0.09\pm0.02$ ng/mL retained by sample bottle; Not Reported							
Adsorption Coefficient Ty	ne. Adsorption Coef-	Not Reported: Not Reported: Not Reported							
ficient Results, Adsorption	n Coefficient Results								
Comments, and Adsorption	1								
Desorption Type									
Partition Coefficient Type	and Partition Coeffi-	Kd = [sediment]/[water] (not reported by the authors. Calculated by the reviewer); $Kd = 2.85 - 31.7  mL/g$ (summer), 2.08 - 1063 mL/g (winter)							
cient Results	and Partition Coeffi	sediment-water: Ranges for sites Mean sediment: 6 27+0 62 to 57 1+1 67 ng/g dw (summer): 5 51+0 35 to 3210+0 60 ng/g dw (winter) Mean							
cient Results	and ratifion Coeffi-	sequences, ranges for successed sequences, $0.27\pm0.02$ to $57.1\pm1.07$ m/g dw (summer), $5.51\pm0.55$ to $5210\pm0.00$ m/g dw (white)) weather water $0.79\pm0.12$ to $3.65\pm0.33$ ng/mL (summer): $1.15\pm0.13$ to $5.59\pm0.56$ ng/mL (winter)							
Mass Balance		Not Reported							
		1							

EVALUATION							
Domain		Metric	Rating	Comments			
Domain 1: Test Subst	tance						
	Metric 1:	Test Substance Identity	High	The chemical of interest was identified by name.			
	Metric 2:	Test Substance Purity	High	Sample sources were reported, the analytical standard source and purity was reported.			

Continued on next page ...

PUBLIC RELEASE DRAFT May 2025 Adsorption and Desorption

HERO ID: 1599751 Table: 1 of 1

### ... continued from previous page

Study Citation:	Sibali, L. L., Okonkwo, J. O., Mccrindle, R. I. (2013). Determination of selected phthalate esters compounds in water and sediments by capillary gas
	chromatography and flame ionization detector. Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances & Environmental
	Engineering 48(11):1365-1377.
OECD Harmonized	Adsorption and Desorption
Template:	
HERO ID:	1599751
	EVALUATION

Domain		Metric	Rating	Comments	
Domain 2: Test Design			<u>U</u>		
C	Metric 3:	Study Controls	High	Sorption loss controls to storage bottles were included.	
	Metric 4:	Test Substance Stability	High	Sample preparation and storage was reported.	
Domain 3: Test Condition	ons				
	Metric 5:	Test Method Suitability	High	The field study method was appropriate for the test substance.	
	Metric 6:	Testing Conditions	Medium	No environmental conditions or samples characteristics were reported.	
	Metric 7:	Testing Consistency	High	Samples were collected, prepared, and analyzed consistently.	
	Metric 8:	System Type and Design	High	Field studies are assumed to be at dynamic equilibrium.	
Domain 4: Test Organis	ms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.	
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.	
		I C IIII			
Domain 5: Outcome As	sessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining partition coeffi- cients between water and sediment.	
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and frequency addressed seasonal variation.	
Domain 6: Confounding	g/Variable Control				
	Metric 13:	Confounding Variables	Low	Surface water and surface sediment samples were collected, water above sediment was not collected. Water samples were analyzed unfiltered, which may have resulted in artificially high concentrations	
	Metric 14.	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type	
		Exposure	1.071		
		•			
Domain 7: Data Present	ation and Analysis				
	Metric 15:	Data Reporting	High	The analytical method was appropriate; limits of detection and percent recovery were reported. The partition coefficients were calculated by the reviewer from reported raw data.	
	Metric 16:	Statistical Methods and	High	Statistical methods were described and applied appropriately.	
		Kinetic Calculations	-		
Domain 8: Other					
		Cont	inued on next r	page	
Communed on new page					

Dibutyl Phthalate Adsorption and Desorption HERO ID: 1599751 Table: 1 of 1 ... continued from previous page **Study Citation:** Sibali, L. L., Okonkwo, J. O., Mccrindle, R. I. (2013). Determination of selected phthalate esters compounds in water and sediments by capillary gas chromatography and flame ionization detector. Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances & Environmental Engineering 48(11):1365-1377. **OECD Harmonized** Adsorption and Desorption **Template: HERO ID:** 1599751 **EVALUATION** Domain Metric Rating Comments Verification or Plausibility of Metric 17: Low No sample characteristics (ex. Sediment organic carbon) were reported so the values could not be normalized. Additionally, no relationship between sediment and water Results sample concentrations was observed, possibly due to the fact that water was collected from the surface and not from above the sediment. This renders the overall confidence in these values as low. Metric 18: **QSAR** Models N/A The metric is not applicable to this study type. **Overall Quality Determination** High

PUBLIC RELEASE DRAFT May 2025

Study Citation: OECD Harmonized	Sullivan, K. F., Atlas, E. L., Glam C-S (1982). Adsorption of phthalic acid esters from sea water. Environmental Science & Technology 16(7):428-432. Adsorption and Desorption							
Template:	Ausorption and De	solption						
HERO ID:	1333237							
EXTRACTION								
Parameter		Data						
CASRN and Test Material		84-74-2; Dibutyl phthalate						
Confidentiality, Type, Guideline		None; Experimental; other: Adsorption and desorption study of DBP with several adsorbents						
Solvent, Reactivity, Storage	e, Stability	Acetone; NR; NR; NR						
Radiolabel, Source, State, I	Purity	14-C DBP; NR; NR Notes: NR						
Sampling Frequency, San Number of Replicates	mpling Details, and	Adsorption was measured once per After several hours, 10mL spiked s	sample, desorption was eawater added (including	measured 1-3 times.; Sediment was added to test tube with 2mL of unspiked seawater. g for blanks without adsorbent). 10mL unspiked seawater added to adsorbent tubes for				
pH, Test Temperature, Buff	fer, and Test Details	background level DBP measuremen 8.10; 25°C; None; 12h equilibrium	nt.; 5-11 sample replicate period used. Samples w	ere centrifuged and extracted with isooctane. Adsorbent was then used for desorption				
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported; The sediment sample	on of 10mL unspiked sea es contained: 43.7% sand	water addition, $12n$ equilibration, and extraction. d/25.8% silt/30.4% clay/<1% organic matter. All adsorbents were solvent extracted to				
Bulk Density and Matrix D	etails	Not reported; Seawater salinity was	s 36.0+/-0.5%. Organics	were removed with column containing Amberlite XAD-2 and charcoal.				
Media, Recovery, and Stati	stics	Adsorbents tested: montmorillonite, calcium montmorillonite, kaolinite, calcite, and marine sediment.; Not reported; Standard errors are reported for each partition coefficient and discussed in the study.						
Transformation Products, E Adsorption Details, and Ec	Equilibrium Juilibrium Desorption	Not reported; Not reported						
Details Reference Substance, Refe	erence Substance Re-	Not reported; Not reported; Not reported						
Adsorption Coefficient Typ ficient Results, Adsorption	on pe, Adsorption Coef- n Coefficient Results	Concentration in sorbent (ng/mg)/concentration in seawater (ng/mL); Unlabeled DBP (GC analysis): montmorillonite: 0.044+/-0.005; kaolinite: 0.020+/-0.003; calcite: 0.005+/-0.001; Ca montmorillonite: 0.004+/-0.001.; Radiolabeled DBP (scintillation counting): montmorillonite: 0.019+/-						
Comments, and Adsorption Desorption Type	1	0.02; kaolinite: 0.004+/-0.001; calcite: 0.010+/-0.002; Ca montmorillonite: 0.036+/-0.017; sediment: 0.149+/-0.017.; Not reported						
Partition Coefficient Type	and Partition Coeffi-	Concentration in sorbent (ng/mg)/concentration in seawater (ng/mL); Desorption of unlabeled DBP: montmorillonite: 0.078+/-0.021; kaolinite: 0.131+/-0.052						
cient Results Partition Coefficient Phase and Partition Coeffi- cient Results		Not Reported; Desorption of radiolabeled DBP: montmorillonite: 0.040+/-0.010; kaolinite: 0.105+/-0.016; calcite: 0.029+/-0.009; calcium mont- morillonite: 0.058+/-0.020; sediment: 0.198+/-0.023						
Muss Dulance		Not reported						
			EVALUATION	N				
Domain		Metric	Rating	Comments				
Domain 1: Test Substan	ce							
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.				
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported but the omission is unlikely to impact the study results.				
Domain 2: Test Design								
	Metric 3:	Study Controls	High	Appropriate controls were used.				
			Continued on next p	age				
	Page <b>531</b> of <b>720</b>							

		contin	ued from prev	vious page				
Study Citation: OECD Harmonized	Sullivan, K. F., At Adsorption and De	Sullivan, K. F., Atlas, E. L., Glam C-S (1982). Adsorption of phthalic acid esters from sea water. Environmental Science & Technology 16(7):428-432. Adsorption and Desorption						
Template: HERO ID:	1333237							
	EVALUATION							
Domain		Metric	Rating	Comments				
	Metric 4:	Test Substance Stability	Medium	Some details regarding the test substance preparation and storage conditions were not reported but the omissions are unlikely to have a substantial impact on the study results.				
Domain 3: Test Condition	ons							
	Metric 5:	Test Method Suitability	High	The test method was suitable for the study type.				
	Metric 6:	Testing Conditions	High	Testing conditions were clearly reported and appropriate.				
	Metric 7:	Testing Consistency	High	Testing conditions across study groups were generally consistent and any changes were reported and discussed.				
	Metric 8:	System Type and Design	High	The system type was appropriate and equilibrium was established.				
Domain 4: Test Organis	ms							
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.				
Domain 5: Outcome Ac	a a com an t							
Domain 5: Outcome As	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interact				
	Metric 12:	Test Substance Purity	High	Sampling methods were clearly reported and appropriate for the study type				
	Metrie 12.	Test Substance Funty	Ingn	Sumpling methods were clearly reported and appropriate for the study type.				
Domain 6: Confounding	/Variable Control							
	Metric 13:	Confounding Variables	High	Uncertainty in the results was reported and discussed and unlikely to impact the study results.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.				
Domain 7: Data Present	ation and Analysis							
	Metric 15: Metric 16:	Data Reporting Statistical Methods and Kinetic Calculations	High High	The data reporting was sufficient to explain the fate of the target chemical in the system. The statistical analysis reported in the study was appropriate.				
Domain & Other								
Domain 8: Other	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.				
Overall Qualit	ty Determina	ation	High					

\* Related References: Cited in ECHA and HSDB

Study Citation:	Tan, G. H. (1995). Residue levels of phthalate esters in water and sediment samples from the klang river basin. Bulletin of Environmental Contamination					
<b>OECD Harmonized</b>	and Toxicology 54(2):171-176. Adsorption and Desorption					
Template:	I I I I I I					
HERO ID:	680414					
_			EXTRACTIO	DN		
Parameter	Data					
CASRN and Test Material		84-74-2; DBP				
Confidentiality, Type, Guid	eline	None; Field study; other: Calculated	partition coefficients f	from river water and sediment samples		
Solvent, Reactivity, Storage	e, Stability	Test substance extracted from river w diethyl ether in petroleum ether; NR	Water in dichloromethan Water and sediment s	amples stored in amber bottles; NA		
Radiolabel, Source, State, I	Purity	NA; Klang River water and sedimen	t; NR; NA Notes: Stan	idard for extraction recovery obtained from Theta Kit, Theta Corp, Pennsylvania, USA		
Sampling Frequency, Sai	mpling Details, and	Every three months from January 19	92 to February 1993;	Surface sediment excavated 0 to 10 cm deep; Surface water collected from the middle		
pH, Test Temperature, Buff	fer, and Test Details	Not reported; Not reported; Not rep	orted; Partition coeffic	cient calculated from test substance concentrations measured in field samples from the		
Matrix, Clay Silts and Orga	anic Carbon, and CEC	Not Reported; Not reported; Not rep	orted			
Bulk Density and Matrix D	etails	Not reported; Not Reported				
Media, Recovery, and Statistics		River sub-surface water and river surface sediment; 51% average recovery from spiked sediment samples; 71% average recovery from spiked water				
		samples; Not reported				
Transformation Products, E	Equilibrium	Not applicable; Not applicable; Not applicable				
Details	Jumbrium Desorption					
Reference Substance, Reference Substance Re-		Not applicable; Not applicable; Not applicable				
sults, and Percent Adsorption	on Advantion Coof	Not applicable. Not applicable. Not	annliaghlas Coloulatad	at 7 different stations Kf - 2217 517 218 5 55 8 142 5 48 1 2127		
ficient Results. Adsorption	n Coefficient Results	The apprendice, the apprendice, the apprendice, calculated at a different stations. In = 551.7, 51.7, 51.0, 55.0, 172.5, 70.1, 215.7				
Comments, and Adsorption						
Desorption Type						
Partition Coefficient Type	and Partition Coeffi-	Calculated from [river sediment] / [river water]; Sediment concentrations = $398$ , 248, 637, 67, 114, 101, and 406 ng/g; water concentrations = $1.2$ , 48, 2, 1, 2, 0, 8, 2, 1, and 1, 0, ng/l				
Cient Results	and Partition Coeffi-	4.8, 2, 1.2, 0.8, 2.1, and 1.9 ug/L sediment-water: Calculated				
cient Results	and I artition Coem-	sedment-water, Calculated				
Mass Balance		Not applicable				
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce		8			
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.		
	Metric 2:	Test Substance Purity	High	The test substance measured in environmental samples against reliable analytical stan- dards.		
Domain 2: Test Design						
6	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.		
Continued on next page						

		contin	ued from pre	vious page	
Study Citation:	Tan, G. H. (1995). Residue levels of phthalate esters in water and sediment samples from the klang river basin. Bulletin of Environmental Contamination and Toxicology 54(2):171-176.				
<b>OECD Harmonized</b>	Adsorption and Desorption				
Template:					
HERO ID:	680414				
			EVALUATIO	N	
Domain		Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	High	The test substance extraction and storage conditions were reported, and were appropriate for the study.	
Domain 3: Test Condition	ons				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	Medium	There were omissions in the sample conditions (pH, sediment type and characteristics), but these were not likely to have a substantial impact on the study results.	
	Metric 7:	Testing Consistency	High	Replicates were collected and analyzed consistently.	
	Metric 8:	System Type and Design	High	Environmental samples were collected at the same monitoring stations and are assumed to be at equilibrium.	
Domain 4: Test Organis	sms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.	
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to the study type.	
Domain 5: Outcome As	sessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.	
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed (e.g., sampling equipment, sample storage conditions) and no notable uncertainties or limitations were expected to influence results.	
Domain 6: Confounding	v/Variable Control				
	Metric 13:	Confounding Variables	High	All reported variability or uncertainty was not likely to influence the outcome assessment.	
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.	
Domain 7. Data Present	tation and Analysis				
Domain 7. Data i resell	Metric 15:	Data Reporting	High	Analytical methods used were suitable for detection and quantification of the target	
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset(s).	
Domain 8: Other					
Domain 6. Outer	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.	
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.	
		Contir	ued on next j	page	

## Page 534 of 720

		continued from previous page			
Study Citation:	Tan, G. H. (1995). Residue levels of phthalate esters in water and sediment samples from the klang river basin. Bulletin of Environmental Contamination				
OECD Harmonized Template:	and Toxicology 54(2):1/1-1/6. Adsorption and Desorption				
HERO ID:	680414				
		EVALUATION			
Domain	Metric	Rating	Comments		
Overall Quality Determination High					

Study Citation:	Vitali, M., Guidotti, M., Macilenti, G., Cremisini, C. (1997). Phthalate esters in freshwaters as markers of contamination sources: A site study in Italy. Environment International 23(3):337-347.						
OECD Harmonized	Adsorption and Desorption						
Template: HERO ID:	680447						
	000117						
			EXTRACTIO	)N			
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, Type, Guide	eline	None; Field study; other: Partition co	befficient estimated fro	om concentrations measured in field sediment and water samples			
Solvent, Reactivity, Storage	, Stability	isooctane; NR; Water samples collec	ted in glass bottles and	d stored in the dark; NR			
Radiolabel, Source, State, P	urity	NA; Water and sediment samples: V	elino, Turano, and Salt	to Rivers; Salto, Scandarello, and Ventina lakes; Ratto River (tributary of Velino), Italy;			
		NR; NA Notes: Phthalate analytical	standards, >99% purit	ity, were obtained from PolyScience Corporation, Alltech, IL			
Sampling Frequency, San	npling Details, and	3 series of sampling: June-July 1994	August 1995, and Sep	ptember-October 1994; Water samples collected 0-20 cm deep in glass bottles; sediment			
nH Test Temperature Buff	er and Test Details	Not reported: Not reported: Not report	rted. Not Reported	ected from 22 stations in the vermo kiver, 5 replicate analyses			
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported. Not reported. Not reported					
Bulk Density and Matrix De	etails	Not reported: river or lake water and sediment					
Media, Recovery, and Statis	stics	surface river or lake water and surface river or lake sediment; water: 104%; sediment: 84%; average of 4 replicates: water: ±0.3%; sediment: ±5.0%					
Transformation Products, E	quilibrium	Not reported; Not applicable; Not applicable					
Adsorption Details, and Eq	uilibrium Desorption						
Details		Net englischler Net englischler Net englischle					
Reference Substance, Refe	rence Substance Re-	not applicable; not applicable					
Adsorption Coefficient Tyr	ne Adsorption Coef-	Not applicable: Not applicable: Not applicable: Calculated for 22 stations = 6.35, 20.6, 9.3, ND, ND, ND, ND, ND, ND, ND, 2.1, ND, ND, ND, ND, ND, ND, ND, ND, ND, ND					
ficient Results. Adsorption	Coefficient Results	ND, 9.3, ND, ND, ND, 3.7, 56.6, 12.7					
Comments, and Adsorption		, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10					
Desorption Type							
Partition Coefficient Type	and Partition Coeffi-	Calculated from [river sediment] / [river water]; Sediment: 25.4, 22.7, 9.3, ND, ND, 4.4, ND, ND, ND, 3.0, ND, 6.3, ND, ND, 9.3, ND, ND, ND, ND, ND, ND, ND, ND, ND, ND					
cient Results	and Dartition Cooff	ND, 7.4, 28.3, and 7.6 ug/kg; Water: 4.0, 1.1, 1.0, 18.0, ND, 44.3, ND, ND, ND, ND, 3.0, 3.0, 2.9, 2, ND, 1.0, 0.4, ND, 0.8, 2.0, 0.5, and 0.6 ug/L;					
cient Results	and Partition Coem-	sediment-water; Not Reported					
Mass Balance		Not reported					
			EVALUATIO	DN			
Domain		Metric	Rating	Comments			
Domain 1: Test Substance	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.			
	Metric 2:	Test Substance Purity	High	The test substances were determined by GC-FID and analyzed in analytical grade sol-			
				vent.			

Domain 2: Test Design

Metric 3:

Medium Blank controls were not reported but the omission is unlikely to have a substantial impact on the study results.

Continued on next page ...

Study Controls

		continu	ued from pre-	vious page		
Study Citation:	Vitali, M., Guido Environment Inte	Vitali, M., Guidotti, M., Macilenti, G., Cremisini, C. (1997). Phthalate esters in freshwaters as markers of contamination sources: A site study in Italy. Environment International 23(3):337-347				
<b>OECD Harmonized</b>	Adsorption and D	Adsorption and Desorption				
Template:						
HERO ID:	680447					
		Ι	EVALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported and appropriate.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable.		
	Metric 6:	Testing Conditions	Medium	Some of the sediment characteristics were not reported.		
	Metric 7:	Testing Consistency	High	No confounding variables between sample groups were noted.		
	Metric 8:	System Type and Design	High	As a field study the system was at equilibrium.		
Domain 4: Test Organis	me					
Domain 4. Test Organis	Matric 0:	Outcome Assessment Methodology	N/A	This matrix is not applicable to the study type		
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to the study type.		
	Wietife 10.	Sampling Methods	IN/A	This metric is not applicable to the study type.		
Domain 5: Outcome As	sessment					
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.		
	Metric 12:	Test Substance Purity	Medium	Sampling frequency was not reported.		
Domain 6: Confounding	g/Variable Control					
	Metric 13:	Confounding Variables	Medium	Uncertainty was reported in the study.		
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.		
		Exposure				
Domain 7. Data Dragant	totion and Analysia					
Domain /: Data Present	Matria 15.	Data Departing	Iliah			
	Metric 15:		High	The data reporting was appropriate.		
	Metric 16:	Statistical Methods and	High	Sufficient statistical analysis was reported.		
		Kinetic Calculations				
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.		
		Results	C			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.		
Overall Quality	ly Determin	auon	нıgn			

Study Citation:	Wang, F., Xia, X., Sha, Y. (2008). Distribution of phthalic acid esters in Wuhan section of the Yangtze River, China. Journal of Hazardous Materials					
OECD Harmonized	Adsorption and Desorption					
Template: HERO ID:	698246					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, Type, Guide	eline	None; Field study; other: Koc value determination for river and lake water and sediment samples				
Solvent, Reactivity, Storage,	, Stability	test substance in sediment phase extracted with carbon disulfide. The test substance was then concentrated via rotary evaporator, purified by "clean-up" columns (packed with dry silica gel and water) in hexane vehicle, and concentrated again; NR; Samples stored at 4°C; NR				
Radiolabel, Source, State, P	urity	NA; 29 sites in the Wuhan portion of the Yangtze River, China: 7 main stream, 22 tributary and lake sites; NR; NA Notes: standard PAE mixture purchased from Beijing Chemical Reagents Corporation (in analytical-grade carbon disulfide)				
Sampling Frequency, San Number of Replicates	npling Details, and	Single sample or two samplings (high and low water period); Samples collected from 29 tributary, river, or lake sites of the Wuhan section of the Yangtze River. China, July - December 2005, during high and low water periods: Not reported				
pH, Test Temperature, Buffe	er, and Test Details	Not reported; Not reported; Not reported; Field samples collected and test substance concentrations determined in water and sediment phase				
Matrix, Clay Silts and Organ	nic Carbon, and CEC	Not Reported; TOC 0.66 - 2.09% high water period; 0.16 - 1.9% low water period; Not reported				
Bulk Density and Matrix De	etails	Not reported; Not reported				
Media, Recovery, and Statis	tics	River and lake water and sediment samples; Water: 85.3 - 105.8% Sediment: 80.9 - 99.4%; Not reported				
Transformation Products, Ed	quilibrium	Not applicable; Not Reported; Not Reported				
Adsorption Details, and Equ	uilibrium Desorption					
Details Reference Substance, Refer	rence Substance Re-	Not applicable: Not applicable: Not reported				
sults, and Percent Adsorptio	n					
Adsorption Coefficient Type, Adsorption Coef-		Koc; High water period: 4.30E8 L/kg (Left Zhuankou), 4.30E6 L/kg (Left Wuhanguan), 1.30E8 (Left Yujiatou), 8.70E8 L/kg (Right Yujiatou);				
ficient Results, Adsorption Coefficient Results		Low water period: 8.40E4 L/kg (Jinkou), 4.20E5 L/kg (Zhuankou), 4.90E5 L/kg (Yangluo); Based on OC normalized test substance concentration				
Comments, and Adsorption		(ratio of test substance to TOC).; Not Reported				
Partition Coefficient Type and Partition Coeffi-		Not Reported: Not Reported				
cient Results						
Partition Coefficient Phase	and Partition Coeffi-	sediment-water; Not Reported				
Mass Balance		Not Reported				

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substand	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2:	Test Substance Purity	High	The field sample source was reported, in addition to the source and purity of the analyti- cal standards used.	
Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	Field studies do not require negative controls.	
Continued on next page					

#### . continued from previous page

Study Citation:	Wang, F., Xia, X., Sha, Y. (2008). Distribution of phthalic acid esters in Wuhan section of the Yangtze River, China. Journal of Hazardous Materials				
OFCD Harmonized	154(1-3):317-324.				
Template	Ausorpholi and D	corpton			
HERO ID.	698246				
IIERO ID.	070240				
			EVALUATIO	N	
Domain		Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	High	The field sample preparation and storage was reported and appropriate for the study.	
Domain 2. Test Canditi	ana				
Domain 3: Test Conditi	Ions Matria 5:	Test Method Suitebility	Uiah	The test method was suitable for the test substance	
	Metric 5:	Testing Conditions	Підії Madium	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	Medium	some sediment and water characteristics were not reported: pH, CEC, sediment type, and temperature.	
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples.	
	Metric 8:	System Type and Design	High	Field studies are assumed to be at equilibrium.	
Domain 1: Test Organie	sme				
Domain 4. Test Organis	Metric 9.	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type	
	Metric 10	Sampling Methods	N/A	This metric is not applicable to the study type.	
	inedie 10.	bumping methods	1.0/1	This means is not appreaded to the study type.	
Domain 5: Outcome As	ssessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.	
	Metric 12:	Test Substance Purity	High	The study used appropriate sampling methods. Number of sample replicates was not reported but is not expected to have a significant impact on study results.	
Domain 6: Confoundin	g/variable Control	Confounding Variables	TT: -1-		
	wietric 13:	Confounding variables	High	Sources of variability and uncertainty were considered and not expected to have a significant impact on study results.	
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.	
		Exposure			
Domain 7: Data Prasan	tation and Analysis				
Domain 7. Data Fiesen	Metric 15.	Data Reporting	High	Target chemical concentrations and extraction afficiency wars reported. Analytical limits	
	mente 13.	Data Reporting	riigii	of detection were not reported but this is not expected to have a significant impact on study results	
	Metric 16:	Statistical Methods and	High	Statistical methods were appropriate for the datasets.	
		Kinetic Calculations	8		
Domain 8: Other	M	Waifersting on Div 11114	TT' 1		
	Metric 1/:	verification or Plausibility of Regults	High	I ne study results were reasonable.	
	Metric 18:	OSAR Models	N/A	The metric is not applicable to this study type.	

# **Overall Quality Determination**

High

Study Citation: OECD Harmonized	Wang, H., Li, H., S Adsorption and De	Song, Q., Gao, L., Wang, N. (2017). Adsorption of Phthalates on Municipal Activated Sludge. Journal of Chemistry 2017:1-7.			
Template: HERO ID:	5666279				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2. Dibutyl phthalate			
Confidentiality Type, Guid	leline	None: Experimental: other: Adsorption of Phthalates on Municipal Activated Sludge			
Solvent Reactivity Storage	e Stability	NR·NR·NR			
Radiolabel Source State I	Purity	NR, MR, MR, MR			
Sampling Frequency, Sa	mpling Details, and	0, 0.25, 0.5, 1, 2, 4, and 8 hours: Not reported: 3			
Number of Replicates		o, ollo, o			
pH, Test Temperature, Buff	fer, and Test Details	7.0; 25°C; Not reported; 80 µg/L test concentration; flasks stirred with a thermostatic oscillator at 130 rpm			
Matrix, Clay Silts and Orga	anic Carbon, and CEC	Not Reported; Not reported; Not reported			
Bulk Density and Matrix D	Details	Not reported; activated sludge taken from a secondary sediment tank of Jinan water treatment factory			
Media, Recovery, and Stati	istics	prepared experimental water made with glucose as carbon source, NH4Cl as nitrogen source, certain amount of Mg, P, Fe, Ca, and Zn ions as trace nutrients, and sodium azide as inhibitor; spiked recovery: 83.20-111.78% standard deviation: 2.29-8.99%; Not reported			
Transformation Products, E	Equilibrium	Not reported; adsorption equilibrium was reached in ca. 2hrs; Not reported			
Adsorption Details, and Ed	quilibrium Desorption				
Details Reference Substance Refe	erence Substance Re-	Not reported: Not reported: Not reported			
sults, and Percent Adsorpti	on	not reported, not reported			
Adsorption Coefficient Ty	pe, Adsorption Coef-	rate constant; half-life; 1.599/hr; 0.433 hours; first-order kinetics; Not reported			
ficient Results, Adsorption Coefficient Results		·			
Comments, and Adsorption					
Desorption Type					
Partition Coefficient Type	and Partition Coeffi-	Not reported; Not reported			
Partition Coefficient Phase	e and Partition Coeffi-	solids-water in activated sewage sludge; Not reported			
cient Results Mass Balance		Initial 80 µg, 20.12 µg remained in sludge, 29.82 µg remained in water, 30.06 µg loss			

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
	Metric 2:	Test Substance Purity	Medium	Source was reported and purity was not reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	Low	Controls were not reported.
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation, and storage conditions were not reported.

Continued on next page ...
		continu	ed from previous	page				
Study Citation: OECD Harmonized	Wang, H., Li, H., Adsorption and D	Wang, H., Li, H., Song, Q., Gao, L., Wang, N. (2017). Adsorption of Phthalates on Municipal Activated Sludge. Journal of Chemistry 2017:1-7. Adsorption and Desorption						
Template:								
HERO ID:	5666279							
		E	VALUATION					
Domain		Metric	Rating	Comments				
Domain 3: Test Condition	ons							
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	Medium	Sludge and water characteristics were limited.				
	Metric 7:	Testing Consistency	Medium	Limited detail regarding this metric.				
	Metric 8:	System Type and Design	High	The system type and design were appropriate.				
Domain 4: Test Organis	sms							
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate.				
	Metric 12:	Test Substance Purity	Medium	Limited detail regarding this metric.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	Medium	Limited detail regarding this metric; mass balance loss not fully discussed.				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.				
		Exposure						
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	Low	Analytical detail was minimal.				
	Metric 16:	Statistical Methods and	High	Calculations were appropriate.				
		Kinetic Calculations	6	11 1				
Damain 9. Other								
Domain 8: Other	Madula 17.	V-sife-tion on Dlassibility of	Τ					
	Metric 17:	vernication or Plausibility of	LOW	Due to influed information on loss and lack of control, evaluation of the reasonableness				
	Matria 19.	Results OSAD Modele	NT/ A	The metric is not confictly to this study to a				
	wietric 18:	QSAK MODELS	IN/A	i ne metric is not applicable to this study type.				
<b>Overall Onali</b>	tv Determin	ation	Medium					
C , or an Quan	-, 2000 mm							

Study Citation:	Wang, J., Liu, P., S	Wang, J., Liu, P., Shi, H., Qian, Y. (1997). Biodegradation of phthalic acid ester in soil by indigenous and introduced microorganisms. Chemosphere							
OECD Harmonized	Adsorption and Desorption								
Template: HERO ID:	1333189								
			EXTRACTION						
Parameter		Data							
CASRN and Test Material		84-74-2; Dibutyl phthalate							
Confidentiality, Type, Guide	eline	None; Experimental; other							
Solvent, Reactivity, Storage	, Stability	Methanol; NR; NR; NR							
Radiolabel, Source, State, P	Purity	NR; Beijing Chemical Plan	nt; NR; Analytical grade Notes: NR						
Sampling Frequency, Sam Number of Replicates	npling Details, and	One time sampling.; Not Reported; Not reported							
pH, Test Temperature, Buffe	er, and Test Details	7.2; 25°C; Not reported; SI							
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported; Organic carbon: 1.14%; Not reported							
Bulk Density and Matrix De	etails	Not reported; Total N: 0.058%: Total P, K, Mg: 9, 30.2, 52.3 mg/kg soil, respectively.							
Media, Recovery, and Statis	stics	Not reported; Not reported; $r = 0.96$							
Transformation Products, E Adsorption Details, and Eq	quilibrium uilibrium Desorption	Not reported; Not reported; Not reported							
Reference Substance, Refe	rence Substance Re-	Not reported; Not reported; Not reported							
Adsorption Coefficient Type, Adsorption Coef- ficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type		Not reported; Not reported; DBP adsorption conformed to Freundlich equation: $X/M = KC^{(1/n)}$ where $x/M =$ amount adsorbed by g of soil, C is the equilibrium concentration, and K and 1/n are constants that depend on temperature and soil.		$M = KC^{(1/n)}$ where $x/M =$ amount of DBP n temperature and soil.					
Partition Coefficient Type	and Partition Coeffi-	Freundlich solid-water dist	ribution coefficient; In the study, K and	n were determined to be 17.46 an	d 0.94, respectively.				
cient Results Partition Coefficient Phase	and Partition Coeffi-	Not Reported; Not reported	d						
cient Results Mass Balance		Not reported							
			EVALUATION						
Domain		Matria	Deting		Commente				

Domain		Wiethe	Kating	Comments
Domain 1: Test Substar	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.
	Metric 2:	Test Substance Purity	High	The test substance was reported as commercial grade.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Sterilized, uninoculated controls were used to establish abiotic losses.
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported and appropriate.

Domain 3: Test Conditions

Continued on next page ...

## PUBLIC RELEASE DRAFT May 2025 Adsorption and Desorption

HERO ID: 1333189 Table: 1 of 1

		continu	ued from pre	vious page			
Study Citation:	Wang, J., Liu, P., Shi, H., Qian, Y. (1997). Biodegradation of phthalic acid ester in soil by indigenous and introduced microorganisms. Chemosphere 35(8):1747-1754.						
<b>OECD Harmonized</b>	Adsorption and D	Desorption					
Template:							
HERO ID:	1333189						
		Ι	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.			
	Metric 7:	Testing Consistency	High	There were no reported deviations in the testing conditions across the sample groups.			
	Metric 8:	System Type and Design	High	The system was appropriate for maintaining test substance concentrations.			
Domain 4: Test Organics	me						
Domain 4. Test Organis	Metric 0:	Outcome Assessment Methodology	High	The metric is not applicable to the study type			
	Metric 10:	Sampling Methods	High	The inculum type was described and appropriate for the study type.			
	Methe 10.	Sampling Methods	Ingn	The modulum type was described and appropriate for the study type.			
Domain 5: Outcome Ass	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	The sampling methods were reported and appropriate.			
			6				
Domain 6: Confounding	/Variable Control						
	Metric 13:	Confounding Variables	Medium	Uncertainty was not reported in the concentration measurements; however, the omission is unlikely to impact the study results.			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.			
		Exposure					
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	High	The data reporting was appropriate and the analytical method was suitable			
	Metric 16:	Statistical Methods and	High	Statistical analysis was reported and appropriate			
		Kinetic Calculations		Statistical analysis was reported and appropriate.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.			
	M 10	Results	<b>N</b> T/ A				
	Metric 18:	QSAK Models	N/A	The metric is not applicable to the study type.			
<b>Overall Qualit</b>	ty Determin	ation	High				

Study Citation:	Wu, W., Sheng, H., Gu, C., Song, Y., Willbold, S., Qiao, Y., Liu, G., Zhao, W., Wang, Y., Jiang, X., Wang, F. (2018). Extraneous dissolved organic matter enhanced adsorption of dibutyl phthalate in soils: Insights from kinetics and isotherms. Science of the Total Environment 631-632(Elsevier):1495-1503.						
<b>OECD Harmonized</b>	Adsorption and De	sorption					
Template:							
HERO ID:	4829396						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl phthalate					
Confidentiality, Type, Guide	eline	None; Experimental; other: adsorption of dibutyl phthalate in soil					
Solvent, Reactivity, Storage	, Stability	stock solutions prepared in HPLC grade methanol; NR; NR					
Radiolabel, Source, State, P	urity	NR; Dr. Ehrenstorfer GmbH (Augsburg, Germany); NR; ≥99.4%					
Sampling Frequency, San Number of Replicates	npling Details, and	Sampled in triplicate at 0.05, 0.13, 0.5, 2, 9, 24, and 48 h; suspensions centrifuged for 3 min at 10000 rpm; 3					
pH, Test Temperature, Buffer, and Test Details		data in SI (not publicly available); $25\pm1^{\circ}$ C; Not reported; batch experiments with 50 g soil in brown glass bottles with 0, 1 mL (50 mg/L), and 2 mL (100 mg/L) extraneous DOM and 8 mg/L DBP (kinetics) or 0.5, 1, 2, 4 and 8 mg/L (isotherms); bottles incubated in the dark on roller drum at 30 rpm					
Matrix, Clay Silts and Organ	nic Carbon, and CEC	Not Reported; data in SI (not publicly available); data in SI (not publicly available)					
Bulk Density and Matrix De	etails	Not reported; RS: red soil from Yingtan, Jiangxi classified as ferralsols; BS: black soil from Harbin, Heilongjang classified as chernozems					
Media, Recovery, and Statis	tics	ultrapure water; Not reported; Not reported					
Transformation Products, Ed Adsorption Details, and Eq Details	quilibrium uilibrium Desorption	Not reported; kinetic experiment indicated 48 hr was sufficient for equilibrium; Not applicable					
Reference Substance, Reference	rence Substance Re-	Not reported; Not reported; Elovich model rate constants (mg/h) in RS = $116.06\pm3.09$ , RS w/50 DOM = $154.27\pm2.39$ , RS w/100 DOM = $142.23\pm1.12$ , BS = $153.54\pm2.58$ , BS w/50 DOM = $184.88\pm1.40$ , BS w/100 DOM = $160.73\pm1.64$					
Adsorption Coefficient Typ ficient Results, Adsorption Comments, and Adsorption Desorption Type	e, Adsorption Coef- Coefficient Results	adsorption kinetics; First-order rate constants (/h) in RS = $31.12\pm12.13$ , RS w/50 DOM = $31.37\pm11.78$ , RS w/100 DOM = $32.51\pm10.68$ , BS = $23.96\pm4.19$ , BS w/50 DOM = $28.48\pm8.42$ , BS w/100 DOM = $30.27\pm10.33$ ; Second-order rate constants (mg/h) in RS = $0.44\pm0.01$ , RS w/50 DOM = $0.34\pm0.02$ , RS w/100 DOM = $0.40\pm0.02$ , BS = $0.27\pm0.00$ , BS w/50 DOM = $0.25\pm0.01$ , BS w/100 DOM = $0.31\pm0.01$ ; Freundlich adsorption coefficient ((mg/kg)/(mg/L)) in RS = $39.56\pm1.47$ , RS w/50 DOM = $50.19\pm1.03$ , RS w/100 DOM = $36.50\pm1.68$ , BS = $66.32\pm1.54$ , BS w/50 DOM = $79.57\pm3.2$ BS w/100 DOM = $67.20\pm5.96$					
Partition Coefficient Type a cient Results	and Partition Coeffi-	Results from adsorption isotherms using the Henry, Langmuir, and Freundlich models; Henry model adsorption coefficient (L/mg) in RS = $29.88\pm0.34$ , RS w/50 DOM = $44.41\pm1.11$ , RS w/100 DOM = $33.97\pm0.68$ , BS = $49.59\pm2.25$ , BS w/50 DOM = $70.91\pm1.81$ , BS w/100 DOM = $65.95\pm3.07$					
Partition Coefficient Phase cient Results Mass Balance	and Partition Coeffi-	soil-water; Langmuir constant (L/mg) in RS = $0.07\pm0.03$ , RS w/50 DOM = $0.05\pm0.01$ , RS w/100 DOM = $0.01\pm0.02$ , BS = $0.14\pm0.04$ , BS w/50 DOM = $0.04\pm0.04$ , BS w/100 DOM = $0.03\pm0.04$ Not reported					

EVALUATION							
Metric	Rating	Comments					
Test Substance Identity	High	The test substance was identified clearly.					
Test Substance Purity	High	Source and purity were reported.					
	Metric Test Substance Identity Test Substance Purity	EVALUATION       Metric     Rating       Test Substance Identity     High       Test Substance Purity     High	EVALUATION         Metric       Rating       Comments         Test Substance Identity       High       The test substance was identified clearly.         Test Substance Purity       High       Source and purity were reported.				

Domain 2: Test Design

Continued on next page ...

PUBLIC RELEASE DRAFT May 2025 Adsorption and Desorption

HERO ID: 4829396 Table: 1 of 1

		continu	ued from pre	vious page			
Study Citation:	Wu, W., Sheng, H enhanced adsorpt	Wu, W., Sheng, H., Gu, C., Song, Y., Willbold, S., Qiao, Y., Liu, G., Zhao, W., Wang, Y., Jiang, X., Wang, F. (2018). Extraneous dissolved organic matter enhanced adsorption of dibutyl phthalate in soils: Insights from kinetics and isotherms. Science of the Total Environment 631-632(Elsevier):1495-1503.					
OECD Harmonized	Adsorption and Desorption						
Template:	4920207						
HERO ID:	4829396						
		I	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 3:	Study Controls	Medium	Controls were reported; results not reported.			
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported.			
Domain 3: Test Conditi	ons						
	Metric 5:	Test Method Suitability	High	The test method was suitable.			
	Metric 6:	Testing Conditions	Medium	Test condition details were omitted and cited to supporting information (SI).			
	Metric 7:	Testing Consistency	High	Testing was consistent.			
	Metric 8:	System Type and Design	High	Equilibrium was established.			
Domain 4 <sup>.</sup> Test Organis	ms						
Domain I. Test organis	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
		1 0					
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	Medium	Limited details reported regarding this metric.			
Domain 6: Confounding	v/Variable Control						
Domain of Comountaing	Metric 13:	Confounding Variables	N/A	No confounding variables were identified.			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.			
		Exposure					
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	Low	Some analytical details including recovery and detection limits were omitted, may be in SI.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited details reported regarding this metric.			
Domain 8: Other							
Domain o. Ouici	Metric 17:	Verification or Plausibility of Results	Medium	The study results are reasonable; SI likely contains details valuable to evaluation of the study.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
Overall Quality Determination			High				

Wu, Y., Si, Y., Zhou, D., Gao, J. (2015). Adsorption of diethyl phthalate ester to clay minerals. Chemosphere 119:690-696.					
orption and Des	sorption				
040					
040					
	EXTRACTION				
	Data				
	84-74-2; Di-n-butyl phthalate ester				
	None; Experimental; other: Batch sorption experiments to assess adsorption kinetics of DnBP to K- and Ca-mont clay minerals				
ity	NR; NR; NR				
	NR; Sigma–Aldrich Chemical (St Louis, MO); NR; >99% Notes: DnBP				
Details, and	Not reported; Not reported; Not reported				
Test Details	6; 20°C; Not reported; DnBP test concentration 0.01 mM in glass tubes				
bon. and CEC	Not Reported; Not reported; 73.6 cmol/kg				
,	Specific surface area = 324.5 m2/g; Montmorillonite clay was purchased from Fenghong Company, Zhejiang Province, China				
	Not reported; Not reported				
um	Not reported; Not reported; Not reported				
m Desorption					
substance Re-	control experiments without clays were included; No apparent degradation was observed in 30 d at pH 4.0–9.0 and 10–30°C in the dark.; Not				
orption Coef-	Kd (L/kg) adsorption distribution coefficient: 236.1 (K-mont clay): 126.5 (Ca-mont clay): Adsorption isotherms to both K- and Ca-mont clays				
icient Results	were not well fitted with the Langmuir model and they were in "S" shape; Not reported				
rtition Coeffi-	Not reported; Not reported				
rtition Coeffi-	Not Reported; Not reported				
	$\mathbf{r}$				
	Not reported				
	Y., Si, Y., Zhou rption and Des 040 ty Details, and Fest Details bon, and CEC um m Desorption ubstance Re- orption Coef- cient Results tition Coeffi- rtition Coeffi-				

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Substan	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.
Domain 2: Test Design	Metric 3: Metric 4:	Study Controls Test Substance Stability	High Medium	Controls were included and appropriate. Minimal details on test substance preparation, storage conditions, and homogeneity were reported.
Domain 3: Test Condit	ions			

Continued on next page ...

		conti	nued from prev	vious page				
Study Citation: OECD Harmonized	Wu, Y., Si, Y., Zhou, D., Gao, J. (2015). Adsorption of diethyl phthalate ester to clay minerals. Chemosphere 119:690-696. Adsorption and Desorption							
HERO ID:	2804040	2804040						
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 5:	Test Method Suitability	High	There were omissions in the test method details; however, these omissions were not likely to have a substantial impact on study results.				
	Metric 6:	Testing Conditions	Medium	There were omissions in testing conditions (e.g., temperature was not reported); how- ever, sufficient data were reported to determine that the deviations and omissions were not likely to have a substantial impact on study results.				
	Metric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported, but these dis- crepancies were not likely to have a substantial impact on study results.				
	Metric 8:	System Type and Design	High	Equilibrium was established. The system type and design were capable of appropriately maintaining substance concentrations.				
Domain 4: Test Organis	sms							
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Demain 5. Outerment								
Domain 5: Outcome As	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.				
	Metric 12:	Test Substance Purity	Low	Details regarding sampling methods were not fully reported, and the omissions may have a substantial impact on study results.				
Domain 6: Confoundin	g/Variable Control							
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques were included.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7: Data Present	tation and Analysis Metric 15:	Data Reporting	Medium	Analytical details were omitted; however it possible they may be found in the SI (not available publicly). The target chemical and transformation product(s) concentrations,				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset(s).				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Quali	ty Determina	ation	High					

Study Citation:	Xiang, L., Wang, X and Isotherms of D	Xiang, L., Wang, X. D., Chen, X. H., Mo, C. H., Li, Y. W., Li, H., Cai, Q. Y., Zhou, D. M., Wong, M. H., Li, Q. X. (2019). Sorption Mechanism, Kinetics, and Isotherms of Di-n-butyl Phthalate to Different Soil Particle-Size Fractions. Journal of Agricultural and Food Chemistry 67(17):4734-4745.						
<b>OECD Harmonized</b>	Adsorption and De	Adsorption and Desorption						
Template:	<b>-</b> / <b>- -</b> / <b>-</b> -							
HERO ID:	5433498							
		EXTRACTION						
Parameter		Data						
CASRN and Test Material		84-74-2; Di-n-butyl phthalate						
Confidentiality, Type, Guid	eline	None; Experimental; OECD Guideline 106 (Adsorption - Desorption Using a Batch Equilibrium Method)						
Solvent, Reactivity, Storage	, Stability	methanol (maintained below 0.5% v/v); NR; NR; NR						
Radiolabel, Source, State, F	Purity	NR; Aladdin Industrial Corporation (Shanghai, China); NR; 98% Notes: DBP						
Sampling Frequency, Sar Number of Replicates	npling Details, and	samples collected at 0.1, 0.5, 1, 2, 6, 10, 14, 20, 24, 48, 96, 144, 192, and 240 h; DBP analysis in supernatants; 3						
pH, Test Temperature, Buff	er, and Test Details	3.8±0.1; 15, 25 and 35C; CaCl2 to control ionic strength; 25 mL Teflon-lined centrifuge tubes were shaken with soil fraction (0.5 g) and 25 mL of DBP methanol solution; NaN3 was sued as a bioinhibitor						
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported; clay: size 0.6-8.9 um (mean 2.8), 22.6±1.5 g/kg organic matter; 420±24 cmol/kg						
Bulk Density and Matrix D	etails	BET surface area 33.4±2.8 m2/g; paddy soil (0-20cm) from Guangzhou, China was fractionated by particle size						
Media, Recovery, and Statis	stics	DBP sorption isotherms evaluated at 1, 2, 4, 6, 8, and 12 mg/L; Not reported; results reported±SD						
Transformation Products, E	quilibrium	Not reported; equilibrium reached at 192h based on preliminary experiments; Not reported						
Adsorption Details, and Eq	uilibrium Desorption							
Details Reference Substance, Reference Substance Re- sults and Percent Adsorption		Controls for loss due to volatilization, microbial degradation and sorption to the centrifuge tubes included; loss of DBP was less than 10%; mass balance ranged from 86-91%; Not reported						
Adsorption Coefficient Type, Adsorption Coef- ficient Results, Adsorption Coefficient Results Comments, and Adsorption		Kd at 1, 2, 4, 6, 8, and 12 mg/L (25C); 143.0 $\pm$ 5.0, 98.0 $\pm$ 2.6, 67.3 $\pm$ 1.2, 53.8 $\pm$ 0.7, 46.1 $\pm$ 0.4 and 37.0 $\pm$ 0.2; Kd: single-point sorption particion coefficient; Kf (at 25C): Freundlich sorption affinity coefficient = 0.14 $\pm$ 0.01; Kf for original paddy soil without fractionation by particle size = 0.030 $\pm$ 0.002 (mg/g)(mg/L)						
Partition Coefficient Type and Partition Coeffi-		log Koc at 1, 2, 4, 6, 8, and 12 mg/L (25C); 4.04±0.02, 3.87±0.01, 3.71±0.01, 3.61±0.01, 3.55±0.00, and 3.45±0.00						
Partition Coefficient Phase	and Partition Coeffi-	soil-water; organic carbon content normalized sorption coefficient (log Koc); values at 15 and 35C also reported						
Mass Balance		Not specified						

EVALUATION							
Domain		Metric	Rating	Comments			
Domain 1: Test Substance							
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.			
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.			
Domain 2: Test Design							
	Metric 3:	Study Controls	High	Controls were included.			
	Metric 4:	Test Substance Stability	High	The test substance preparation was appropriate.			

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HERO ID: 5433498 Table: 1 of 6

	continued from previous page							
Study Citation:	Xiang, L., Wang, and Isotherms of	Xiang, L., Wang, X. D., Chen, X. H., Mo, C. H., Li, Y. W., Li, H., Cai, Q. Y., Zhou, D. M., Wong, M. H., Li, Q. X. (2019). Sorption Mechanism, Kinetics, and Isotherms of Di-n-butyl Phthalate to Different Soil Particle-Size Fractions. Journal of Agricultural and Food Chemistry 67(17):4734-4745.						
<b>OECD Harmonized</b>	Adsorption and D	Desorption						
Template:								
HERO ID:	5433498							
		]	EVALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 3: Test Condition	ons							
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.				
	Metric 7:	Testing Consistency	High	The testing conditions did not change across the sample groups.				
	Metric 8:	System Type and Design	High	Equilibrium was established.				
Domain 4: Test Organis	ms							
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.				
		1 0		11 771				
Domain 5: Outcome Ass	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.				
	Metric 12:	Test Substance Purity	Medium	The sampling method details were limited.				
Domain 6: Confounding	Variable Control							
Domain 0. Confounding	Metric 13.	Confounding Variables	High	Uncertainty was unlikely to have an impact on the outcome assessment				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type				
		Exposure	1.011					
Domain 7: Data Presenta	ation and Analysis							
	Metric 15:	Data Reporting	Medium	The analytical method details were limited.				
	Metric 16:	Statistical Methods and	High	The calculations were appropriate.				
		Kinetic Calculations	ing.					
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.				
<b>Overall Oualit</b>	v Determin	ation	High					

Study Citation:	Xiang, L., Wang, X	iang, L., Wang, X. D., Chen, X. H., Mo, C. H., Li, Y. W., Li, H., Cai, Q. Y., Zhou, D. M., Wong, M. H., Li, Q. X. (2019). Sorption Mechanism, Kinetics,						
OECD Harmonized	Adsorption and De	Adsorption and Desorption						
Template: HERO ID:	5433498							
			EXTRACTIO	N				
Parameter		Data						
CASRN and Test Material		84-74-2; Di-n-butyl phthalate						
Confidentiality, Type, Guide	eline	None; Experimental; OECD Guidelin	e 106 (Adsorption - I	Desorption Using a Batch Equilibrium Method)				
Solvent, Reactivity, Storage	, Stability	methanol (maintained below 0.5% v/v	); NR; NR; NR					
Radiolabel, Source, State, F	Purity	NR; Aladdin Industrial Corporation (S	Shanghai, China); NR	R; 98% Notes: DBP				
Sampling Frequency, Sar Number of Replicates	npling Details, and	samples collected at 0.1, 0.5, 1, 2, 6, 1	0, 14, 20, 24, 48, 96,	144, 192, and 240 h; DBP analysis in supernatants; 3				
pH, Test Temperature, Buffer, and Test Details		5.1±0.2; 15, 25 and 35C; CaCl2 to control ionic strength; 25 mL Teflon-lined centrifuge tubes were shaken with soil fraction (0.5 g) and 25 mL of DBP methanol solution; NaN3 was sued as a bioinhibitor						
Matrix, Clay Silts and Organic Carbon, and CEC		Not Reported; humic acid: size 8.0-79 um (mean 33), 39.5±2.5 g/kg organic matter; 388±23 cmol/kg						
Bulk Density and Matrix Details		BET surface area 14.2±1.4 m2/g; paddy soil (0-20cm) from Guangzhou, China was fractionated by particle size						
Media, Recovery, and Statis	stics	DBP sorption isotherms evaluated at 1, 2, 4, 6, 8, and 12 mg/L; Not reported; results reported $\pm$ SD						
Transformation Products, E	quilibrium	Not reported; equilibrium reached at 192h based on preliminary experiments; Not reported						
Adsorption Details, and Eq	uilibrium Desorption							
Details	Ch-t D-			n and sometime to the contribute to be included, have of DDD and have 1000 and a				
sults and Percent Adsorption	nence Substance Re-	balance ranged from 86-91%. Not reported						
Adsorption Coefficient Tyr	be. Adsorption Coef-	Kd at 1, 2, 4, 6, 8, and 12 mg/L (25C): $150.0+6.4$ , $98.3+5.4$ , $64.4+4.5$ , $50.3+4.0$ , $42.2+3.7$ and $32.9+3.3$ : Kd; single-noint sorption partition						
ficient Results, Adsorption	Coefficient Results	coefficient; Kf (at 25C): Freundlich sorption affinity coefficient = $0.15\pm0.01$ ; Kf for original paddy soil without fractionation by particle size =						
Comments, and Adsorption		0.030±0.002 (mg/g)(mg/L)						
Desorption Type								
Partition Coefficient Type	and Partition Coeffi-	log Koc at 1, 2, 4, 6, 8, and 12 mg/L (25C); $3.82\pm0.02$ , $3.63\pm0.02$ , $3.45\pm0.02$ , $3.34\pm0.02$ , $3.27\pm0.02$ , and $3.16\pm0.02$						
cient Results Partition Coefficient Phase	and Partition Coeffi-	soil water: organic carbon content normalized comption coefficient (log Koc): values at 15 and 35C also reported						
cient Results	and I artition Coeffi	son water, organic carbon content nor	manzed sorption coe	incient (log itoe), values at 15 and 550 also reported				
Mass Balance		Not specified						
				N				
Domain		Metric	EVALUATIO	IN Comments				
Domain 1: Test Substan	20	Moure	Ratilly	comments				
Domain 1. 165t Substant	Metric 1.	Test Substance Identity	High	The test substance was identified using common nomenclature				
	metho 1.	rest substance furnity	ingn	The cost substance was identified using common nomenerature.				

	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.			
Domain 2: Test D	esign						
	Metric 3:	Study Controls	High	Controls were included.			
	Metric 4:	Test Substance Stability	High	The test substance preparation was appropriate.			
Domain 3: Test C	onditions						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Continued on next page						

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HERO ID: 5433498 Table: 2 of 6

		contin	ued from prev	vious page			
Study Citation:	Xiang, L., Wang, and Isotherms of	Xiang, L., Wang, X. D., Chen, X. H., Mo, C. H., Li, Y. W., Li, H., Cai, Q. Y., Zhou, D. M., Wong, M. H., Li, Q. X. (2019). Sorption Mechanism, Kinetics, and Isotherms of Di- n-butyl Phthalate to Different Soil Particle-Size Fractions, Journal of Agricultural and Food Chemistry 67(17):4734-4745					
OECD Harmonized	Adsorption and D	Adsorption and Desorption					
HERO ID:	5433498						
		I	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.			
	Metric 7:	Testing Consistency	High	The testing conditions did not change across the sample groups.			
	Metric 8:	System Type and Design	High	Equilibrium was established.			
Domain 4: Test Organis	ms						
U	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	Medium	The sampling method details were limited.			
Domain 6: Confounding	v/Variable Control						
Domain 0. Comounding	Metric 13	Confounding Variables	High	Uncertainty was unlikely to have an impact on the outcome assessment			
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type			
	Metter I I.	Exposure	10/1	The metric is not applicable to the study type.			
Domain 7: Data Present	ation and Analysis						
Domain 7. Data Frederic	Metric 15:	Data Reporting	Medium	The analytical method details were limited			
	Metric 16:	Statistical Methods and	High	The calculations were appropriate			
		Kinetic Calculations					
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.			
Overall Queli	ty Dotormin	ation	High				
Uver all Quality	ly Determin	auvii	Ingii				

Study Citation:	Xiang, L., Wang, X	Ciang, L., Wang, X. D., Chen, X. H., Mo, C. H., Li, Y. W., Li, H., Cai, Q. Y., Zhou, D. M., Wong, M. H., Li, Q. X. (2019). Sorption Mechanism, Kinetics,					
OECD Harmonized	and Isotherms of L Adsorption and De	or- n-butyl Phthalate to Different esorption	Soil Particle-Size Fra	actions. Journal of Agricultural and Food Chemistry 67(17):4734-4745.			
Template: HERO ID:	5433498						
			EXTRACTIO	ON			
Parameter		Data					
CASRN and Test Material		84-74-2; Di-n-butyl phthalate					
Confidentiality, Type, Guide	eline	None; Experimental; OECD Guide	eline 106 (Adsorption - I	Desorption Using a Batch Equilibrium Method)			
Solvent, Reactivity, Storage	e, Stability	methanol (maintained below $0.5\%$	v/v); NR; NR; NR				
Radiolabel, Source, State, F	Purity	NR; Aladdin Industrial Corporatio	n (Shanghai, China); NR	R; 98% Notes: DBP			
Sampling Frequency, Sar Number of Replicates	npling Details, and	samples collected at 0.1, 0.5, 1, 2,	6, 10, 14, 20, 24, 48, 96,	5, 144, 192, and 240 h; DBP analysis in supernatants; 3			
pH, Test Temperature, Buff	er, and Test Details	5.2±0.3; 15, 25 and 35C; CaCl2 to control ionic strength; 25 mL Teflon-lined centrifuge tubes were shaken with soil fraction (0.5 g) and 25 mL of DBP methanol solution: NaN3 was sued as a bioinhibitor					
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported; coarse sand: size 28-786 um (mean 209), 5.1±0.2 g/kg organic matter; 26.2±2.0 cmol/kg					
Bulk Density and Matrix D	etails	BET surface area 1.6±0.2 m2/g; paddy soil (0-20cm) from Guangzhou, China was fractionated by particle size					
Media, Recovery, and Statis	stics	DBP sorption isotherms evaluated at 1, 2, 4, 6, 8, and 12 mg/L; Not reported; results reported±SD					
Transformation Products, E	quilibrium	Not reported; equilibrium reached at 192h based on preliminary experiments; Not reported					
Adsorption Details, and Eq	uilibrium Desorption						
Details	non a Calatana Da	Controls for loss due to colotilizet	·	en en desembles de the contribuer tables la de de lace of DDD and lace them 1000 and			
sults and Percent Adsorption	on	balance ranged from 86-91%: Not reported					
Adsorption Coefficient Tvr	be. Adsorption Coef-	Kd at 1, 2, 4, 6, 8, and 12 mg/L (25C); $46.0\pm2.0$ , $33.2\pm1.3$ , $24.0\pm0.8$ , $19.8\pm0.6$ , $17.3\pm0.4$ and $14.3\pm0.3$ ; Kd; single-point sorption partition					
ficient Results, Adsorption	Coefficient Results	coefficient; Kf (at 25C): Freundlich sorption affinity coefficient = $0.05\pm0.00$ ; Kf for original paddy soil without fractionation by particle size =					
Comments, and Adsorption		0.030±0.002 (mg/g)(mg/L)	0.030±0.002 (mg/g)(mg/L)				
Desorption Type							
Partition Coefficient Type	and Partition Coeffi-	log Koc at 1, 2, 4, 6, 8, and 12 mg/	L (25C); $4.19 \pm 0.02$ , $4.0$	$05\pm0.02$ , $3.91\pm0.01$ , $3.83\pm0.01$ , $3.77\pm0.01$ , and $3.69\pm0.01$			
Partition Coefficient Phase	and Partition Coeffi-	soil-water; organic carbon content	normalized sorption coe	efficient (log Koc); values at 15 and 35C also reported			
Mass Balance		Not specified					
			EVALUATIO	DN			
Domain		Metric	Rating	Comments			
Domain 1: Test Substand	ce						
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.			
	Materia 2.	Test Substance Durity	II: -1-				

Continued on next page						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
Domain 3: Test Conditions						
	Metric 4:	Test Substance Stability	High	The test substance preparation was appropriate.		
	Metric 3:	Study Controls	High	Controls were included.		
Domain 2: Test Desig	gn					
			-			
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.		

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HERO ID: 5433498 Table: 3 of 6

		contin	ued from prev	vious page			
Study Citation:	Xiang, L., Wang, and Isotherms of	Xiang, L., Wang, X. D., Chen, X. H., Mo, C. H., Li, Y. W., Li, H., Cai, Q. Y., Zhou, D. M., Wong, M. H., Li, Q. X. (2019). Sorption Mechanism, Kinetics, and Isotherms of Di- n-butyl Phthalate to Different Soil Particle-Size Fractions, Journal of Agricultural and Food Chemistry 67(17):4734-4745					
OECD Harmonized	Adsorption and D	Adsorption and Desorption					
HERO ID:	5433498						
		I	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.			
	Metric 7:	Testing Consistency	High	The testing conditions did not change across the sample groups.			
	Metric 8:	System Type and Design	High	Equilibrium was established.			
Domain 4: Test Organis	ms						
U	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	Medium	The sampling method details were limited.			
Domain 6: Confounding	v/Variable Control						
Domain of Comounding	Metric 13:	Confounding Variables	High	Uncertainty was unlikely to have an impact on the outcome assessment			
	Metric 14	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type			
		Exposure	1.011				
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	Medium	The analytical method details were limited.			
	Metric 16:	Statistical Methods and	High	The calculations were appropriate.			
		Kinetic Calculations	0				
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.			
Overall Qualit	ty Dotormin	ation	High				
	iy Detter min	auvii	Ingn				

Study Citation:	Xiang, L., Wang, X	Kiang, L., Wang, X. D., Chen, X. H., Mo, C. H., Li, Y. W., Li, H., Cai, Q. Y., Zhou, D. M., Wong, M. H., Li, Q. X. (2019). Sorption Mechanism, Kinetics,						
OECD Harmonized	Adsorption and De	Adsorption and Desorption						
Template: HERO ID:	5433498							
			EXTRACTIO	N				
Parameter		Data						
CASPN and Test Material		84.74.2. Din butul phthalata						
Confidentiality Type Guid	eline	None: Experimental: OFCD Guideli	ne 106 (Adsorption - F	Desorntion Using a Batch Equilibrium Method)				
Solvent Reactivity Storage	Stability	methanol (maintained below 0.5% v	$(v) \cdot NR \cdot NR \cdot NR$					
Radiolabel Source State F	Purity	NR: Aladdin Industrial Corporation	(Shanghai, China): NR	2: 98% Notes: DBP				
Sampling Frequency, Sar	npling Details, and	samples collected at 0.1, 0.5, 1, 2, 6,	10, 14, 20, 24, 48, 96,	144, 192, and 240 h; DBP analysis in supernatants; 3				
pH, Test Temperature, Buff	er, and Test Details	5.0±0.2; 15, 25 and 35C; CaCl2 to control ionic strength; 25 mL Teflon-lined centrifuge tubes were shaken with soil fraction (0.5 g) and 25 mL of						
Matrix Class Silts and Orea	nia Carbon and CEC	DBP methanol solution; NaN5 was sued as a bioinhibitor Not Reported: fine sond: size 27.445 µm (mean 135) 11.7 $\pm$ 1.0 g/kg organic metter: 34.3 $\pm$ 2.0 cmol/kg						
Bully Density and Matrix D	atoila	RET surface area 3.0 $\pm$ 0.2 m <sup>2</sup> /a <sup>2</sup> naddy soil (0.20cm) from Guangzhou. China was fractionated by particle size						
Madia Pasavary and Static		DBP sorntion isotherms evaluated at $1, 2, 4, 6, 8$ and $12 \text{ mar/l} \cdot Not reported: results reported + SD$						
Transformation Products	sues	Not reported, equilibrium reached at 192b based on preliminary experiments. Not reported						
Adsorption Details and Eq	uilibrium Desorption	Not reported, equinorium reached at 1920 based on premininary experiments; Not reported						
Details	unionum Desorption							
Reference Substance, Refe	erence Substance Re-	Controls for loss due to volatilization, microbialdegradation and sorption to the centrifuge tubes included; loss of DBP was less than 10%; mass						
sults, and Percent Adsorption	on Adsorption Coef	balance ranged from 80-91%; Not reported Kd at $1, 2, 4, 6, 8$ and $12 \text{ mg/L}$ (25C): 40 0±44, 41 0±33, 34 0±25, 30 5±21, 28 3±10 and 25 3±16; Kd; single point comption partition						
ficient Results Adsorption	Coefficient Results	Ku at 1, 2, 4, 0, o, and 12 mg/L (25C); 49.0 $\pm$ 44, 41.0 $\pm$ 5.3, 54.0 $\pm$ 2.3, 50.3 $\pm$ 2.1, 20.3 $\pm$ 1.9 and 25.3 $\pm$ 1.0; Ku: single-point sorption particle size –						
Comments, and Adsorption		$0.030\pm0.002 \text{ (mg/g)(mg/L)}$						
Desorption Type								
Partition Coefficient Type	and Partition Coeffi-	log Koc at 1, 2, 4, 6, 8, and 12 mg/L	(25C); 3.86±0.04, 3.7	$8\pm0.04$ , $3.70\pm0.03$ , $3.65\pm0.03$ , $3.62\pm0.03$ , and $3.557\pm0.03$				
cient Results	and Partition Cooff	soil water: organia aerban contant n	normalized comption as the installer. We do unloss at 15 and 25C also more stad					
cient Results	and I artition Coem-	son-water; organic cardon content normalized sorption coefficient (log Koc); values at 15 and 35C also reported						
Mass Balance		Not specified						
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 1: Test Substand	ce							
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.				

Continued on next page						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
Domain 3: Test Conditions						
	Metric 4:	Test Substance Stability	High	The test substance preparation was appropriate.		
	Metric 3:	Study Controls	High	Controls were included.		
Domain 2: Test Desig	gn					
		-				
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.		

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HERO ID: 5433498 Table: 4 of 6

		contin	ued from prev	vious page			
Study Citation:	Xiang, L., Wang, and Isotherms of	Xiang, L., Wang, X. D., Chen, X. H., Mo, C. H., Li, Y. W., Li, H., Cai, Q. Y., Zhou, D. M., Wong, M. H., Li, Q. X. (2019). Sorption Mechanism, Kinetics, and Isotherms of Di-n-butyl Phthalate to Different Soil Particle-Size Fractions, Journal of Agricultural and Food Chemistry 67(17):4734-4745					
OECD Harmonized Template:	Adsorption and D	Adsorption and Desorption					
HERO ID:	5433498						
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.			
	Metric 7:	Testing Consistency	High	The testing conditions did not change across the sample groups.			
	Metric 8:	System Type and Design	High	Equilibrium was established.			
Domain 4: Test Organis	ms						
6	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.			
	Metric 12:	Test Substance Purity	Medium	The sampling method details were limited.			
Domain 6: Confounding	v/Variable Control						
Domain of Comounding	Metric 13:	Confounding Variables	High	Uncertainty was unlikely to have an impact on the outcome assessment			
	Metric 14	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type			
		Exposure	1.011	The mean is not applicable to the study type.			
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	Medium	The analytical method details were limited.			
	Metric 16:	Statistical Methods and	High	The calculations were appropriate.			
		Kinetic Calculations	U	** *			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.			
	Metric 18:	Results QSAR Models	N/A	The method is not applicable to the study type.			
Overall Augli	tv Determin	ation	High				
Vitian Quan			111611				

Study Citation:	Xiang, L., Wang, X	iang, L., Wang, X. D., Chen, X. H., Mo, C. H., Li, Y. W., Li, H., Cai, Q. Y., Zhou, D. M., Wong, M. H., Li, Q. X. (2019). Sorption Mechanism, Kinetics,						
OECD Harmonized	Adsorption and De	Adsorption and Desorption						
HERO ID:	5433498							
			EXTRACTIO	DN				
Parameter		Data						
CASRN and Test Material		84-74-2; Di-n-butyl phthalate						
Confidentiality, Type, Guide	eline	None; Experimental; OECD Guideli	ne 106 (Adsorption - E	Desorption Using a Batch Equilibrium Method)				
Solvent, Reactivity, Storage	, Stability	methanol (maintained below 0.5% v	/v); NR; NR; NR					
Radiolabel, Source, State, F	Purity	NR; Aladdin Industrial Corporation	(Shanghai, China); NR	R; 98% Notes: DBP				
Sampling Frequency, Sar Number of Replicates	npling Details, and	samples collected at 0.1, 0.5, 1, 2, 6,	10, 14, 20, 24, 48, 96,	, 144, 192, and 240 h; DBP analysis in supernatants; 3				
pH, Test Temperature, Buffer, and Test Details		7.9±0.2; 15, 25 and 35C; CaCl2 to control ionic strength; 25 mL Teflon-lined centrifuge tubes were shaken with soil fraction (0.5 g) and 25 mL of DBP methanol solution; NaN3 was sued as a bioinhibitor						
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported; coarse silt: size 9.0-109 um (mean 35), 29.4±1.6 g/kg organic matter; 129±8.2 cmol/kg						
Bulk Density and Matrix Details		BET surface area 18.8±2.1 m2/g; paddy soil (0-20cm) from Guangzhou, China was fractionated by particle size						
Media, Recovery, and Statis	stics	DBP sorption isotherms evaluated at 1, 2, 4, 6, 8, and 12 mg/L; Not reported; results reported±SD						
Transformation Products, E	quilibrium	Not reported; equilibrium reached at 192h based on preliminary experiments; Not reported						
Adsorption Details, and Eq	uilibrium Desorption							
Details Reference Substance Refe	ranga Substance Pa	Controls for loss due to veletilizatio	n miarahialdagradatia	on and comption to the contributed tubes included; loss of DPD was loss than 10%; mass				
sults and Percent Adsorptio	n	balance ranged from 86-91%: Not reported						
Adsorption Coefficient Typ	be, Adsorption Coef-	Kd at 1, 2, 4, 6, 8, and 12 mg/L (25C); $90.0\pm3.5$ , $67.5\pm3.3$ , $50.5\pm2.9$ , $42.5\pm2.7$ , $37.6\pm2.5$ and $31.8\pm2.3$ ; Kd: single-point sorption partition						
ficient Results, Adsorption	Coefficient Results	coefficient; Kf (at 25C): Freundlich sorption affinity coefficient = $0.09\pm0.00$ ; Kf for original paddy soil without fractionation by particle size =						
Comments, and Adsorption		0.030±0.002 (mg/g)(mg/L)						
Desorption Type								
Partition Coefficient Type	and Partition Coeffi-	log Koc at 1, 2, 4, 6, 8, and 12 mg/L	$(25C); 3.72\pm0.02, 3.6$	$60\pm0.02$ , $3.47\pm0.03$ , $3.40\pm0.03$ , $3.34\pm0.03$ , and $3.27\pm0.03$				
Partition Coefficient Phase	and Partition Coeffi-	soil-water: organic carbon content normalized sorption coefficient (log Koc): values at 15 and 35C also reported						
cient Results				(				
Mass Balance		Not specified						
			EVALUATIO	)N				
Domain		Metric	Rating	Comments				
Domain 1: Test Substand	ce							
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.				

	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.			
Domain 2: Test D	esign						
	Metric 3:	Study Controls	High	Controls were included.			
	Metric 4:	Test Substance Stability	High	The test substance preparation was appropriate.			
Domain 3: Test C	onditions						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Continued on next page						

PUBLIC RELEASE DRAFT May 2025 Adsorption and Desorption

HERO ID: 5433498 Table: 5 of 6

		contin	ued from prev	vious page		
Study Citation:	Xiang, L., Wang, and Isotherms of J	Xiang, L., Wang, X. D., Chen, X. H., Mo, C. H., Li, Y. W., Li, H., Cai, Q. Y., Zhou, D. M., Wong, M. H., Li, Q. X. (2019). Sorption Mechanism, Kinetics, and Isotherms of Di-n-butyl Phthalate to Different Soil Particle-Size Fractions, Journal of Agricultural and Food Chemistry 67(17):4734-4745.				
OECD Harmonized Template:	Adsorption and D	Adsorption and Desorption				
HERO ID:	5433498					
		1	EVALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.		
	Metric 7:	Testing Consistency	High	The testing conditions did not change across the sample groups.		
	Metric 8:	System Type and Design	High	Equilibrium was established.		
Domain 4: Test Organis	ms					
C	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.		
Domain 5: Outcome As	sessment					
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.		
	Metric 12:	Test Substance Purity	Medium	The sampling method details were limited.		
Domain 6: Confounding	Variable Control					
Domain of Comounding	Metric 13:	Confounding Variables	High	Uncertainty was unlikely to have an impact on the outcome assessment		
	Metric 14	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type		
		Exposure	1.011			
Domain 7: Data Present	ation and Analysis					
	Metric 15:	Data Reporting	Medium	The analytical method details were limited.		
	Metric 16:	Statistical Methods and	High	The calculations were appropriate.		
		Kinetic Calculations				
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.		
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.		
Overall Qualit	v Determin	ation	High			
Cretan Zuan			111611			

Domain 2: Test Design

Domain 3: Test Conditions

Metric 3:

Metric 4:

Metric 5:

Study Controls

Test Substance Stability

Test Method Suitability

Study Citation:	Xiang, L., Wang, X	L., Wang, X. D., Chen, X. H., Mo, C. H., Li, Y. W., Li, H., Cai, Q. Y., Zhou, D. M., Wong, M. H., Li, Q. X. (2019). Sorption Mechanism, Kinetics,					
OECD Harmonized	Adsorption and De	sorption					
Template: HERO ID:	5433498	133498					
			EXTRACTIO	N			
Parameter		Data					
CASRN and Test Material		84-74-2; Di-n-butyl phthalate					
Confidentiality, Type, Guide	eline	None; Experimental; OECD Guide	line 106 (Adsorption - D	esorption Using a Batch Equilibrium Method)			
Solvent, Reactivity, Storage	, Stability	methanol (maintained below 0.5%	v/v); NR; NR; NR				
Radiolabel, Source, State, P	urity	NR; Aladdin Industrial Corporation	n (Shanghai, China); NR;	; 98% Notes: DBP			
Sampling Frequency, Sam Number of Replicates	npling Details, and	samples collected at 0.1, 0.5, 1, 2, 6	5, 10, 14, 20, 24, 48, 96,	144, 192, and 240 h; DBP analysis in supernatants; 3			
pH, Test Temperature, Buffe	er, and Test Details	$6.9\pm0.2$ ; 15, 25 and 35C; CaCl2 to control ionic strength; 25 mL Teflon-lined centrifuge tubes were shaken with soil fraction (0.5 g) and 25 mL of DBP methanol solution; NaN3 was used as a bioinhibitor					
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported; fine silt: size 5.6-55 um (mean 15), 14.0±1.1 g/kg organic matter; 251±11 cmol/kg					
Bulk Density and Matrix De	etails	BET surface area 20.5±2.5 m2/g; paddy soil (0-20cm) from Guangzhou, China was fractionated by particle size					
Media, Recovery, and Statis	stics	DBP sorption isotherms evaluated at 1, 2, 4, 6, 8, and 12 mg/L; Not reported; results reported±SD					
Transformation Products, E Adsorption Details, and Eq	quilibrium uilibrium Desorption	Not reported; equilibrium reached at 192h based on preliminary experiments; Not reported					
Reference Substance, Refe	rence Substance Re-	Controls for loss due to volatilization, microbialdegradation and sorption to the centrifuge tubes included; loss of DBP was less than 10%; mass balance ranged from 86-91%; Not reported					
Adsorption Coefficient Type, Adsorption Coef- ficient Results, Adsorption Coefficient Results Comments, and Adsorption		Kd at 1, 2, 4, 6, 8, and 12 mg/L (25C); 100.0 $\pm$ 12.5, 74.2 $\pm$ 7.4, 55.1 $\pm$ 4.1, 46.3 $\pm$ 2.8, 40.9 $\pm$ 2.1 and 34.4 $\pm$ 1.3; Kd: single-point sorption partition coefficient; Kf (at 25C): Freundlich sorption affinity coefficient = 0.10 $\pm$ 0.00; Kf for original paddy soil without fractionation by particle size = 0.030 $\pm$ 0.002 (mg/g)(mg/L)					
Desorption Type Partition Coefficient Type	and Partition Coeffi-	log Koc at 1, 2, 4, 6, 8, and 12 mg/l	L (25C); 4.09±0.05, 3.96	$5\pm0.04, 3.83\pm0.03, 3.76\pm0.03, 3.71\pm0.02$ , and $3.63\pm0.02$			
Partition Coefficient Phase	Partition Coefficient Phase and Partition Coeffi-		soil-water; organic carbon content normalized sorption coefficient (log Koc); values at 15 and 35C also reported				
Mass Balance		Not specified					
			EXALLIA PLAN				
Domain		Matria	EVALUATION	Comments			
Domain 1: Test Substand	20	wienie	Kaulig	Comments			
Domain 1. Test Substant	Metric 1.	Test Substance Identity	High	The test substance was identified using common nomenclature			
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.			

Continued on next page ...

High

High

High

Controls were included.

The test substance preparation was appropriate.

The test method was suitable for the test substance.

PUBLIC RELEASE DRAFT May 2025 Adsorption and Desorption

HERO ID: 5433498 Table: 6 of 6

		contin	ued from prev	vious page		
Study Citation:	Xiang, L., Wang, and Isotherms of J	Xiang, L., Wang, X. D., Chen, X. H., Mo, C. H., Li, Y. W., Li, H., Cai, Q. Y., Zhou, D. M., Wong, M. H., Li, Q. X. (2019). Sorption Mechanism, Kinetics, and Isotherms of Di-n-butyl Phthalate to Different Soil Particle-Size Fractions, Journal of Agricultural and Food Chemistry 67(17):4734-4745.				
OECD Harmonized Template:	Adsorption and D	Adsorption and Desorption				
HERO ID:	5433498					
		1	EVALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.		
	Metric 7:	Testing Consistency	High	The testing conditions did not change across the sample groups.		
	Metric 8:	System Type and Design	High	Equilibrium was established.		
Domain 4: Test Organis	ms					
C	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.		
Domain 5: Outcome As	sessment					
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.		
	Metric 12:	Test Substance Purity	Medium	The sampling method details were limited.		
Domain 6: Confounding	Variable Control					
Domain of Comounding	Metric 13:	Confounding Variables	High	Uncertainty was unlikely to have an impact on the outcome assessment		
	Metric 14	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type		
		Exposure	1.011			
Domain 7: Data Present	ation and Analysis					
	Metric 15:	Data Reporting	Medium	The analytical method details were limited.		
	Metric 16:	Statistical Methods and	High	The calculations were appropriate.		
		Kinetic Calculations				
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.		
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.		
Overall Qualit	v Determin	ation	High			
Cretan Zuan			111611			

Study Citation:	Yamamoto, H., Lil	Yamamoto, H., Liljestrand, H. M. (2003). The fate of estrogenic compounds in the aquatic environment: sorption onto organic colloids. Water Science and			
OECD Harmonized	Technology 47(9): Adsorption and De	77-84. sorption			
Template:	I I I I I I I I I I I I I I I I I I I				
HERO ID:	1332828	1332828			
			EXTRACTIO	N	
Parameter		Data			
CASRN and Test Material		84-74-2; Dibutyl phthalate			
Confidentiality, Type, Guide	eline	None; Experimental; other: Sorption e	experiment		
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, F	Purity	Nr; Sigma Chemical Company; NR; N	IR Notes: NR		
Sampling Frequency, Sar Number of Replicates	npling Details, and	One time sampling; 24 hours was dete	rmined to be an appro	opriate equilibration time.; 6	
pH, Test Temperature, Buff	er, and Test Details	7; Room temperature; Phosphate buffe	er; 13mL centrifuge tu	bes sealed with Teflon stoppers and minimized headspace. Ionic strength of 0.02 M.	
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported; Humic acid (Aldrich and Suwannee River); Fulvic acid (Suwannee River and Nordic); Alginic Acid; Dextran; Tannic Acid; Not			
Bulk Density and Matrix D	etails	Not reported; Initial concentration: approx. 700µg/L. Aqueous solution of organic colloids and DBP.			
Media, Recovery, and Statis	stics	Not Reported; Not reported; Not reported			
Transformation Products, E	quilibrium	Not reported; Not reported; Not reported			
Adsorption Details, and Eq	uilibrium Desorption				
Details Deference Substance Defe	wanaa Subatanaa Da	Not non-outed. Not non-outed. Not non-out	ad		
sults and Percent Adsorptio	on	Not reported, Not reported			
Adsorption Coefficient Typ	be, Adsorption Coef-	Not reported; Not reported; Not reported; Not reported			
ficient Results, Adsorption	n Coefficient Results	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		
Comments, and Adsorption					
Desorption Type					
Partition Coefficient Type	and Partition Coeffi-	Koc (x 10^4 L/kg); Aldrich humic acid: 8.85, Suwannee humic acid: 6.29; Suwannee Fulvic acid: 4.43; Nordic fulvic acid: 5.65; Alginic acid:			
Cient Results	and Partition Coeffi-	0.0138; dextran: 0.00124; Tannic acid: 6.97 Not Deposted. Standard devictions (v. 1004 L./ks). Aldrick U.A. 0.51. Suyanes river U.A. 0.66. Suyannes Biver EA. 0.82; Nordio EA. 0.72; Alginia			
cient Results	and I artition Coem-	acid: 0.0025: Dextran: 0.00012: Tannic acid: 0.83			
Mass Balance		Not reported			
			EVALUATION	N	
Domain		Metric	Rating	Comments	
Domain 1: Test Substand	ce		0		
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.	
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported but the omission is unlikely to have a substan-	
		·		tial impact on the study results.	

 Domain 2: Test Design
 Metric 3:
 Study Controls
 High
 Appropriate controls were used.

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## PUBLIC RELEASE DRAFT May 2025 Adsorption and Desorption

HERO ID: 1332828 Table: 1 of 1

		contin	ued from pre	vious page
Study Citation:	Yamamoto, H., Liljestrand, H. M. (2003). The fate of estrogenic compounds in the aquatic environment: sorption onto organic colloids. Water Science and Technology 47(9):77-84.			
OECD Harmonized	Adsorption and De	esorption		
Template:	12220220			
HERO ID:	1332828			
		1	EVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 4:	Test Substance Stability	High	The test substance preparation, storage conditions, and homogeneity were reported and appropriate.
Domain 3: Test Condition	ons			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance and the target chemical was tested below its aqueous solubility.
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate.
	Metric 7:	Testing Consistency	High	The testing conditions were consistent across the study groups.
	Metric 8:	System Type and Design	High	The system type was appropriate and equilibrium was established.
Domain 4: Tast Organia	<b>122</b> G			
Domain 4. Test Organis	Metric 9.	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type
	Metric 10.	Sampling Methods	N/A	The metric is not applicable to the study type.
	incule 10.	Sumpling Mouldus	1.011	
Domain 5: Outcome As	sessment			
	Metric 11:	Test Substance Identity	High	The outcome assessment addressed the intended outcome of interest and limitations of the outcome assessment were discussed.
	Metric 12:	Test Substance Purity	High	The sampling methods were reported and appropriate.
Domain 6: Confounding	Wariable Control			
Domain 0. Comounding	Metric 13:	Confounding Variables	High	Uncertainties in the Koc calculations were reported and do not influence the outcome assessment.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Present	tation and Analysis			
	Metric 15:	Data Reporting	Medium	The percent recovery of the analytical methods was not reported but the omission is unlikely to have a substantial impact on the study results.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The statistical analysis was reported and appropriate.
Domain 8: Other				
2 chium of Other	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.
	M-4	Results		
	Metric 18:	QSAK Models	N/A	The metric is not applicable to the study type.
<b>Overall Quali</b>	ty Determina	ation	High	

Study Citation:	Yamamoto, H., Li	ljestrand, H. M., Shimizu, Y., Mor	ita, M. (2003). Ef	fects of physical-chemical characteristics on the sorption of selected endocrine				
OECD Harmonized	Adsorption and De	Adsorption and Desorption 1332827						
HERO ID:	1332827							
			EXTRACTIO	N				
Parameter		Data						
CASRN and Test Material		84-74-2; Dibutylphthalate						
Confidentiality, Type, Guid	eline	None; Experimental; other: Equilibriu	im sorption of DBP b	y several dissolved organic matter surrogates.				
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR; NR						
Radiolabel, Source, State, H	Purity	NR; Sigma Chemical Co., St. Louis, I	MO; NR; 98% Notes:	NR				
Sampling Frequency, San	mpling Details, and	After a 24h equilibration period, samp	ples were analyzed.; S	Samples were prepared at four different DOM concentrations and without DOM.; One				
Number of Replicates	For and Test Datails	sample at each DOM concentration at 7: 22: Phosphate huffer: Eluorescence	id duplicate blanks wi	thout DOM.				
pii, iest iemperature, bui	ei, and Test Details	<i>i</i> ; 22; Prosphate burler; Fluorescence quenching technique was used for numic substances and tannic acid, solubility enhancement technique was used for alginic acid and dextran samples						
Matrix, Clay Silts and Organic Carbon, and CEC		Not Reported; Humic acid, fulvic acid, alginic acid, dextran, and tannic acid were used as DOM surrogates.; Not reported						
Bulk Density and Matrix D	etails	Not reported; Not reported Not reported; Not reported; Standard deviations reported with Log Koc.						
Media, Recovery, and Statis	stics							
Transformation Products, E	Equilibrium	Not reported; Not reported; Not reported						
Adsorption Details, and Eq	uilibrium Desorption							
Details Reference Substance Refe	erence Substance Re-	Not reported: Not reported: Not reported						
sults, and Percent Adsorption	on							
Adsorption Coefficient Typ	pe, Adsorption Coef-	Not reported; Not reported; Not reported; Not reported						
ficient Results, Adsorption	n Coefficient Results							
Comments, and Adsorption	l							
Partition Coefficient Type	and Partition Coeffi-	Log Koc: Aldrich humic acid: 4 95+/-0 02: Suwannee river humic acid: 4 80+/-0 04: Suwannee River fluvic acid: 4 65+/-0 07: Nordic fulvic acid:						
cient Results	and Furtherin Coom	4.75+/-0.05; alginic acid: 4.11+/-0.07; tannic acid: 4.84+/-0.05.						
Partition Coefficient Phase	and Partition Coeffi-	Not Reported; Koc determined from slope of best fit for the following line: $Fo/F = 1 + Koc[DOM (kg C/L)]$ , where F is the corrected total						
cient Results		fluorescence and Fo is the fluorescence without DOM surrogates.						
Mass Balance		Not reported						
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 1: Test Substan	ce		2					
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.				
	Metric 2:	Test Substance Purity	High	The test substance purity was reported and appropriate.				

Domain 2: Test Design

Domain 2: Test Design	Metric 3: Metric 4:	Study Controls Test Substance Stability	High High	Appropriate controls were used. The test substance preparation, storage conditions, and homogeneity were reported and appropriate
				appropriate.

Continued on next page ...

PUBLIC RELEASE DRAFT May 2025 Adsorption and Desorption

HERO ID: 1332827 Table: 1 of 1

		conti	nued from pre	vious page					
Study Citation:	Yamamoto, H., I disruptors by diss	Yamamoto, H., Liljestrand, H. M., Shimizu, Y., Morita, M. (2003). Effects of physical-chemical characteristics on the sorption of selected endocrine disruptors by dissolved organic matter surrogates. Environmental Science & Technology 37(12):2646-2657.							
OECD Harmonized	Adsorption and E	Desorption							
Template:									
HERO ID:	1332827								
EVALUATION									
Domain		Metric	Rating	Comments					
Domain 3: Test Conditi	ions								
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance and the target chemical was tested below its aqueous solubility.					
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate.					
	Metric 7:	Testing Consistency	High	The testing conditions were consistent across the study groups, although the results of one sample group were noted as questionable.					
	Metric 8:	System Type and Design	High	The system type was appropriate and equilibrium was established.					
Domain 4: Test Organi	sme								
Domain 4. Test Organis	Metric 9.	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type					
	Metric 10 <sup>°</sup>	Sampling Methods	N/A	The metric is not applicable to the study type.					
	Meule 10.	Sumpring Methods	10/1	The metric is not appreade to the study type.					
Domain 5: Outcome As	ssessment								
	Metric 11:	Test Substance Identity	High	The outcome assessment addressed the intended outcome of interest and limitations of the outcome assessment were discussed.					
	Metric 12:	Test Substance Purity	Medium	The number of samples tested at each concentration was not clearly reported but is un- likely to have a substantial impact on the study results.					
Domain & Confoundin	a Wariahla Control								
Domain 0. Comoundan	Metric 13:	Confounding Variables	High	Uncertainties in the Koc calculations were reported and do not influence the outcome assessment					
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.					
Domain /: Data Presen	Metric 15:	Data Reporting	Medium	The percent recovery of the analytical methods was not reported but the omission is unlikely to have a substantial impact on the study results.					
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The statistical analysis was reported and appropriate.					
Domain 8: Other	Metric 17:	Verification or Plausibility of	High	The study results are reasonable when compared to the results of similar studies					
	wieure 17:	Results	nigii	The study results are reasonable when compared to the results of similar studies.					
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.					
Overall Ouali	tv Determin	ation	High						
Overall Quali	ty Determin		High						

Study Citation:	Ye, C., Zhao, W., Environmental Sci	Ye, C., Zhao, W., Li, T., Lei, Z., Yan, H. (1997). Sorption and desorption kinetics of phthalates and phenol on water/sediment interface. Journal of Environmental Sciences 9(3):337-344.						
<b>OECD Harmonized</b>	Adsorption and De	Adsorption and Desorption						
Template: HERO ID:	5766216	5766216						
		EXTRACTION						
Parameter		Data						
CASRN and Test Material		84-74-2; Dibutyl phthalate						
Confidentiality, Type, Guid	leline	None; Experimental; other: sorption coefficients measured by batch equilibrium method						
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR						
Radiolabel, Source, State, I	Purity	NR; Beijing Chemistry Factory; NR; Analytical grade Notes: NR						
Sampling Frequency, Sampling Details, and Number of Replicates		0, 72, 144, 216, 288, 360, 432, 504 hours; filtered using $0.45\mu$ m-microporous filter membrane; Not reported						
pH, Test Temperature, Buffer, and Test Details		8.12; $20\pm 2^{\circ}$ C; Not reported; batch equilibrium method						
Matrix, Clay Silts and Organic Carbon, and CEC		Not Reported; 4.3% organic carbon; Not reported						
Bulk Density and Matrix Details		Not reported; sediment from Xiaoqinghe River Beijing						
Media, Recovery, and Stati	stics	distilled water; Not reported; standard deviation reported						
Transformation Products, E	Equilibrium	1 0/00 NaN3 (used to inhibit biodegradation loss of tested compounds); reached in hours; Not reported						
Adsorption Details, and Ec	quilibrium Desorption							
Details Reference Substance Ref	aranca Substanca Pa	Not reported. Not reported						
sults and Percent Adsorpti	on	Not reported, Not reported						
Adsorption Coefficient Type, Adsorption Coef-		sorption and desorption kinetic constants, respectively; 0.727 ml.cm-2.h-1 and 0.00127h-1 (static conditions) and 0.496 ml.cm-2.h-1 and 0.00116h-						
ficient Results, Adsorption Coefficient Results		1 (flow water conditions); sorption coefficient = 132; Not reported						
Comments, and Adsorption								
Desorption Type								
Partition Coefficient Type	and Partition Coeffi-	Not reported; Not reported						
Partition Coefficient Phase	and Partition Coeffi-	sediment-water; Not reported						
cient Results		···· · · · · · · · · · · · · · · · · ·						
Mass Balance		Not reported						

			EVALUATIO	N	
Domain		Metric	Rating	Comments	
Domain 1: Test Substand	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
	Metric 2:	Test Substance Purity	High	Source and purity were reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	Medium	Some concurrent control group details were not included; however, the lack of data was not likely to have a substantial impact on study results.	
	Metric 4:	Test Substance Stability	Medium	The stability of the test substance in the environment was not tested, but this was un- likely to have affected the results.	
Continued on next page					

		conti	nued from pre	vious page	
Study Citation:	Ye, C., Zhao, W. Environmental Sc	, Li, T., Lei, Z., Yan, H. (1997). Sorp	tion and desorp	ption kinetics of phthalates and phenol on water/sediment interface. Journal of	
<b>OECD Harmonized</b>	Adsorption and D	Adsorption and Desorption			
Template:	L.				
HERO ID:	5766216				
			EVALUATIO	N	
Domain		Metric	Rating	Comments	
Domain 3: Test Conditi	ions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate for the method.	
	Metric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported, but these dis- crepancies were not likely to have a substantial impact on study results.	
	Metric 8:	System Type and Design	Medium	Equilibrium was reported but without supporting details.	
Domain 4: Test Organia	sms				
Domain 1. Test organi	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.	
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.	
		1 0			
Domain 5: Outcome As	ssessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.	
	Metric 12:	Test Substance Purity	Medium	Some details regarding this metric were not reported; however, additional information may be included in the primary source.	
Domain 6: Confoundin	a/Variable Control				
Domain 0. Comoundin	Metric 13.	Confounding Variables	Medium	Sources of variability and uncertainty in the measurements and statistical techniques	
	Weule 15.	comounding variables	Wiedium	were considered with minor omissions and the omissions were not likely to have a sub- stantial impact on study results.	
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.	
Damain 7. Data Draam					
Domain /: Data Presen	Metric 15:	Data Reporting	Medium	Transformation products and mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.	
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were clearly described and address the dataset.	
<b>D</b>					
Domain 8: Other	Matria 17.	Varifaction on Dlassibility of	TT: _1_		
	Metric 1/:	verification of Plausibility of Desults	High	i ne study results are generally consistent with the chemical characteristics.	
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.	
Overall Onali	ty Determin	ation	High		
Vivian Yuan					

Study Citation:	Zheng, X., Zhang,	Cheng, X., Zhang, B. T., Teng, Y. (2014). Distribution of phthalate acid esters in lakes of Beijing and its relationship with anthropogenic activities. Science					
OECD Harmonized	Adsorption and De	dsorption and Desorption					
HERO ID:	2241688	2241688					
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; DBP					
Confidentiality, Type, Guide	eline	None; Experimental; other: Field or monitoring study samples analyzed evaluating concentrations in multiple compartments					
Solvent, Reactivity, Storage	, Stability	Methanol; NR; 4°C in the dark; NR					
Radiolabel, Source, State, P	Purity	NR; Ehrenstorfer, Augsburg, Germany; NR; NR					
Sampling Frequency, San Number of Replicates	npling Details, and	Water collected from April to May, 2012; Sediment collected 5 cm from the surface; 19 replicates in total					
pH, Test Temperature, Buffe	er, and Test Details	7.32-9.06; Not applicable; Not reported; concentrations reported in water and sediment					
Matrix, Clay Silts and Organic Carbon, and CEC		Not Reported; Not reported; Not reported					
Bulk Density and Matrix Details		Not reported; Sediment from Guanting Reservoir, Lakes Shichahai and Lakes in Summer Palace; sealed in 120 mL wide mouthed amber bottles with foil-lined caps					
Media, Recovery, and Statistics		Water from Guanting Reservoir, Lakes Shichahai and Lakes in Summer Palace and pretreated following EPA method 3535; 71.0-97.7% for water, 83.8-109.4% for sediments and 91.0-109.3% for suspended particles: Minimum, maximum and mean values reported					
Transformation Products, Equilibrium		Not reported; Not applicable, monitoring study; Not applicable					
Details	uniorium Description						
Reference Substance, Reference Substance Re- sults and Percent Adsorption		Not applicable; Not applicable; ND-0.594 ug/L in water samples, ND-11113.5 ng/g d.w. in sediment and 19.3-461.90 ug/g d.w in suspended particle samples					
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption		Not applicable; Not applicable; Not applicable					
Desorption Type Partition Coefficient Type and Partition Coefficient		Not applicable. Not applicable					
cient Results		Tot applicable, Tot applicable					
Partition Coefficient Phase	and Partition Coeffi-	Not applicable; Not applicable					
cient Results Mass Balance		Not applicable, monitoring study					
		EVALUATION					

			EVALUATIO	N	
Domain		Metric	Rating	Comments	
Domain 1: Test Substand	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2:	Test Substance Purity	High	The test substance source was reported in this monitoring study. The source of analytical standards were not reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.	
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		contin	ued from pre	vious page			
Study Citation:	Zheng, X., Zhang, B. T., Teng, Y. (2014). Distribution of phthalate acid esters in lakes of Beijing and its relationship with anthropogenic activities. Science						
OECD Harmonized	of the Total Environment 476-477:107-113. Adsorption and Desorption						
HERO ID:	2241688						
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.			
Domain 3: Test Condition	ons						
	Metric 5:	Test Method Suitability	High	The method was appropriate for this type of study.			
	Metric 6:	Testing Conditions	Low	Monitoring study; some details on water conditions, sediment and particulate matter characteristics omitted.			
	Metric 7:	Testing Consistency	Medium	Variation from multiple monitoring spots noted but quantitative results were not re- ported.			
	Metric 8:	System Type and Design	High	The system was appropriate for this type of study.			
Domain 4: Test Organis	ms						
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	Sampling details were appropriate.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	Medium	Variation from multiple monitoring spots noted but quantitative results were not re- ported.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	Medium	Variation from multiple monitoring spots noted but quantitative results were not re- ported.			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis reported and acceptable.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	Reasonable and consistent with properties of test substance.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.			
		Contin	nued on next p	Dage			

		continued from previous page				
Study Citation:	Zheng, X., Zhang, B. T., Teng, Y. (2014). Distribution of phthalate acid esters in lakes of Beijing and its relationship with anthropogenic activities. Science					
OECD Harmonized	of the Total Environment 476-477:107-113. Adsorption and Desorption					
Template:						
HERO ID:	2241688					
		EVALUATION				
Domain	Metric Rating Comments					
<b>Overall Quali</b>	Overall Quality Determination High					

Study Citation:	Zheng, Z., He, P. J., Fu, Q., Shao, L. M., Lee, D. J. (2008). Partition of six phthalic acid esters in soluble and solid residual fractions of wastewater sludges. Environmental Technology 29(3):343-350.							
<b>OECD Harmonized</b>	Adsorption and De	Adsorption and Desorption						
Template: HERO ID:	675535							
		EXTRACTION						
Parameter		Data						
CASRN and Test Material		84-74-2; Not Reported						
Confidentiality, Type, Guid	eline	No; Partitioning between soluble and i	nsoluble sludge fract	ions; Not Reported				
Solvent, Reactivity, Storage	e, Stability	NA; NA; WWTP samples stored in gla	uss containers at 4 de	g C; NR				
Radiolabel, Source, State, I	Purity	NA; Not Reported; Sludge samples fro	m 4 WWTPs in Shai	nghai, China; NA				
Sampling Frequency, San Number of Replicates	mpling Details, and	NR; NR; NR						
pH, Test Temperature, Buff	er, and Test Details	NR; NR; NR; Field samples collected	from two municipal	sewage treatment plants, one WWTP receiving domestic and industrial wastewaters,				
Matrix, Clay Silts and Orga	unic Carbon, and CEC	and one industrial WWTP other; 45 - 61% organic matter (soluble	e fractions); NR					
Bulk Density and Matrix D	etails	NR; Sludge samples were mixed with CaCl2 solution and filtered through 0.7 ŵm glass microfiber filter to separate soluble and insoluble fractions.						
Media, Recovery, and Stati	stics	Not Reported; 81-94% in sludge, 77-90% in soluble fractions; Correlation coefficient of UV absorbance at 254 nm / DOC (SUVA 254): 0.993						
Transformation Products, E Adsorption Details, and Ec	Equilibrium Juilibrium Desorption	NR; Field study; assumed to be at equilibrium.; Field study; assumed to be at equilibrium.						
Details Reference Substance, Refe	erence Substance Re-	NR; NR; Not Reported						
Adsorption Coefficient Typ ficient Results, Adsorption Comments, and Adsorption	pe, Adsorption Coef- n Coefficient Results	Not Reported; Not Reported; Not Reported						
Partition Coefficient Type	and Partition Coeffi-	Kd (solid sludge fraction / soluble slud	lge fraction); WWTP	1 Kd = 49WWTP 2 Kd = 30WWTP 3 Kd = 47WWTP 4 Kd = 7.1				
cient ResultsPartition Coefficient Phase and Partition Coeffi- cient ResultsInsoluble - soluble sludge fractions; WWTP 1: 0.64 g/kg (solid), 0.013 g/kg (soluble) WWTP 2: 0.24 g/kg (solid), 0.008 g/kg (soluble)WW 0.42 g/kg (solid), 0.009 g/kg (soluble)WWTP 4: 0.10 g/kg (solid), 0.014 g/kg (soluble)Partitioning coefficient calculated by reviewer.Mass BalanceNot Reported				olid), 0.013 g/kg (soluble) WWTP 2: 0.24 g/kg (solid), 0.008 g/kg (soluble)WWTP 3: (solid), 0.014 g/kg (soluble)Partitioning coefficient calculated by reviewer.				
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 1: Test Substan	ce							
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.				
	Metric 2:	Test Substance Purity	Medium	The sludge sample sources were reported generally, purity is not required for this study type.				
Domain 2: Test Design								
Domani 2. Test Design	Metric 3:	Study Controls	N/A	Controls are not required for field studies.				

Metric 4:	Test Substance Stability	High	Sample preparation and storage conditions were reported.

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Study Citation:	Zheng, Z., He, P.	J., Fu, Q., Shao, L. M., Lee, D. J. (2008).	Partition of six	phthalic acid esters in soluble and solid residual fractions of wastewater sludges.			
OECD Harmonized	Adsorption and Desorption						
Template:	675535						
	075555						
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 3: Test Conditi	ons						
	Metric 5:	Test Method Suitability	High	The field study method was appropriate.			
	Metric 6:	Testing Conditions	Medium	Organic content was reported, other characteristics like pH and temperature were not included.			
	Metric 7:	Testing Consistency	High	Samples were collected, processed, and analyzed consistently.			
	Metric 8:	System Type and Design	N/A	Field studies are assumed to be at equilibrium.			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	N/A	Not applicable.			
	Metric 10:	Sampling Methods	N/A	Not applicable.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	Medium	The outcome assessment measured appropriate media but did not include wastewater measurements for overall partitioning to sludge.			
	Metric 12:	Test Substance Purity	Medium	Sampling methods were reported generally, frequency was not reported and may not reflect temporal variation.			
Domain 6: Confoundin	ø/Variable Control						
Domain of Confounding	Metric 13:	Confounding Variables	High	No notable sources of uncertainty were identified.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Not applicable.			
Domain 7: Data Presen	tation and Analysis						
	Metric 15:	Data Reporting	High	The analytical method was appropriate; limits of detection and quantification and per- cent recovery were reported. Raw data was reported. Partition coefficients were calcu- lated by the reviewer.			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were described and applied appropriately.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of Results	Medium	The partition coefficient was calculated by the reviewer and not reported by the authors. Organic carbon normalized values were not reported.			
	Metric 18:	QSAR Models	N/A	Not applicable.			
<b>Overall Quali</b>	ty Determir	nation	High				

Study Citation:	Zurmuehl, T. (199	muchl, T. (1998). Capability of convection-dispersion transport models to predict transient water and solute movement in undisturbed soil columns.					
OECD Harmonized	Adsorption and De	and Desorption					
Template: HERO ID:	1333300						
		EXTRACTION					
Parameter		Data					
CASEN and Test Motorial		84.74.2. Dikutul akthelete					
Confidentiality Type Guide	eline	84-74-2, Dibutyl plutate None: Experimental: other: Study of adsorption/desorption isotherms and rate constants for DBP with soil					
Solvent, Reactivity, Storage	, Stability	NR; NR; NR					
Radiolabel, Source, State, P	Purity	14-C dibutyl phthalate; NR; NR Notes: NR					
Sampling Frequency, Sampling Details, and Number of Replicates pH, Test Temperature, Buffer, and Test Details		All adsorption and desorption points were measured in triplicate.; Six 15 mL solutions with 14-C DBP in 0.01 M CaCl2 were mixed with 4g dry soil. Shaken for 80 hours and centrifuged at 2000 rpm for 15 min.; Each sampling point was measured in triplicate. Soil pH = 3.2; Not reported; Not reported; Initial solution concentrations were 16-1040 $\mu$ g/L for the adsorption/desorption isotherm experiments; kinetic studies were performed with an initial concentration of 140 $\mu$ g/L.					
Matrix, Clay Silts and Orga	nic Carbon, and CEC	Not Reported; 4/1/95/0.07 (%); Not reported					
Bulk Density and Matrix Details		Not reported; The solution contained DBP for the adsorption experiments and was then replaced with fresh 0.01M CaCl2 solution without DBP for the desorption experiments. NaN3 was added to prevent microbiological degradation.					
Media, Recovery, and Statis	stics	Soil; Not reported; Standard errors were reported for the rate constants and partition coefficient.					
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption		Not reported; Not reported					
Reference Substance, Reference Substance Re- sults, and Percent Adsorption		Not reported; Not reported; Not Reported					
Adsorption Coefficient Typ ficient Results, Adsorption Comments, and Adsorption Desorption Type	be, Adsorption Coef- n Coefficient Results	Adsorption occurred in two steps: 1) an instant sorption of a fraction of the sorbent to the soil (fraction = F) followed by a kinetic-controlled second adsorption step, Kad (h^-1); F (fraction of sorbent that underwent instant sorption): 0.52; Kad (h-1): $0.031+-0.018$ ; Desorption rate (h^-1): $0.069+-0.060$ . $\beta$ = reversible sorption = $0.67+-0.01$ ; Kp: distribution coefficient (mL/g)					
Partition Coefficient Type cient Results	and Partition Coeffi-	Not reported; 1.49+/-0.02					
Partition Coefficient Phase cient Results	and Partition Coeffi-	Not reported; Not reported					
Mass Balance		Not Reported					

			EVALUATIO	N	
Domain		Metric	Rating	Comments	
Domain 1: Test Substand	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.	
	Metric 2:	Test Substance Purity	High	The test substance purity was not reported but a labeled compound was used.	
Domain 2: Test Design	Metric 3:	Study Controls	Low	No blank controls were used to monitor sorption of DBP to the walls of test tubes. Since DBP sorption to soil was calculated from the aqueous concentration reduction, this may have a substantial impact on the study results.	
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		continu	ued from pre	vious page			
Study Citation:	Zurmuehl, T. (1998). Capability of convection-dispersion transport models to predict transient water and solute movement in undisturbed soil columns. Journal of Contaminant Hydrology 30(1-2):101-128.						
OECD Harmonized	Adsorption and Desorption						
Template:							
HERO ID:	1333300						
		I	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported and appropriate.			
Demeir 2. Test Conditi							
Domain 5: Test Conditi	Metric 5:	Test Method Suitability	High	The test method and target chemical concentrations were appropriate			
	Metric 5:	Testing Conditions	High	The test method and target chemical concentrations were appropriate.			
	Metric 7	Testing Consistency	High	The test conditions were consistent across the study groups			
	Metric 8:	System Type and Design	High	The system type was appropriate and equilibrium was established			
	Metric 8:	System Type and Design	Figli	The system type was appropriate and equilibrium was established.			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.			
Domain 5: Outcome As	ssessment		т				
	Metric 11:	Test Substance Identity	Low	The assumption that any DBP removed from solution was bound to the soil rather than the centrifuge tube was not validated and may have a substantial impact on the study results.			
	Metric 12:	Test Substance Purity	High	The sampling methods were reported and adequate for the aqueous concentrations.			
Domain 6: Confoundin	g/Variable Control	Confounding Variables	High	Characteristic and a second			
	Matria 14	Uselth Outcomes Uppeleted to	riign	Standard errors were reported and were not likely to impact the study results.			
	wieuric 14:	Exposure	IN/A	The metric is not applicable to the study type.			
Domain 7. Data Da	tation and Arralia						
Domain /: Data Presen	Metric 15:	Data Penorting	Medium	The target chemical concentrations were not directly apported but the emii i			
	metric 15:	Data Reporting	Medium	The target chemical concentrations were not directly reported but the omission is un-			
	Metric 16.	Statistical Methods and	Medium	Kinetic calculations and statistical methods were clearly reported and appropriate			
	moure ro.	Kinetic Calculations	meanann	Thread calculations and statistical methods were crearly reported and appropriate.			
Domain 8: Other							
Domain 0. Other	Metric 17:	Verification or Plausibility of	High	The study results are similar to other published data.			
		Results	0				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.			
	ty Dotower	ation	High				
Overall Quali	iy Determin		High				

Study Citation:	Sitation: Asakura, H., Matsuto, T., Tanaka, N. (2007). Analytical study of endocrine-disrupting chemicals in leachate treatment process of municipal solid waste (MSW) lendfill sites. Environmental Sciences 14(2):70-87					
<b>OECD Harmonized</b>	Miscellaneous	s. Environmental Sciences 17(2), 17-01.				
Template:						
HERO ID:	698293					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, Type, Guide	eline	None; Field study; Field study				
Solvent, Reactivity, Storage	e, Stability	extracted with hexane; NR; sealed brown glass bottles; bottled prewashed 2x with acetone and dichloromethane; NR				
Radiolabel, Source, State, P	Purity	NA; 5 facilities treating leachate form municipal solid waste landfills; Liquid; NA Notes: source and purity of analytical standards not reported				
Test Method Details, Test C	Condition Details, and	Samples taken at different treatment stages of 5 facilities, from May 2000 - Oct 2001, Sept 2000 - Nov 2001, Aug 2002, Oct 2002, and Feb 2003;				
Test Consistency		Landfill wastes were typically ash, incombustible, bulky wastes; some facilities also treated business, industrial, and household waste; Samples				
Details		were collected, prepared, and analyzed in the same way				
System Type Design		Sequential first aeration treatment (sites 1-5), biological treatment (sites 2-5), coagulation and sedimentation (sites 1-5) and activated carbon adsorb				
Sampling Frequency and Sa	ampling Details	4 times, 4 times, 1 time, 1 time, and 1 time per facility respectively: Leachate collected from the surface with a stainless steel bucket or ladle				
Test Temperature	1 8	Influent: 16, 22, 18, 16, and 15°C1st aeration: 20, 23, 19, 17, and 15°Cbiological treatment: NA, 22, 19, 17, and 15°CCS treatment: 15, 22, 19,				
I IIIII		17, and 15°CACA treatment: NA, NA, 18, and NA°C				
Results Details		Influent (max): 9.9 µg/L1st aeration (max): 7.2 µg/Lbiological treatment (max): 6.8 µg/LCS treatment (max): 7.6 µg/LACA treatment (max): 5.7				
		μg/L				
Analytical Method and Analytical Details GC-MS; Detection limit: 0.2 µg/L		GC-MS; Detection limit: 0.2 µg/L				
Transformation Products, S	tatistics, and Kinetics	Not reported; Influent (median): 5.5 ug/L1st aeration (median): 5.2 ug/Lbiological treatment (median): 4.6 ug/LCS treatment (median): 4.1				
<b>D</b> (1) (7)	<u>_</u>	ug/LACA treatment (median): 5.7 ug/L; Not reported				
Substance Results	eterence	Not applicable; Not applicable				

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.		
	Metric 2:	Test Substance Purity	Medium	A general description of the test substance source was provided, and purity is not an applicable metric for field studies; the source and purity of analytical standards was not reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	Concurrent negative controls not required for field studies.		
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage was reported and appropriate for the study.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Sample characteristics were analyzed and reported and were appropriate for the study.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent across sample groups.		
Continued on next page						

		continu	ed from pre	vious page				
Study Citation:	Asakura, H., Mats (MSW) landfill sit	suto, T., Tanaka, N. (2007). Analytical st tes. Environmental Sciences 14(2):79-87.	udy of endoc	rine-disrupting chemicals in leachate treatment process of municipal solid waste				
OECD Harmonized Template:	Miscellaneous	Miscellaneous						
HERO ID:	698293							
		E	VALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.				
Domain 4: Test Organis	sms							
C	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	sessment							
Domain 5. Outcome 745	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.				
	Metric 12:	Test Substance Purity	High	The study used sampling methods that are acceptable and address the outcomes of inter- est.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	High	Reported sources of variability were not likely to influence the outcome assessment.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7. Data Present	tation and Analysis	•						
Domain 7. Data i resent	Metric 15:	Data Reporting	Medium	Target chemical concentrations and mass balance were reported; extraction efficiency was not reported but is not expected to have a significant impact on study results.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods applied to the datasets were appropriate.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
<b>Overall Quali</b>	ty Determina	ation	High					

Study Citation: Atlas, E., Foster, R., Giam, C. S. (1982). Air-sea exchange of high molecular weight organic pollutants: laboratory studies. Environmental Science &							
OFCD Harmonized	Technology 16(5): Miscellaneous	Technology 16(5):283-286. Miscellaneous					
Template:							
HERO ID:	5763561						
			EXTRACTION				
Parameter		Data					
CASRN and Test Material		not reported; Dibutyl phthalate					
Confidentiality, Type, Guideline		none; experimental/modeling; experimental/modeling					
Solvent, Reactivity, Storage, Stability		NR; NR; NR					
Radiolabel, Source, State, Purity		NR; NR; NR Notes: NR					
Test Method Details, Test Condition Details, and		Distilled and seawater were spiked with test substance, mass-transfer constants determined by monitoring volatilization of substance from stirred					
Test Consistency		solution; procedure similar to Mackay et al.; Solution equilibrated for 24-48 hours.; not reported					
Details System Type Design		not reported					
Sampling Frequency and Sampling Details		not reported Total mass-transfer coefficient $K1^x/K1^{O2} = 0.0083$ in distilled water and 0.0080 in seawater.					
Test Temperature		ca. 23°C					
Results Details		Partition coefficients in distilled water = 0.011, in seawater = 0.145, note these values do not represent equilibrium values and other loss processes may be involved; partition coefficient based on H/RT, where H = Henry's law, R = gas law constant, T = temperature. Total mass-transfer coefficient Kl^x/Kl^O2 = 0.0083 in distilled water and 0.0080 in seawater. Diffusion ratio: $f1=0.20$ , $f2=0.19$ ; mass-transfer coefficient (1/Kl, h/cm) in seawater: measured = 9.61 and predicted = 0.41 (two-layer diffusion model) (additional value reported = 11.47 calculated using H/RT = 0.0000)					
Analytical Method and Ar	Analytical Method and Analytical Details		not reported; not reported				
Transformation Products, Statistics, and Kinetics		not reported; RI = total mass-transfer coefficient; overall mass transfer coefficient, KI obtained from: ln (Ct/Co) = -(KI/L)t					
Reference Substance and Reference Substance Results		not reported; not reported					
EVALUATION							
Domain		Metric	Rating	Comments			
Domain 1: Test Substa	nce						

Continued on next page						
	Metric 6:	Testing Conditions	Medium	Limited details regarding test conditions.		
	Metric 5:	Test Method Suitability	Medium	Limited details regarding the methodology.		
Domain 3: Test Conditions						
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported.		
-	Metric 3:	Study Controls	Uninformative	No controls were included.		
Domain 2: Test Design						
				means.		
	Metric 2:	Test Substance Purity	Low	The source and purity of the test substance were not reported or verified by analytical		
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.		
Domain 1: Test Substance						

continued from previous page								
Study Citation:	Atlas, E., Foster, R., Giam, C. S. (1982). Air-sea exchange of high molecular weight organic pollutants: laboratory studies. Environmental Science & Technology 16(5):283-286							
<b>OECD Harmonized</b>	Miscellaneous	Miscellaneous						
Template:								
HERO ID:	5763561							
	EVALUATION							
Domain		Metric	Rating	Comments				
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to the study type.				
	Metric 8:	System Type and Design	Low	Equilibrium was not established.				
Domain 4: Test Organisms								
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.				
Domain 5: Outcome Assessment								
	Metric 11:	Test Substance Identity	Medium	There were minor differences between the assessment methodology and the intended outcome assessment; volatilization rates were not reported.				
	Metric 12:	Test Substance Purity	Medium	Limited detail regarding sampling methods.				
Domain 6: Confoundin	g/Variable Control							
Domain 0. Comoundin	Metric 13.	Confounding Variables	Low	Sources of variability and uncertainty in the measurements were not fully addressed				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type				
	Weute 14.	Exposure	11/11	The neure is not appreade to the study type.				
Domain 7. Data Presen	Metric 15.	Data Reporting	Uninformative	No analytical methodology detail was reported				
	Metric 16:	Statistical Methods and	High	Calculations were described				
	Wieure 10.	Kinetic Calculations	mgn					
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.				
<b>Overall Quality Determination</b>			Uninformative					
Study Citation:	Balabanic, D., Hermosilla, D., Merayo, N., Klemencic, A. K., Blanco, A. (2012). Comparison of different wastewater treatments for removal of selected							
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	Engineering 47(10	):1350-1363.						
OECD Harmonized	Miscellaneous							
Template:								
HERO ID:	1322111							
		EXTRACTION						
Parameter		Data						
CASRN and Test Material		84-74-2; DBP						
Confidentiality, Type, Guideli	ine	None; Experimental; Experimental						
Solvent, Reactivity, Storage, S	Stability	NR; NR; NR						
Radiolabel, Source, State, Pur	rity	NR; Panreac; NR; analytical grade						
Test Method Details, Test Cor	ndition Details, and	Test substance monitoring to evaluate removal from papermill wastewaters by advanced oxidation processes (AOPs); Two pilot plants running in						
Details		paralet with wastewaters from a first producing 100% recycled paper, no inconsistencies noted						
System Type Design		Pilot plant A had a biological double-step process (anaerobic + aerobic) followed by ultrafiltration and reverse osmosis filtration; Pilot plant B had anaerobic reactor followed by a membrane bioreactor and a reverse osmosis filtration						
Sampling Frequency and Sampling Details		Samples were collected before and after every step of treatment. repeated three times for each pilot plant and each AOP treatment every 2-4 days; Samples collected in 2.5 L glass bottles for the analyses of COD and test substance						
Test Temperature		Not applicable						
Results Details		70% anaerobic, 80% aerobic, 95% ultrafiltration, 100% reverse osmosis, 95% membrane bioreactor (approx.)						
Analytical Method and Analytical Details		GC-MS: samples extracted from the wastewater						
Transformation Products, Stat	tistics, and Kinetics	Not reported; % Treatment efficiency reported; Not reported						
Reference Substance and Reference Substance Results		Not applicable; Not applicable						

	EVALUATION					
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ice					
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.		
	Metric 2:	Test Substance Purity	High	The source and purity of the test material was reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.		
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.		
Domain 3: Test Conditi	ons					
	Metric 5:	Test Method Suitability	High	This metric met the criteria for high confidence as expected for this type of study.		
	Metric 6:	Testing Conditions	High	This metric met the criteria for high confidence as expected for this type of study.		
	Metric 7:	Testing Consistency	High	This metric met the criteria for high confidence as expected for this type of study.		
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.		

## ... continued from previous page **Study Citation:** Balabanic, D., Hermosilla, D., Merayo, N., Klemencic, A. K., Blanco, A. (2012). Comparison of different wastewater treatments for removal of selected endocrine-disruptors from paper mill wastewaters. Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances & Environmental Engineering 47(10):1350-1363. **OECD Harmonized** Miscellaneous Template: **HERO ID:** 1322111 **EVALUATION** Domain Metric Rating Comments Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology High Appropriate for a WWTP removal monitoring study. Metric 10: Sampling Methods N/A The metric is not applicable to this study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity High This metric met the criteria for high confidence as expected for this type of study. Metric 12: Test Substance Purity High This metric met the criteria for high confidence as expected for this type of study. Domain 6: Confounding/Variable Control Metric 13: N/A Confounding Variables No confounding variables were noted. Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting Medium Details were omitted; however, the lack of data is not likely to hinder the interpretation of the results. Metric 16: Statistical Methods and Medium Details were omitted; however, the lack of data is not likely to hinder the interpretation **Kinetic Calculations** of the results. Domain 8: Other Metric 17: Verification or Plausibility of High The results were reasonable. Results Metric 18: QSAR Models N/A The metric is not applicable to this study type. **Overall Quality Determination** High

Study Citation: B	Boonnorat, J., Chiemchaisri, C., Chiemchaisri, W., Yamamoto, K. (2016). Kinetics of phenolic and phthalic acid esters biodegradation in membrane				
DECD Harmonized M	moreactor (MBR) treating municipal landfill leachate. Chemosphere 150:639-649.				
Template:	liseenaneous				
HERO ID: 3	350322				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Dibutyl phthalate			
Confidentiality, Type, Guidelin	e	None; Experimental; Experimental			
Solvent, Reactivity, Storage, St	tability	NR; NR; NR			
Radiolabel, Source, State, Purit	ty	NR; NR; NR			
Test Method Details, Test Condition Details, and Test Consistency Details		Membrane bioreactor containing sludge was fed mixed leachate; mixed leachate: Carbon/nitrogen ratio adjusted to 10. Feed DBP concentration was 1.0 mg/L. Bacteria community included: heterotrophic, heterotrophic nitrifying, autotroph trophic nitrifying bacteria.; pH of 7.5 and dissolved oxygen in reactor of 5 mg/L or more.			
System Type Design		Solid retention time was varied (90 d, 15 d, 5 d)			
Sampling Frequency and Samp	oling Details	regularly monitored; appropriate			
Test Temperature		room temperature			
Results Details		biodegradation rate constant: 0.066/h, 0.045/h, 0.020/h for SRT 90 d, 15 d, 5 d, respectively			
Analytical Method and Analytical Details		solid phase extraction technique (SPE) followed by their analyses using GC and GC/MS.; Analytical details are referenced			
Transformation Products, Statistics, and Kinetics		not reported; R2 0.947, 0.989, 0.972 for SRT 90, 15, 5 d, respectively.; Increased SRT from 5 to 90 days resulted in increased degradation rate from 0.020/h to 0.066/h			
Reference Substance and Refer	rence	not applicable; not applicable			
Substance Results					

	EVALUATION					
Domain		Metric	Rating	Comments		
Domain 1: Test Substar	nce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The test substance source was not reported		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.		
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.		
Domain 3: Test Conditi	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent.		
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.		

		contin	ued from pre	vious page			
Study Citation:	Boonnorat, J., Ch bioreactor (MBR)	Boonnorat, J., Chiemchaisri, C., Chiemchaisri, W., Yamamoto, K. (2016). Kinetics of phenolic and phthalic acid esters biodegradation in membrane bioreactor (MBR) treating municipal landfill leachate. Chemosphere 150:639-649.					
OECD Harmonized	Miscellaneous						
Template:							
HERO ID:	3350322						
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source were reported.			
	Metric 10:	Sampling Methods	High	Test organism information was reported.			
Domain 5: Outcome A	reassmant						
Domain 5. Outcome As	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.			
Domain 6: Confoundin	g/Variable Control						
Domain of Comountain	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Domain 7: Data Presen	tation and Analysis						
Domain 7. Data i losen	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Quali</b>	ty Determin	ation	High				

Study Citation: OECD Harmonized Template:	Boonnorat, J., Chi bioreactor (MBR) t Miscellaneous	Boonnorat, J., Chiemchaisri, C., Chiemchaisri, W., Yamamoto, K. (2016). Kinetics of phenolic and phthalic acid esters biodegradation in membrane bioreactor (MBR) treating municipal landfill leachate. Chemosphere 150:639-649. Miscellaneous			
HERO ID:	3350322				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Dibutyl phthalate			
Confidentiality, Type, Guide	eline	None; Experimental; Experimental			
Solvent, Reactivity, Storage	, Stability	NR; NR; NR			
Radiolabel, Source, State, Purity		NR; NR; NR			
Test Method Details, Test Condition Details, and Test Consistency Details System Type Design		Membrane bioreactor containing sludge was fed mixed leachate.; mixed leachate: Carbon/nitrogen ratio adjusted to 6. Feed DBP concentration was 1.0 mg/L. Bacteria community included: heterotrophic, heterotrophic nitrifying, autotroph trophic nitrifying bacteria.; pH of 7.5 and dissolved oxygen in reactor of 5 mg/L or more. Solid retention time was varied (90 d, 15 d, 5 d)			
Sampling Frequency and Sa	mpling Details	regularly monitored; appropriate			
Test Temperature		room temperature			
Results Details		biodegradation rate constant: 0.072/h, 0.065/h, 0.036/h for SRT 90 d, 15 d, 5 d, respectively			
Analytical Method and Analytical Details		solid phase extraction technique (SPE) followed by their analyses using GC and GC/MS.; Analytical details are referenced			
Transformation Products, St	tatistics, and Kinetics	not reported; R2 0.955, 0.967, 0.975 for SRT 90, 15, 5 d, respectively.; Increased SRT from 5 to 90 days resulted in increased degradation rate from 0.036/h to 0.072/h			
Reference Substance and Re Substance Results	eference	not applicable; not applicable			

		F	EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substar	ice					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The test substance source was not reported		
Domain 2: Test Design						
C C	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.		
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.		
Domain 3: Test Conditi	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent.		
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.		
Domain 4: Test Organis	Domain 4: Test Organisms					
_	Metric 9:	Outcome Assessment Methodology	High	The inoculum source were reported.		
Continued on next page						

		COI	ntinued from prev	vious page			
Study Citation:	Boonnorat, J., Cl bioreactor (MBR)	Boonnorat, J., Chiemchaisri, C., Chiemchaisri, W., Yamamoto, K. (2016). Kinetics of phenolic and phthalic acid esters biodegradation in membrane bioreactor (MBR) treating municipal landfill leachate. Chemosphere 150:639-649					
OECD Harmonized	Miscellaneous	Miscellaneous					
HERO ID:	3350322						
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 10:	Sampling Methods	High	Test organism information was reported.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being analyzed.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Domain 7: Data Presen	tation and Analysis						
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of Results	High	Reported values were within expected range.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Quality Determination</b>			High				

Study Citation: OECD Harmonized	Boonnorat, J., Chi bioreactor (MBR) t Miscellaneous	Boonnorat, J., Chiemchaisri, C., Chiemchaisri, W., Yamamoto, K. (2016). Kinetics of phenolic and phthalic acid esters biodegradation in membrane bioreactor (MBR) treating municipal landfill leachate. Chemosphere 150:639-649. Miscellaneous			
HERO ID:	3350322				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Dibutyl phthalate			
Confidentiality, Type, Guide	eline	None; Experimental; Experimental			
Solvent, Reactivity, Storage	, Stability	NR; NR; NR			
Radiolabel, Source, State, P	urity	NR; NR; NR			
Test Method Details, Test Condition Details, and Test Consistency Details System Type Design		Membrane bioreactor containing sludge was fed mixed leachate.; mixed leachate: Carbon/nitrogen ratio adjusted to 3. Feed DBP concentration was 1.0 mg/L. Bacteria community included: heterotrophic, heterotrophic nitrifying, autotroph trophic nitrifying bacteria.; pH of 7.5 and dissolved oxygen in reactor of 5 mg/L or more. Solid retention time was varied (90 d, 15 d, 5 d)			
Sampling Frequency and Sa	mpling Details	regularly monitored; appropriate			
Test Temperature		room temperature			
Results Details		biodegradation rate constant: 0.022/h, 0.013/h, 0.007/h for SRT 90 d, 15 d, 5 d, respectively			
Analytical Method and Analytical Details		solid phase extraction technique (SPE) followed by their analyses using GC and GC/MS.; Analytical details are referenced			
Transformation Products, St	tatistics, and Kinetics	not reported; R2 0.946, 0.928, 0.973 for SRT 90, 15, 5 d, respectively.; Increased SRT from 5 to 90 days resulted in increased degradation rate from 0.007/h to 0.022/h			
Substance Results	ererence	not applicable, not applicable			

		F	EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substar	ice					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The test substance source was not reported		
Domain 2: Test Design						
C C	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.		
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.		
Domain 3: Test Conditi	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent.		
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.		
Domain 4: Test Organis	Domain 4: Test Organisms					
_	Metric 9:	Outcome Assessment Methodology	High	The inoculum source were reported.		
Continued on next page						

		cor	tinued from pre	vious page		
Study Citation:	Boonnorat, J., Ch bioreactor (MBR)	Boonnorat, J., Chiemchaisri, C., Chiemchaisri, W., Yamamoto, K. (2016). Kinetics of phenolic and phthalic acid esters biodegradation in membrane bioreactor (MBR) treating municipal landfill leachate. Chemosphere 150:639-649				
OECD Harmonized	Miscellaneous	, dealing maneipar landim reachade. (				
HERO ID:	3350322					
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 10:	Sampling Methods	High	Test organism information was reported.		
Domain 5: Outcome As	ssessment					
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.		
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.		
Domain 6: Confoundin	g/Variable Control					
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation.		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.		
Domain 7: Data Presen	tation and Analysis					
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported		
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of Results	High	Reported values were within expected range.		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.		
<b>Overall Quality Determination</b>			High			

Study Citation: OECD Harmonized	Boonnorat, J., Chi bioreactor (MBR) t Miscellaneous	Boonnorat, J., Chiemchaisri, C., Chiemchaisri, W., Yamamoto, K. (2016). Kinetics of phenolic and phthalic acid esters biodegradation in membrane pioreactor (MBR) treating municipal landfill leachate. Chemosphere 150:639-649. Miscellaneous			
Template: HERO ID:	3350322				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Dibutyl phthalate			
Confidentiality, Type, Guide	eline	None; Experimental; Experimental			
Solvent, Reactivity, Storage	, Stability	NR; NR; NR			
Radiolabel, Source, State, Purity		NR; NR; NR			
Test Method Details, Test C Test Consistency Details System Type Design	Condition Details, and	Membrane bioreactor containing sludge was fed mixed leachate.; mixed leachate: Carbon/nitrogen ratio adjusted to 10. Feed DBP concentration was 1.0 mg/L. Bacteria community included: heterotrophic, heterotrophic nitrifying bacteria.; pH of 7.5 and dissolved oxygen in reactor of 5 mg/L or more. Solid retention time was varied (90 d. 15 d. 5 d)			
Sampling Frequency and Sa	ampling Details	regularly monitored; appropriate			
Test Temperature		room temperature			
Results Details		biodegradation rate constant: 0.059/h, 0.035/h, 0.016/h for SRT 90 d, 15 d, 5 d, respectively			
Analytical Method and Analytical Details		solid phase extraction technique (SPE) followed by their analyses using GC and GC/MS.; Analytical details are referenced			
Transformation Products, St	tatistics, and Kinetics	not reported; R2 0.935, 0.968, 0.910 for SRT 90, 15, 5 d, respectively.; Increased SRT from 5 to 90 days resulted in increased degradation rate from 0.016/h to 0.059/h			
Reference Substance and Re Substance Results	eference	not applicable; not applicable			

		E	EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ice					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The test substance source was not reported		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.		
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent.		
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.		
Domain 4: Test Organisms						
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source were reported.		
Continued on next page						

		cor	tinued from pre	vious page		
Study Citation:	Boonnorat, J., Ch bioreactor (MBR)	Boonnorat, J., Chiemchaisri, C., Chiemchaisri, W., Yamamoto, K. (2016). Kinetics of phenolic and phthalic acid esters biodegradation in membrane bioreactor (MBR) treating municipal landfill leachate. Chemosphere 150:639-649				
OECD Harmonized	Miscellaneous	, trouting manopar fanding fournate.				
HERO ID:	3350322					
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
	Metric 10:	Sampling Methods	High	Test organism information was reported.		
Domain 5: Outcome As	ssessment					
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.		
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.		
Domain 6: Confoundin	g/Variable Control					
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation.		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.		
Domain 7: Data Presen	tation and Analysis					
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported		
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of Results	High	Reported values were within expected range.		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.		
Overall Quali	<b>Overall Quality Determination</b>					

Study Citation: OECD Harmonized	Boonnorat, J., Chi bioreactor (MBR) Miscellaneous	Boonnorat, J., Chiemchaisri, C., Chiemchaisri, W., Yamamoto, K. (2016). Kinetics of phenolic and phthalic acid esters biodegradation in membrane pioreactor (MBR) treating municipal landfill leachate. Chemosphere 150:639-649. Miscellaneous				
Template: HERO ID:	3350322					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, Type, Guide	eline	None; Experimental; Experimental				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	Purity	NR; NR; NR				
Test Method Details, Test Condition Details, and Test Consistency Details System Type Design		Membrane bioreactor containing sludge was fed mixed leachate.; mixed leachate: Carbon/nitrogen ratio adjusted to 6. Feed DBP concentration was 1.0 mg/L. Bacteria community included: heterotrophic, heterotrophic nitrifying bacteria.; pH of 7.5 and dissolved oxygen in reactor of 5 mg/L or more. Solid retention time was varied (90 d, 15 d, 5 d)				
Sampling Frequency and Sa	ampling Details	regularly monitored; appropriate				
Test Temperature		room temperature				
Results Details		biodegradation rate constant: 0.064/h, 0.041/h, 0.025/h for SRT 90 d, 15 d, 5 d, respectively				
Analytical Method and Analytical Details		solid phase extraction technique (SPE) followed by their analyses using GC and GC/MS.; Analytical details are referenced				
Transformation Products, St	tatistics, and Kinetics	not reported; R2 0.962, 0.875, 0.985 for SRT 90, 15, 5 d, respectively.; Increased SRT from 5 to 90 days resulted in increased degradation rate from 0.025/h to 0.064/h				
Reference Substance and Re Substance Results	eference	not applicable; not applicable				

		E	EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The test substance source was not reported		
Domain 2: Test Design						
-	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.		
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent.		
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.		
Domain 4: Test Organisms						
C C	Metric 9:	Outcome Assessment Methodology	High	The inoculum source were reported.		
Continued on next page						

			ntinued from prev	vious page			
Study Citation:	Boonnorat, J., Ch bioreactor (MBR)	Boonnorat, J., Chiemchaisri, C., Chiemchaisri, W., Yamamoto, K. (2016). Kinetics of phenolic and phthalic acid esters biodegradation in membrane bioreactor (MBR) treating municipal landfill leachate. Chemosphere 150:639-649					
OECD Harmonized	Miscellaneous	,					
HERO ID:	3350322						
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 10:	Sampling Methods	High	Test organism information was reported.			
Domain 5: Outcome A	ssessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.			
Domain 6: Confoundin	g/Variable Control						
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Domain 7: Data Presen	ntation and Analysis						
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
<b>Overall Quali</b>	ity Determin	ation	High				

Study Citation: OECD Harmonized	Boonnorat, J., Chi bioreactor (MBR) Miscellaneous	Boonnorat, J., Chiemchaisri, C., Chiemchaisri, W., Yamamoto, K. (2016). Kinetics of phenolic and phthalic acid esters biodegradation in membrane pioreactor (MBR) treating municipal landfill leachate. Chemosphere 150:639-649.				
Template:						
HERO ID:	3350322					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, Type, Guideline		None; Experimental; Experimental				
Solvent, Reactivity, Storage, Stability		NR; NR; NR				
Radiolabel, Source, State, P	Purity	NR; NR; NR				
Test Method Details, Test C	Condition Details, and	Membrane bioreactor containing sludge was fed mixed leachate.; mixed leachate: Carbon/nitrogen ratio adjusted to 3. Feed DBP concentration				
Test Consistency		was 1.0 mg/L. Bacteria community included: heterotrophic, heterotrophic nitrifying bacteria.; pH of 7.5 and dissolved oxygen in reactor of 5 mg/L				
System Type Design		Solid retention time was varied (90 d, 15 d, 5 d)				
Sampling Frequency and Sa	ampling Details	regularly monitored; appropriate				
Test Temperature		room temperature				
Results Details		biodegradation rate constant: 0.016/h, 0.009/h, 0.006/h for SRT 90 d, 15 d, 5 d, respectively				
Analytical Method and Analytical Details		solid phase extraction technique (SPE) followed by their analyses using GC and GC/MS.; Analytical details are referenced				
Transformation Products, Statistics, and Kinetics		not reported; R2 0.985, 0.944, 0.997 for SRT 90 d, 15 d, 5 d, respectively.; Increased SRT from 5 to 90 days resulted in increased degradation rate				
Reference Substance and Re Substance Results	eference	from 0.006/h to 0.016/h not applicable; not applicable				

		E	VALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The test substance source was not reported		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.		
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent.		
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.		
Domain 4: Test Organisms						
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source were reported.		
Continued on next page						

		col	ntinued from prev	vious page			
Study Citation:	Boonnorat, J., Ch bioreactor (MBR)	Boonnorat, J., Chiemchaisri, C., Chiemchaisri, W., Yamamoto, K. (2016). Kinetics of phenolic and phthalic acid esters biodegradation in membrane bioreactor (MBR) treating municipal landfill leachate. Chemosphere 150:639-649					
OECD Harmonized	Miscellaneous	, treating manerpar tandim reachate.					
HERO ID:	3350322						
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 10:	Sampling Methods	High	Test organism information was reported.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of Pesults	High	Reported values were within expected range.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
Overall Quali	<b>Overall Quality Determination</b>						

Study Citation:	Boonnorat, J., Kanyatrakul, A., Prakhongsak, A., Honda, R., Panichnumsin, P., Boonapatcharoen, N. (2019). Effect of hydraulic retention time on micropollutant high-graduation in activated sludge sustain sugmented with acclimatized sludge tracting law micropollutants used					
OECD Harmonized	230:606-615. Miscellaneous					
HERO ID:	5494471					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Di-butyl-phthalate				
Confidentiality, Type, Guidelin	ne	None; Experimental; Experimental				
Solvent, Reactivity, Storage, S	Stability	NR; NR; NR				
Radiolabel, Source, State, Pur	rity	NR; NR; NR				
Test Method Details, Test Condition Details, and Test Consistency		Samples were collected from influent, anoxic water, aerobic water, and effluent of bioaugmented systems.; Seed sludge: BOD: <50mg/L; COD: 200mg/L; NH3-N: <40mg/L. Acclimated sludge: BOD: >800mg/L; COD: >1200 mg/L; NH3-N: >100mg/L.; Not reported				
Details System Type Design		Two stage activated sludge system (10L acrylic anoxic tank and 10L aerobic tank). Seed sludge from a local wastewater treatment plant was used as well as acclimatized sludge.				
Sampling Frequency and Sampling Details		Sampling periods were S1: days 0-63, S2: days 64-119, and S3: days 120-182.; Hydraulic retention times in S1, S2, and S3 sampling periods were 24, 18, and 12 hours, respectively.				
Test Temperature		Not reported				
Results Details		Removal % in S1, S2 and S3 conditions: 87%, 87%, and 81%, respectively.				
Analytical Method and Analytical Details		Gas chromatography-mass spectrometry.; Not reported				
Transformation Products, Stati	istics, and Kinetics	Not reported; No significant differences in biodegradation rates were found between 24h and 18h or 18h and 12h HRT; however, 24h and 12h HRT biodegradation rates were significantly different.; First order rate: ln(C/Co) = kt. K values (hour^-1) for S1, S2, and S3 conditions were -0.0901, -0.083, and -0.1067, respectively.				
Reference Substance and Refe Substance Results	erence	Not Reported; Not Reported				

EVALUATION				
Domain		Metric	Rating	Comments
Domain 1: Test Substand	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported but the omission is unlikely to have a substan- tial impact on the study results.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	No study controls were reported but the omission is unlikely to have a substantial impact on the study results.
	Metric 4:	Test Substance Stability	Medium	Some details regarding the preparation, storage, and homogeneity of the samples con- taining the test substance were not reported; however, the omissions are unlikely to have a substantial impact on the study results.

Domain 3: Test Conditions

		contin	ued from pre	vious page			
Study Citation:	Boonnorat, J., K micropollutant b	Boonnorat, J., Kanyatrakul, A., Prakhongsak, A., Honda, R., Panichnumsin, P., Boonapatcharoen, N. (2019). Effect of hydraulic retention time on micropollutant biodegradation in activated sludge system augmented with acclimatized sludge treating low-micropollutants wastewater. Chemosphere					
	230:606-615.		-				
OECD Harmonized	Miscellaneous						
Template:	5404471						
HERO ID:	5494471						
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.			
	Metric 7:	Testing Consistency	High	Besides the hydraulic retention time, there were no reported differences in the test con- ditions across study groups.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.			
Domain 4: Test Organis	sms						
	Metric 9:	Outcome Assessment Methodology	Low	The inoculum was acclimated and from a wastewater treatment plant.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	Medium	The outcome assessment methodology was not clearly described; however, this is un- likely to have a substantial impact on the study results.			
	Metric 12:	Test Substance Purity	Medium	Some of the details regarding the sampling method were not reported.			
Domain 6: Confounding	y/Variable Control						
	Metric 13:	Confounding Variables	High	Uncertainty was reported in the measurements and was not likely to influence the study results.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.			
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	High	The data reporting was appropriate and the analytical method was suitable.			
	Metric 16:	Statistical Methods and	High	The statistical analysis was described and appropriate.			
		Kinetic Calculations					
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	Low	Due to limited information, the reasonableness of the study results was not possible.			
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.			
<b>Overall Quali</b>	ty Determin	ation	High				

Study Citation:	Boonnorat, J., Tech biodegradation in r	Boonnorat, J., Techkarnjanaruk, S., Honda, R., Prachanurak, P. (2016). Effects of hydraulic retention time and carbon to nitrogen ratio on micro-pollutant biodegradation in membrane bioreactor for leachate treatment. Bioresource Technology 219:53-63.					
<b>OECD Harmonized</b>	Miscellaneous	Miscellaneous					
Template:							
HERO ID:	3466805						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl phthalate					
Confidentiality, Type, Guideline		None; Experimental; Experimental					
Solvent, Reactivity, Storage	, Stability	NR; NR; NR					
Radiolabel, Source, State, P	Purity	NR; NR; NR					
Test Method Details, Test C	Condition Details, and	Membrane bioreactor containing acclimated (60 d) sludge was fed mixed leachate. 120 d study duration.; Mixed leachate: Carbon/nitrogen ratio					
Test Consistency		adjusted to 10. Feed DBP concentration was 1,064 ug/L. Initial mixed liquor suspended solids 7 g/L.; Triplicate batch, pH of 7±0.2 and dissolved					
Details System Type Design		oxygen in reactor of 5 mg/L hydraulia retartion time was varied (24 h 12 h 6 h)					
System Type Design	muling Dataila	nyuraune retention time was varied (24 ft, 12 ft, 0 ft)					
Tast Temporature	unphing Details						
Resulta Deteila		100 in compensation of $100$ mass of $100$ mass respectively.					
A polytical Mathed and A polytical Dataila		20.3, 97.9, 73.970 ucglauduon at FINI unics of 24, 12, 0 nouis, respectively					
Analytical Method and Analytical Delalis		sond phase extraction technique (SFE) and analyzed by GU-MS; Analytical details referenced					
Transformation Floudets, S	taustics, and Killetics	AOB at HRT of 24 12 6 hours respectively DBP initial concentrations of 1.064 us/L were reduced to 16 and 278 us/L under HRT times of 24					
		and 6 hours, respectively.					
Reference Substance and Reference		not applicable; not applicable					

Reference	substance and
Substance	Results

			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Test Substa	nce						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.			
	Metric 2:	Test Substance Purity	Medium	The test substance source was not reported.			
Domain 2: Test Design	1						
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.			
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.			
Domain 3: Test Condit	ions						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent.			
	Continued on next page						

		continu	ued from pre	vious page					
Study Citation:	Boonnorat, J., Tec biodegradation in	Boonnorat, J., Techkarnjanaruk, S., Honda, R., Prachanurak, P. (2016). Effects of hydraulic retention time and carbon to nitrogen ratio on micro-pollutant biodegradation in membrane bioreactor for leachate treatment. Bioresource Technology 219:53-63.							
OECD Harmonized	Miscellaneous								
Template:									
HERO ID:	3466805								
		F	EVALUATIO	N					
Domain		Metric	Rating	Comments					
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.					
Domain 4: Test Organis	ms								
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported.					
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.					
Domain 5: Outcome Ass	sessment								
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.					
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.					
Domain 6: Confounding	y/Variable Control								
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation.					
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.					
Domain 7: Data Present	ation and Analysis								
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported.					
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.					
Domain 8: Other									
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.					
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.					
<b>Overall Qualit</b>	ty Determina	ation	High						

Study Citation:	Citation: Boonnorat, J., Techkarnjanaruk, S., Honda, R., Prachanurak, P. (2016). Effects of hydraulic retention time and carbon to nitrogen ratio on micro-pollutant biodegradation in membrane bioreactor for leachate treatment. Bioresource Technology 219:53-63.					
OECD Harmonized	Miscellaneous					
Template:	2466005					
HERO ID:	3466805					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, Type, Guid	eline	None; Experimental; Experimental				
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR				
Radiolabel, Source, State, H	Purity	NR; NR; NR				
Test Method Details, Test Condition Details, and Test Consistency Details System Type Design		Membrane bioreactor containing acclimated (60 d) sludge was fed mixed leachate. 120 d study duration.; mixed leachate: Carbon/nitrogen ratio adjusted to 6. Feed DBP concentration was 1,064 ug/L. Initial mixed liquor suspended solids 7 g/L.; Triplicate batch, pH of $7\pm0.2$ and dissolved oxygen in reactor of 5 mg/L hydraulic retention time was varied (24 h, 12 h, 6 h)				
Sampling Frequency and Sampling	ampling Details	not reported: Not Reported				
Test Temperature	1 0	room temperature				
Results Details		98.5, 98.3, 90.3% degradation at HRT times of 24, 12, 6 hours, respectively				
Analytical Method and Analytical Details		solid phase extraction technique (SPE) and analyzed by GC-MS; Analytical details referenced				
Transformation Products, S	tatistics, and Kinetics	not reported; Degradation rate constant were 0.065, 0.078, 0.045/h with ammonia oxidizing bacteria (AOB) and 0.056, 0.065, 0.031/h without AOB at HRT of 24, 12, 6 hours, respectively; DBP initial concentrations of 1,064 ug/L were reduced to 16 and 103 ug/L under HRT times of 24 and 6 hours, respectively				
Reference Substance and R Substance Results	eference	not applicable; not applicable				

			EVALUATION					
Domain		Metric	Rating	Comments				
Domain 1: Test Sub	stance							
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.				
	Metric 2:	Test Substance Purity	Medium	The test substance source was not reported.				
Domain 2: Test Des	ign							
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.				
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.				
Domain 3: Test Con	ditions							
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.				
	Metric 7:	Testing Consistency	High	Test conditions were consistent.				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.				

Domain 4: Test Organisms

		contin	ued from pre	vious page				
Study Citation:	Boonnorat, J., Tec biodegradation in	Boonnorat, J., Techkarnjanaruk, S., Honda, R., Prachanurak, P. (2016). Effects of hydraulic retention time and carbon to nitrogen ratio on micro-pollutant biodegradation in membrane bioreactor for leachate treatment. Bioresource Technology 219:53-63						
<b>OECD Harmonized</b>	Miscellaneous							
Template:								
HERO ID:	3466805							
		I	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome Ag	aggment							
Domain 5: Outcome As	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of				
	Wieute 11.	Test Substance Identity	Ingn	interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being and				
				lyzed.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7: Data Present	ation and Analysis							
Domain 7. Data i leselit	Metric 15.	Data Reporting	High	The target chemical concentrations extraction efficiency percent recovery or mass				
	Wetter 15.	Data Reporting	Ingn	balance were reported.				
	Metric 16:	Statistical Methods and	High	Statistical methods or kinetic calculations were clearly described and address the				
		Kinetic Calculations		dataset.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
		· ·	TT• 1					
<b>Overall Qualit</b>	ty Determination	ation	High					

Study Citation: OECD Harmonized	Bove, J. L., Dalver Miscellaneous	a, P. (1984). Pyrolysis of phthalic-acid esters: Their fate. Science of the Total Environment 36(JUN):313-318.			
Template:					
HERO ID:	1333380				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; DBP			
Confidentiality, Type, Gui	deline	None; Experimental; Experimental			
Solvent, Reactivity, Storag	ge, Stability	NR; NR; NR			
Radiolabel, Source, State,	Purity	NR; Aldrich Chemical Company; NR; NR Notes: NR			
Test Method Details, Test	Condition Details, and	7.5-10 minute in a 22 ml stainless steel bomb with an asbestos/copper gasket; heated in a muffle furnace; 5 runs, differences in the trials reported			
Test Consistency					
Details System Type Design		numbers of 90 ms DBD			
System Type Design	Denveller - Detaile	pytotysis of a of ling DBr			
Sampling Frequency and S	Sampling Details	I time; extracted with 50 ml of boiling benzene			
Test Temperature		600°C			
Results Details		DBP removed and several transformation products listed			
Analytical Method and Analytical Details		GC/MS; Not applicable			
Transformation Products, Statistics, and Kinetics		14 compounds characterized and another 6 not identified. Characterize chemical species include: Methylindene, Naphthalene, 1- Methylnaphthalene, 2-Methylnaphthalene, Biphenyl, Dimethylnaphthalene, Acenaphthene, Fluorene, Methylacenaphthene, Methylfluorene, and Indene.; Not reported; Not reported			
Reference Substance and I	Reference	Not reported; Not reported			
Substance Results					

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substa	ance			
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.
	Metric 2:	Test Substance Purity	High	The source of the test substance was reported.
Domain 2: Test Design	n			
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 3: Test Condi	tions			
	Metric 5:	Test Method Suitability	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 6:	Testing Conditions	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 7:	Testing Consistency	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 8:	System Type and Design	Medium	There was some information not reported regarding the test system and design, but these omissions were not likely to have impacted the study result.

Domain 4: Test Organisms

		continu	ed from previous	page			
Study Citation: OECD Harmonized	Bove, J. L., Dalven, P. (1984). Pyrolysis of phthalic-acid esters: Their fate. Science of the Total Environment 36(JUN):313-318. Miscellaneous						
HERO ID:	1333380						
		H	EVALUATION				
Domain		Metric	Rating	Comments			
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	Low	There was incomplete reporting of outcome assessment methods; however, the absence of details were likely to have an impact on the study results.			
	Metric 12:	Test Substance Purity	Medium	There was some information not reported regarding the sampling methods, but these omissions were not likely to have impacted the study result.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	Medium	Recovery of reaction products was poor and was a source of variability and uncertainty in the measurements.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	Low	Quantitative results pyrolysis products were not provided.			
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Data and calculations were not presented.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
Overall Quali	ty Determina	ation	Medium				

Study Citation: C	Cheng, X., Ma, L., Xu, D., Cheng, H., Yang, G., Luo, M., in (2015). Mapping of phthalate esters in suburban surface and deep soils around a metropolis-					
OECD Harmonized M	<b>DECD Harmonized</b> Miscellaneous					
Template:						
HERO ID: 3	022721					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		NR; dibutyl phthalate				
Confidentiality, Type, Guidelin	e	None; Experimental - monitoring; Calculation - volatilization (not reported); Experimental - monitoring; Calculation - volatilization (not reported)				
Solvent, Reactivity, Storage, St	ability	NA; NR; NR				
Radiolabel, Source, State, Purit	ty	NR; Soil from Beijing, China; NR; NA				
Test Method Details, Test Condition Details, and Test Consistency		Data collected in monitoring study; 47 surface soil samples and core samples and 16 vicinal sub-samples weremixed fully to obtain one composite surface sample; NA				
System Type Design		NA				
Sampling Frequency and Samp	oling Details	1 sample time; Not Reported				
Test Temperature	-	NA				
Results Details $0.09 \pm 0.12$ mg/kg in surface soil (mean) and $0.04 \pm 0.07$ mg/kg in deep soil; volatility calculated but n		$0.09 \pm 0.12$ mg/kg in surface soil (mean) and $0.04 \pm 0.07$ mg/kg in deep soil; volatility calculated but not reported				
Analytical Method and Analyti	ical Details	GC-FID; confirmation of the compounds by GC-MSD-EI-SIM				
Transformation Products, Statis	stics, and Kinetics	NR; range, median and mean concentrations reported; NA				
Reference Substance and Reference Substance Results Analytical blank, spiked blank, spiked matrix; Average recoveries of PAEs were 75–130% with the relative standard deviations of 3–13% (n = 5)		Analytical blank, spiked blank, spiked matrix; Average recoveries of PAEs were 75–130% with the relative standard deviations of 3–13% (n = 5)				

	EVALUATION						
Domain		Metric	Rating	Comments			
Domain 1: Test Substanc	e						
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.			
	Metric 2:	Test Substance Purity	N/A	Test purity is not applicable to this study type (monitoring).			
Domain 2: Test Design							
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.			
	Metric 4:	Test Substance Stability	N/A	This metric is not applicable to monitoring studies.			
Domain 3: Test Condition	ns						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	Medium	There were reported deviations or omissions in testing conditions; however, sufficient data were reported to determine that the deviations and omissions were not likely to have a substantial impact on study results.			
	Metric 7:	Testing Consistency	N/A	This metric is not applicable to monitoring studies.			
	Metric 8:	System Type and Design	N/A	This metric is not applicable to monitoring studies.			

		continu	ied from pre	vious page				
Study Citation:	Cheng, X., Ma, L. Beijing, China. Jo	, Xu, D., Cheng, H., Yang, G., Luo, M., ir urnal of Geochemical Exploration 155:56	n (2015). Maj -61.	pping of phthalate esters in suburban surface and deep soils around a metropolis-				
<b>OECD Harmonized</b>	Miscellaneous	Miscellaneous						
Template:								
HERO ID:	3022721							
		E	EVALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 4: Test Organis	ms		<b>N</b> T/ A					
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	IN/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	Low	Deficiencies in the outcome assessment methodology of the assessment or reporting were likely to have a substantial impact on results. Soil transport and volatility can be inferred from these monitoring results.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed.				
Domain 6: Confounding	Wariable Control							
Domain o. Comountaing	Metric 13:	Confounding Variables	Low	Sources of variability and uncertainty in the measurements were reported in the study and there is concern that variability or uncertainty was likely to have a substantial im- pact on the results.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7. Data Present	ation and Analysis							
	Metric 15:	Data Reporting	Low	There was insufficient evidence presented to confirm that parent compound disappear- ance was not likely due to some other process.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset(s).				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible.				
	Metric 18:	QSAR Models	N/A	A QSAR model was not reported.				
Overall Qualit	ty Determina	ation	Low					

Study Citation:	Cheng, Z., Li, H. H	I., Yu, L., Yang, Z. B., Xu, X. X., Wang, H. S., Wong, M. H. (2018). Phthalate esters distribution in coastal mariculture of Hong Kong,				
	China. Environmental Science and Pollution Research 25(18):17321-17329.					
OECD Harmonized	Miscellaneous					
Template:	1779621					
	4728034					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Di-n-butyl phthalate				
Confidentiality, Type, Guide	eline	None; Experimental; Experimental				
Solvent, Reactivity, Storage	, Stability	NA; NA; NA				
Radiolabel, Source, State, P	urity	NA; NA; NA Notes: DBP				
Test Method Details, Test C	condition Details, and	Fish and sediment samples collected from 6 mariculture sites in Hong Kong and China; Surface sediment (0-5 cm; mariculture and non-mariculture)				
Test Consistency		and farmed fish species collected: Red snapper (Lutjanus campechanus) ( $n = 26$ ), orange spotted grouper (Epinephelus coioides) ( $n = 26$ ), and				
Details System Type Design		snubnose pompano (Trachinotus blochii) (n = 1/); Not applicable Field study				
System Type Design	muling Dataila	Not applicable, compling datas not provided. Sodiment comples were collected via a steipless steel greb compler, fish comples were collected				
Sampling Frequency and Sa	unphing Details	wrapped in foil, delivered and stored at -20C prior to analysis				
Test Temperature		Site specific temperatures not reported				
Results Details		Approximate concentrations in mariculture (MS) and nonmariculture (NS) sediment (mg/kg dw) and corresponding concentrations fish samples (mg/kg ww): Site M1: 1 (MS), 1.5 (NS), 0.47 (snubnose pompano), 1.01 (orange-spotted grouper), 0.04 (red snapper); Site M2: 2.5 (MS), 2 (NS), 0.70 (snubnose pompano), 0.73 (orange-spotted grouper), 0.61 (red snapper); Site H1: ND (MS), ND (NS), 0.79 (orange-spotted grouper), 0.03 (red snapper); Site H2: <1 (MS), 2 (NS), 0.60 (orange-spotted grouper); Site H3: 1 (MS), 1.0 (NS), 0.28 orange-spotted grouper), 0.06 (red				
Analytical Method and Analytical Details		Preparation and measurements in sediment and fish samples were conducted following a method in a cited reference.; Analytical details described in Supplementary Materials, only available to authorized users.				
Transformation Products, Statistics, and Kinetics N		Not applicable; Analysis of the data was performed by two independent t tests, Wilcoxon rank sum test, one-way ANOVA, and Duncan's multiple range test ( $p < 0.05$ ); Not applicable				
Reference Substance and Re Substance Results	eference	Not applicable; Not applicable				

			EVALUATION				
Domain		Metric	Rating	Comments			
Domain 1: Test Substar	nce						
	Metric 1:	Test Substance Identity	Medium	The chemical of interest was identified by common acronym used for this phthalate ester; however the acronym was not defined in the paper.			
	Metric 2:	Test Substance Purity	Low	Field sample sources reported; analytical standard source and purity not reported.			
Domain 2: Test Design							
	Metric 3:	Study Controls	Medium	Procedural blanks were not included.			
	Metric 4:	Test Substance Stability	Medium	Sample storage and limited preparation details were reported.			
Domain 3: Test Conditi	ons						
	Metric 5:	Test Method Suitability	High	The monitoring study method was appropriate for the chemical of interest.			
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Study Citation:	Cheng, Z., Li, H China. Environ	Cheng, Z., Li, H. H., Yu, L., Yang, Z. B., Xu, X. X., Wang, H. S., Wong, M. H. (2018). Phthalate esters distribution in coastal mariculture of Hong Kong, China Environmental Science and Pollution Research 25(18):17321-17329						
<b>OECD Harmonized</b>	Miscellaneous		,					
Template:								
HERO ID:	4728634							
		E	EVALUATION					
Domain		Metric	Rating	Comments				
	Metric 6:	Testing Conditions	Medium	No environmental conditions were reported.				
	Metric 7:	Testing Consistency	N/A	This metric is not applicable to this type of study.				
	Metric 8:	System Type and Design	High	Field samples are assumed to be in dynamic equilibrium.				
Domain 4: Test Organis	sms							
Domain 1. Test Organi	Metric 9.	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study				
	Metric 10:	Sampling Methods	Low	Organism species were reported: specific details were not reported for individual				
				species.				
Domain 5: Outcome A	reasement							
Domain J. Outcome As	Metric 11.	Test Substance Identity	Low	The outcome assessment did not quantify accumulation or report numerical concentra				
	Methe 11.	Test Substance Identity	Low	tions in sediment.				
	Metric 12:	Test Substance Purity	High	Sampling focused on appropriate species with acceptable sample sizes, and processing was appropriate. The same tissues for fish were analyzed across species.				
Domain 6: Confoundin	g/Variable Control							
Domain 0. Comoundain	Metric 13.	Confounding Variables	N/A	This metric is not applicable to this type of study				
	Metric 14	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type				
		Exposure	1 011					
Domain 7. Data Presen	tation and Analysis	-						
Domain 7. Data Presen	Metric 15.	Data Reporting	Low	The analytical method was not reported, detail in SI which was not available				
	Metric 16:	Statistical Methods and	High	Statistical methods ware described				
	Methe 10.	Kinetic Calculations	Ingn	Statistical methods were described.				
		Kinetie Calculations						
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	Low	The results were reasonable however BCF values were not reported.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
				** ***				
<b>Overall Quali</b>	ty Determi	nation	Medium					

Study Citation:	Ebinghaus, R., Xie, Z. (2006). Occurrence and air/sea-exchange of novel organic pollutants in the marine environment. Journal de Physique IV					
OECD Harmonized	237. Miscellaneous					
Template:	Wilseenancous					
HERO ID:	1322127					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material	l	84-74-2; Dibutyl phthalate				
Confidentiality, Type, Gui	deline	None; Experimental; Experimental				
Solvent, Reactivity, Storag	ge, Stability	Hexane (residue analysis or HPLC grade); NR; NR; NR				
Radiolabel, Source, State, Purity		NR; Augsburg, Germany; 5-10 µg of neat chemicals were dissolved in 10mL hexane and diluted for stock solutions.; NR Notes: Stock solutions were remade every 6 months				
Test Method Details, Test Condition Details, and Test Consistency		Air was sampled with a high-volume air sampler holding a PUF/XAD-2 column. Water was sampled from below ships in the Atlantic Ocean and North Sea using an in-situ pump with a glass fiber filter followed by a PAD-2 column.; Not reported; Air samplers located on ships were placed using a discrete provide the provided of the sampler and the provided of the provided of the sampler and the provided of the provided o				
System Type Design		Blank samples were used to correct air and water concentrations.				
Sampling Frequency and Sampling Details		Not reported; Air sampling: flow rate 200 L/min; total volumes 400-1000m^3. Water samples: pump used was a modified Kiel In-Situ Pump (KISP), plastic parts were replaced with glass or stainless steel.				
Test Temperature		Water temperatures: 3.8-6.7°C				
Results Details		Air-sea vapor exchange flux: -60 to -686 ng/m <sup>2</sup> /day (negative value indicates deposition into water)				
Analytical Method and Analytical Details		GC-MS (Agilent 6890 N GC-5973 quadrupole mass selective detector); Instrument limit of detection: 0.3pg. Method limits: sea water (dissolved): 25 pg/L, sea water (total suspended matter): 30 pg/L; air (vapor): 5 pg/m^3; air (particle): 5 pg/m^3				
Transformation Products,	Statistics, and Kinetics	Not reported; Errors for flux measurements were 45%. DBP concentration range in North Sea: $0.45-6.6$ ng/L. Average vapor phase conc.: $0.53$ ng/m <sup>3</sup> ; average particle phase conc.: $0.53$ ng/m <sup>3</sup> ; Flux = Kol(Cw-Ca/H <sup>3</sup> ), where Kol is the mass transfer coefficient, Cw is the dissolved concentration, Ca is the vapor phase concentration, and H <sup>3</sup> is the dimensionless Henry's law constant.				
Reference Substance and I Substance Results	Reference	Not reported; Not reported				

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.		
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not directly reported but the omission is unlikely to impact the study results.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	All concentration measurements were blank corrected.		
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were clearly reported and appro- priate.		
Domain 3: Test Conditions						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Test conditions were reported and appropriate.		
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		contin	ued from pre	vious page				
Study Citation:	Ebinghaus, R., Xi	Ebinghaus, R., Xie, Z. (2006). Occurrence and air/sea-exchange of novel organic pollutants in the marine environment. Journal de Physique IV 139:211-						
OFCD Harmonized	237. Miscellaneous							
Template:	Wilseenancous							
HERO ID:	1322127							
		1	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 7:	Testing Consistency	High	Testing conditions were consistent across study groups.				
	Metric 8:	System Type and Design	High	The system design is appropriate for the study type.				
Domain 4 <sup>.</sup> Test Organis	ms							
Domain 1. Test organis	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.				
		1 0						
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	Sampling methods were clearly described and were appropriate.				
Domain 6: Confounding	g/variable Control	Confounding Variables	High					
	Metric 15:	Comounding variables	nigii	study results				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.				
		Exposure		11 7 71				
Domain 7. Data Dragant	tation and Analysia							
Domain 7. Data Fresent	Metric 15:	Data Reporting	High	The data reporting was appropriate for the study type				
	Metric 15:	Statistical Methods and	High	Statistical methods were clearly described and appropriate				
	Wetter 10.	Kinetic Calculations	Ingn	statistical methods were clearly described and appropriate.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The results are reasonable based on the results of other cited studies.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.				
Overall Ouali	Overall Auglity Determination High							
	y Determin	unun	111611					

Study Citation: EC	A, (2009). Data on manufacture, import, export, uses and releases of dibutyl phthalate (DBP) as well as information on potential alternatives to its			
	11			
OECD Harmonized Mi	ellaneous			
Template:				
HERO ID: 63	858			
	EXTRACTION			
Parameter	Data			
CASRN and Test Material	84-74-2; dibutyl phthalate			
Confidentiality, Type, Guideline	no; experimental; experimental			
Solvent, Reactivity, Storage, Sta	ity NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR			
Test Method Details, Test Condi	Field samples; wastewater from a large mixed urban area, an industrial area and a mostly residential area; NR			
Test Consistency				
Details System Type Design	ND			
System Type Design				
Test Temperature	, Details NR, NR			
Regulta Dataila	100 (7. 2000) reductions offluent concentrations 0.0.0.4 up/l, sludge concentrations of 0.02.1.2 molec sludge			
Results Details	01-98% reduction; effuent concentrations 0.0-0.4 ug/L; studge concentrations of 0.05-1.2 mg/kg studge			
Analytical Method and Analytic	Details NK; NK			
Transformation Products, Statist	and Kinetics NR; calculated average 84% reduction; NR			
Reference Substance and Refere	e NR; Not Reported			
Substance Results				

EVALUATION							
Domain		Metric	Rating	Comments			
Domain 1: Test Substa	nce						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.			
	Metric 2:	Test Substance Purity	N/A	The metric is not applicable to this study type.			
Domain 2: Test Design	1						
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.			
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.			
Domain 3: Test Condit	tions						
	Metric 5:	Test Method Suitability	Low	Details regarding this metric were not reported in the secondary source.			
	Metric 6:	Testing Conditions	Low	Details regarding this metric were not reported in the secondary source.			
	Metric 7:	Testing Consistency	Low	Details regarding this metric were not reported in the secondary source.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.			
Domain 4: Test Organisms							
	Metric 9:	Outcome Assessment Methodology	Low	Details regarding this metric were not reported in the secondary source.			
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		con	tinued from prev	vious page
Study Citation:	ECHA, (2009).	Data on manufacture, import, export, u	ises and releases	of dibutyl phthalate (DBP) as well as information on potential alternatives to its
OECD Harmonized	use. Miscellaneous			
Template:	1115 <b>ce</b> ntaneo as			
HERO ID:	6316858			
			EVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	sessment			
	Metric 11:	Test Substance Identity	Medium	Details regarding this metric were not reported in the secondary source.
	Metric 12:	Test Substance Purity	Low	Details regarding this metric were not reported in the secondary source.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	Medium	Details regarding this metric were not reported in the secondary source.
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.
		Exposure		
Domain 7: Data Present	ation and Analysis			
	Metric 15:	Data Reporting	Low	limited data were reported in the secondary source.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Details regarding this metric were not reported in the secondary source.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Qualit</b>	ty Determin	nation	Low	

\* Related References: Cites: Hoffmann. 1996. Massestrømsanalyse for phthalater [Substance flow analysis forphthalates]. Miljøprojekt nr. 320. Danish Environmental Protection Agency, Copenhagen.(In Danish)

Study Citation	Eana C. Lana V.	Shan D. (2015). Decredation and advantion behavior of dibutul atthelets in mother scale phase refuse. Environmental Environmental				
Study Citation:	and Management Journal 14(3):700-717					
<b>OECD Harmonized</b>	Miscellaneous	1 - (5) - (1) - (1)				
Template:						
HERO ID:	2914646					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		Not Reported; dibutyl phthalate				
Confidentiality, Type, Guide	eline	no; experimental				
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR				
Radiolabel, Source, State, P	Purity	NR; Tianjin Siyou Co. (Tianjin, China); NR; Reagent grade, >/= 99%				
Test Method Details, Test C Test Consistency Details	Condition Details, and	The system was comprised of a methanogenic reactor that received leachate from the landfill. The leachate was subjected to methanogenesis in the methanogenic reactor, after which it was recycled into the landfill. Leachate was continuously circulated between the landfill and the methanogenic reactor for 8 h daily using pumps with adjusted flow rates that varied with leachate volume during waste decomposition.; methanogenic phase refuse tests. moisture content: 20%, 40% and 60-80%; methanogenic phase refuse; % moisture = $62.3\% \pm 0.3$ ; Volatile Suspended Solids = $14.7\% \pm 0.3$ ; Specific surface area = $4.58 \pm 0.78 \text{ m}^2/\text{g}$ ; Biodegradable Materials = $13.4\% \pm 0.6$ ; population of microorganisms: $7.59\% \pm 0.07$ bacteria lg CFU/g, $6.72\% \pm 0.10$ fungi lg CFU/g, and $5.5\% \pm 0.09$ actinomycetes lg CFU/g; Redox enzyme activities: $434.5 \pm 48.6$ dehydrogenase (mg TF/g dw, 12 h), 14.2 $\pm 1.6$ hydrogen peroxidase (mL KMnO4/g dw, 1 h), and $4.9 \pm 1.2$ polyphenol oxidase (mg purple gall pigment/g dw, 2 h); not reported				
System Type Design		not reported				
Sampling Frequency and Sa	ampling Details	not reported; Analysis of the refuse indicated that the simulated landfill had completed the acidic phase and entered the methanogenic phase, and refuse samples collected on day 120 are defined as samples from the methanogenic phase.				
Test Temperature		varied				
Results Details		The half-life decreased by $35.85\%$ when dominant bacterial strains were added. For Inoculated samples: Rate constant = $0.0249$ /d and $t1/2 = 27.8$ days; for unsterilized samples: Rate constant = $0.016$ /days and $t1/2 = 43.3$ days. For 20%, 40%, 60%, and 80% moisture the rate constants and half-lives were $0.0095$ /d and 73 days, $0.0127$ /days and 54.6 days, $0.0160$ /days and 43.3 days, and $0.0202$ days and 34.3 days, respectively.				
Analytical Method and Ana	alytical Details	not reported; Not Reported				
Transformation Products, St	tatistics, and Kinetics	not reported; Different concentrations of DBP did not have obvious effects on its degradation.; optimal temperature ~30°C; optimal pH ~7.0				
Reference Substance and Re Substance Results	eference	sterilized refuse; half-life 5.9 higher than unsterilized refuse. Rate constant = $0.0027/day$ , $t1/2 = 256.7 days$				

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	High	The source or purity of the test substance was reported
Domain 2: Test Design				
-	Metric 3:	Study Controls	Medium	Some concurrent control group details were not included; however, the lack of data was not likely to have a substantial impact on study results.
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.

		continu	ed from previou	s page			
Study Citation:	Fang, C., Long, Y and Management	Fang, C., Long, Y., Shen, D. (2015). Degradation and adsorption behavior of dibutyl phthalate in methanogenic phase refuse. Environmental Engineering and Management Journal 14(3):709-717.					
<b>OECD Harmonized</b>	Miscellaneous						
Template:							
HERO ID:	2914646						
		ŀ	EVALUATION				
Domain		Metric	Rating	Comments			
Domain 3: Test Condition	ons						
	Metric 5:	Test Method Suitability	Medium	The test method was suitable for the test substance with minor deviations			
	Metric 6:	Testing Conditions	Medium	There were reported deviations or omissions in testing conditions (e.g., temperature was not constant or was not in a standard range for the test but, results can be extrapolated to approximate appropriate temperatures); however, sufficient data were reported to determine that the deviations and omissions were not likely to have a substantial impact on study results.			
	Metric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported, but these dis- crepancies were not likely to have a substantial impact on study results.			
	Metric 8:	System Type and Design	High	Equilibrium was established. The system type and design (i.e., static, semi-static, and flow-through; sealed, open) were capable of appropriately maintaining substance concentrations.			
Domain 4: Test Organis	Metric 0:	Outcome Assessment Methodology	Low	Incoulum source are not routingly used for similar study types			
	Metric 10.	Sampling Methods	N/A	The metric is not applicable to this study type			
	metrie 10.	Sumpring Methods	10/11	The metho is not appreade to and study type.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	Medium	There was incomplete reporting of outcome assessment methods; however, such differ- ences or absence of details were not likely to be severe or have a substantial impact on the study results.			
	Metric 12:	Test Substance Purity	Low	Details regarding sampling methods of the outcome(s) were not fully reported, and the omissions were likely to have a substantial impact on study results			
Domain 6: Confounding	Wariable Control						
	Metric 13.	Confounding Variables	High	Sources of variability and uncertainty in the measurements and statistical techniques			
	Wette 13.	contounding variables	mgn	and between study groups (if applicable) were considered and accounted for in data evaluation			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Domain 7. Data Data	totion and Arralars'						
Domain /: Data Present	Metric 15.	Data Reporting	Low	There was insufficient evidence presented to confirm that parent compound disappear			
	within 15.	Data Reporting	LUW	ance was not likely due to some other process			
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetic calculations were not clearly described			
Domain 8: Other							
		Contin	ued on next page				

continued from previous page					
Study Citation:	Fang, C., Long, Y., Shen, D. (2015). Degradation and adsorption behavior of dibutyl phthalate in methanogenic phase refuse. Environmental Engineering and Management Journal 14(3):709-717.				
OECD Harmonized	Miscellaneous				
Template:					
HERO ID:	2914646				
EVALUATION					
Domain		Metric	Rating	Comments	
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable	
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.	
<b>Overall Quality Determination</b>		Medium			

Study Citation: OECD Harmonized Template:	Fauser, P., Vikelsoe, J., Sorensen, P. B., Carlsen, L. (2003). Phthalates, nonylphenols and LAS in an alternately operated wastewater treatment plant–fate modelling based on measured concentrations in wastewater and sludge. Water Research 37(6):1288-1295. Miscellaneous					
HERO ID:						
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, Type, Guide	eline	None; Experimental; Experimental				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, Purity		NR; WWTP in Roskilde municipality, Denmark; NR; NR				
Test Method Details, Test Condition Details, and Test Consistency		Not reported; Treatment plant used grating, primary settling, a sludge digestion reactor, anaerobic reactors for propagating phosphorus assimilating bacteria, anoxic denitrifying reactors, aerobic nitrifying reactors, and a secondary settler.; Reported concentrations were corrected by blanks values.				
System Type Design		Over a 4h period, the order and/or inclusion of the anoxic denitrifying (D) and aerobic nitrifying (N) reactors was changed.				
Sampling Frequency and Sampling Details		Six composite samples were collected daily.; Samples were collected after the intake grate and outlet. 80mL were pumped every half hour for 4h.				
Test Temperature		Not reported				
Results Details		DBP removal could not be calculated as it was not detected in most of the inlet samples.				
Analytical Method and Analytical Details		High-resolution GC/MS; DCM extracts were analyzed.				
Transformation Products, Statistics, and Kinetics		Not Reported; Not reported; Not reported				
Reference Substance and Reference Substance Results		Not reported; Not reported				

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substar	ice				
	Metric 1:	Test Substance Identity	High	Test substance identified using common nomenclature.	
	Metric 2:	Test Substance Purity	High	The source of the test substance was reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	High	Concentrations were corrected using blank samples.	
	Metric 4:	Test Substance Stability	High	Some details regarding the storage of the test substance after sampling were not reported but the omission is not likely to have a substantial impact on the study results.	
Domain 3: Test Conditions					
	Metric 5:	Test Method Suitability	High	The test method was suitable.	
	Metric 6:	Testing Conditions	Medium	Some of the test conditions were not reported.	
	Metric 7:	Testing Consistency	High	No differences between sampling groups were reported.	
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.	

Domain 4: Test Organisms

continued from previous page						
Study Citation:	Fauser, P., Vikelsoe, J., Sorensen, P. B., Carlsen, L. (2003). Phthalates, nonylphenols and LAS in an alternately operated wastewater treatment plant-fate					
OFCD Hormonized	modelling based on measured concentrations in wastewater and sludge. Water Research 37(6):1288-1295.					
Templete.	Miscellaneous					
HERO ID:	679494					
	EVALUATION					
Domain		Metric	Rating	Comments		
	Metric 9:	Outcome Assessment Methodology	Medium	The treatment process was described sufficiently but some details were not reported.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.		
Domain 5: Outcome As	sessment					
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for the endpoint of interest.		
	Metric 12:	Test Substance Purity	High	The sampling methods were reported and appropriate.		
Domain 6: Confounding	v/Variable Control					
Domain of Comounding	Metric 13:	Confounding Variables	High	Uncertainty was accounted for in the measurements.		
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to this study type.		
		Exposure				
Domain 7: Data Present	ation and Analysis					
	Metric 15:	Data Reporting	High	The mass balances were reported.		
	Metric 16:	Statistical Methods and	High	Statistical methods and kinetic calculations were reported.		
		Kinetic Calculations				
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	High	The results were reasonable based on reported results from other studies.		
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.		
Overall Quality Determination High						

Study Citation:	Gani, K. M., Kazmi, A. A. (2016). Comparative assessment of phthalate removal and risk in biological wastewater treatment systems of developing					
OECD Harmonized	countries and small communities. Science of the Total Environment 569-570:661-671. Miscellaneous					
Template: HERO ID:	3350189					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, Type, Guideline		None; Experimental; Experimental				
Solvent, Reactivity, Storage	, Stability	NA; NR; 4°C in amber glass bottles; NR				
Radiolabel, Source, State, Purity		NA; 3 WWTPs in India; NA; NA				
Test Method Details, Test Condition Details, and Test Consistency		Study collected influent and effluent samples from WWTPs in India to determine removal efficiency and seasonal influences to removal of the test substance.; HRT in UASB: 10.2 hoursHRT in polishing pond: 24 hr; Not reported				
Details System Type Design		Un flow anaerobic sludge blanket, nost treatment by polishing pond: grit chamber, UASB (sludge sump, sludge drying bed), polishing pond, final				
System Type Design		effluent				
Sampling Frequency and Sampling Details		October 2014 to September 2015, monthly; Samples collected from untreated sewage sump., outlet of primary settling tank and bioreactor; sludge samples collected from sludge wastage flow line. Samples collected directly with storage bottles or stainless steel buckets				
Test Temperature		Winter (November to March): 18±4°C				
Results Details		Test substance removal fate (UASB):Sorption: approx. 3%Biotransformation: approx. 60%Effluent: approx. 37%Overall removal with pond: approx. 98%November - March UASB percentage removal: approx. 18 - 85%April - October UASB percentage removal: approx58% to 100%November - March Pond percentage removal: approx18% to 100%April - October Pond percentage removal: approx. 55% to 100%				
Analytical Method and Analytical Details		Varian 450 GC with Varian 240 MS; LOD 0.130 ug/L, LOQ 0.182 ug/L; Liquid samples extracted 3x following US EPA method 606, into hexane:DCM, dried with anhydrous sodium sulfate, concentrated, and cleaned by column; sludge samples extracted on rotary shaker into n-hexane:DCM, filtered, and concentrated: 95% recovery				
Transformation Products, St	tatistics, and Kinetics	Not reported; Not reported; Not applicable				
Reference Substance and Reference Substance Results		Not reported; Not reported				

EVALUATION								
Domain		Metric	Rating	Comments				
Domain 1: Test Substan	ce							
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.				
	Metric 2:	Test Substance Purity	High	The sample source was reported, the analytical standard source and purity was reported.				
Domain 2: Test Design								
	Metric 3:	Study Controls	Medium	Analytical blanks were included, field blanks were not explicitly included.				
	Metric 4:	Test Substance Stability	High	Sample preparation and storage conditions were reported.				
Domain 3: Test Conditions								
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	High	WWTP operational stages and conditions were reported.				
	Metric 7:	Testing Consistency	High	Samples were collected, analyzed, and processed consistently.				
Continued on next page								
		continu	led from pre	vious page				
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Study Citation:	Gani, K. M., Kaz	Gani, K. M., Kazmi, A. A. (2016). Comparative assessment of phthalate removal and risk in biological wastewater treatment systems of developing						
OECD Harmonized Template:	Miscellaneous	Miscellaneous						
HERO ID:	3350189							
		F	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.				
Domain 4: Test Organis	ms							
C	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	aggment							
Domain 5. Outcome As	Metric 11.	Test Substance Identity	High	The outcome assessment methodology addressed the outcomes of interest				
	Metric 12:	Test Substance Purity	High	Sampling methods addressed the outcomes of interest and used accepted approaches				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	High	Variability and uncertainty in the measurements was addressed.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7: Data Present	ation and Analysis							
	Metric 15:	Data Reporting	Medium	Data was primarily reported graphically, values are estimated from the figures. Limit of detection, limit of quantification, and percent recovery were reported, the analytical method was appropriate.				
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical methods were not explicitly described.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The results were reasonable and trends were comparable to previous studies.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
<b>Overall Qualit</b>	ty Determina	ation	High					

Study Citation:	Gao, D., Li, Z., Wen, Z., Ren, N. (2014). Occurrence and fate of phthalate esters in full-scale domestic wastewater treatment plants and their impact on						
OECD Harmonized	receiving waters along the Songhua River in China. Chemosphere 95:24-32. Miscellaneous						
HERO ID:	1987643						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl phthalate					
Confidentiality, Type, Guid	leline	None; Experimental; Experimental					
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR					
Radiolabel, Source, State,	Purity	NR; Wastewater contaminant; NR; Analytical standard: Sigma-Aldrich Notes: DBP					
Test Method Details, Test Condition Details, and Test Consistency Details		Three full-scale wastewater treatment plants operating different treatment processes: Cyclic Activated Sludge Technology (CAST) process; Anoxic/Oxic (A/O) process and Anaerobic/Anoxic/Oxic (A/A/O) process; WWTP #1: Indoor CAST process: influent sewage treated by pri- mary sedimentation and a sequence of biological selectors, then enters CAST bioreactor tanks with 6h intermittent aeration cycle (1.5h feeding, 3h aeration, and 1.5h settlement): WWTP #2: A/O process: 8h of bydraulic retention time and 19d of sludge retention time					
System Type Design		WWTP #3: A/A/O process: 9.5h hydraulic retention time and 17d sludge retention time.					
Sampling Frequency and S	ampling Details	Not reported; Aqueous samples extracted via standard liquid phase extraction method 8061, U.S. EPA; Sediment/sludge samples dried and ex- tracted with hexane in a mechanical shaker and purified					
Test Temperature		WWTP #1: 5.6-5.9°C WWTP #2: 3.9-4.1°C WWTP #3: 4.6-5.0°C					
Results Details		Removal efficiency WWTP $#1 = 53\%$ ; WWTP $#2 = 85\%$ ; WWTP $#3$ ca. 60%; 53–85% of DBP effectively removed from the aqueous phase by three different treatment processes					
Analytical Method and Analytical Details		GC-MS; Instrumental limits of detection (LOD) were calculated from the signal-to-noise ratio of 3 for the pure standard solutions injected into the column. Recovery: 96%					
Transformation Products, S	Statistics, and Kinetics	Not reported; Not reported; Occurrence WWTPs: Influent 8.73-24.46, mean = $14.34 \text{ ng/mL}$ ; Effluent: $3.47-4.13$ , mean = $3.79 \text{ ng/mL}$ ; Sludge: $537.37-1935.12$ , mean = $1026.78 \text{ ng/g}$ ; occurrence receiving surface water: $1.69-11.81$ , mean = $5.12 \text{ ng/L}$ , sediment $58.14-881.18$ , mean $268.56 \text{ ng/g}$					
Reference Substance and R Substance Results	Reference	Not reported; Not reported					

EVALUATION							
Domain		Metric	Rating	Comments			
Domain 1: Test Substance	e						
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.			
	Metric 2:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.			
Domain 2: Test Design							
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.			
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.			
Domain 3: Test Conditio	ns						
	Metric 5:	Test Method Suitability	High	This metric met the criteria for high confidence as expected for this type of study.			
	Metric 6:	Testing Conditions	High	This metric met the criteria for high confidence as expected for this type of study.			
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to this study type.			
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		continu	ed from pre	vious page					
Study Citation:	Gao, D., Li, Z., W receiving waters a	Gao, D., Li, Z., Wen, Z., Ren, N. (2014). Occurrence and fate of phthalate esters in full-scale domestic wastewater treatment plants and their impact on receiving waters along the Songhua River in China. Chemosphere 95:24-32.							
<b>OECD Harmonized</b>	Miscellaneous	Miscellaneous							
Template:									
HERO ID:	1987643								
		E	VALUATIO	N					
Domain		Metric	Rating	Comments					
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.					
Domain 4: Test Organis	sms								
-	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.					
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.					
Domain 5: Outcome As	ssessment								
	Metric 11:	Test Substance Identity	High	This metric met the criteria for high confidence as expected for this type of study.					
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.					
Domain 6: Confoundin	g/Variable Control								
Domain o. Comountain	Metric 13:	Confounding Variables	N/A	The metric is not applicable to this study type.					
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.					
		Exposure		11 771					
Domain 7: Data Presen	tation and Analysis								
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.					
	Metric 16:	Statistical Methods and	N/A	The metric is not applicable to this study type.					
		Kinetic Calculations							
Domain 8: Other									
	Metric 17:	Verification or Plausibility of	High	This metric met the criteria for high confidence as expected for this type of study.					
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.					
Overall Ouali	ty Determin	ation	High						
	ij Determini	<b>u</b> 11011	Ingn						

Study Citation:	Huang, R., Wang, Z., Liu, G., Luo, Q. (2013). Removal efficiency of environmental endocrine disrupting chemicals pollutants-phthalate esters in northern						
OECD Harmonized	WWIP. Advanced Miscellaneous	WWTP. Advanced Materials Research 807-809:694-698. Miscellaneous					
Template: HERO ID:	2347150						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl phthalate					
Confidentiality, Type, Guide	eline	None; Experimental; Experimental					
Solvent, Reactivity, Storage	, Stability	NR; NR; NR					
Radiolabel, Source, State, P	urity	NR; WWTP influent; NR; NR Notes: standard stock solutions for analytical methods prepared from purchased standard material as certified solu-					
Test Method Details, Test Condition Details, and Test Consistency		tions. WWTP operating conventional activated sludge processes; Influent concentration of DBP = 21.01 $\mu$ g/L; Not reported					
Details System Type Design		WWTP in China					
Sampling Frequency and Sa	mpling Details	grab samples collected in glass containers with Teflon cap liners; sample points were located at influent of aerated grit chamber, effluent of primary sedimentation tank, outflow of secondary sedimentation tank and four sample sites in advanced treatment process					
Test Temperature		Not reported					
Results Details		Overall conventional activated sludge process removal rate for $DBP = 90.10\%$ ; primary and secondary treatment removal rates for $DBP$ were 25.51% and 86.71%, respectively.					
Analytical Method and Analytical Details		GC; Not reported					
Transformation Products, St	tatistics, and Kinetics	Not reported; Not reported; DBP effluent concentration after aerated grit chamber = 15.65 $\mu$ g/L; effluent concentration after A/O aerobic tank = 2.08 $\mu$ g/L					
Reference Substance and Re Substance Results	eference	Not reported; Not reported					

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substand	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.		
	Metric 2:	Test Substance Purity	High	Analytical standards used.		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	This metric does not apply to this study type.		
	Metric 4:	Test Substance Stability	N/A	This metric does not apply to this study type.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	N/A	This metric does not apply to this study type.		
	Metric 6:	Testing Conditions	Medium	This metric met the criteria for high confidence as expected for this type of study.		
	Metric 7:	Testing Consistency	N/A	This metric does not apply to this study type.		
	Metric 8:	System Type and Design	N/A	This metric does not apply to this study type.		

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Study Citation:	Huang, R., Wang,	Huang, R., Wang, Z., Liu, G., Luo, Q. (2013). Removal efficiency of environmental endocrine disrupting chemicals pollutants-phthalate esters in northern							
OECD Harmonized	WWTP. Advanced Miscellaneous	WWTP. Advanced Materials Research 807-809:694-698. Miscellaneous							
Template:	2347150								
	2347130			<b>N</b> 7					
Domain		Metric	VALUATIO Poting	N Comments					
Domain 4: Test Organis	sms	Metric	Katilig	comments					
Domain 4. Test Organis	Metric 9:	Outcome Assessment Methodology	N/A	This metric does not apply to this study type.					
	Metric 10:	Sampling Methods	N/A	This metric does not apply to this study type.					
Domain 5: Outcome As	ssessment								
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.					
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.					
Domain 6: Confoundin	g/Variable Control								
	Metric 13:	Confounding Variables	N/A	This metric does not apply to this study type.					
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric does not apply to this study type.					
Domain 7: Data Presen	tation and Analysis								
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.					
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	This metric does not apply to this study type.					
Domain 8: Other									
	Metric 17:	Verification or Plausibility of	High	This metric met the criteria for high confidence as expected for this type of study.					
	Metric 18:	QSAR Models	N/A	This metric does not apply to this study type.					
Overall Quali	ty Determin	ation	High						

Study Citation:	IOP, (2017). Removal efficiency of polycyclic aromatic hydrocarbons and phthalate esters by surface flow wetland in Shunyi district, Beijing. IOP Conference Series-Earth and Environmental Science 59(1):012041.						
OECD Harmonized	Miscellaneous						
Template:							
HERO ID:	5432997						
		EXTRACTION					
Parameter		Data					
CACDN							
		84-74-2; Dibuyi prinalate					
Confidentiality, Type, Guidelin	ne	None; Experimental; Experimental					
Solvent, Reactivity, Storage, S	Stability	NK; NK; NK					
Radiolabel, Source, State, Pur	ity	NR; NR; NR					
Test Method Details, Test Con	ndition Details, and	Surface flow wetland system was used to treat industrial wastewater and domestic sewage.; not reported; not reported					
Test Consistency							
Details System Type Design		17.3 hm2, containing 2 stabilization ponds, 8 grade series SFWs and 1 water storage pond.					
Sampling Frequency and Sam	pling Details	influent and effluent: not reported					
Test Temperature		not applicable					
Results Details		80% removal rate					
Analytical Method and Analytical Details		GC-MS: Detection limits: 0.10-0.40 ng/L: Recovery rates: 85.2-96.3%					
Transformation Products, Stat	istics, and Kinetics	not reported: initial concentration of 7998 1 ug/L, reduced to 1430 7 ug/L. The main mechanism for the removal by heterotrophic microorganisms					
Reference Substance and Refe	erence	not applicable: Not Reported					
Substance Results	· · · · -	TI TO					

			EVALUATION	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The test substance source was not reported		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.		
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was appropriate for the test substance.		
	Metric 6:	Testing Conditions	Medium	There were omissions in testing conditions; however, sufficient data were reported to determine that the deviations and omissions were not likely to have a substantial impact on study results.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent.		
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.		
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		continu	ied from pre	vious page					
Study Citation:	IOP, (2017). Ren Conference Series	IOP, (2017). Removal efficiency of polycyclic aromatic hydrocarbons and phthalate esters by surface flow wetland in Shunyi district, Beijing. IOP Conference Series-Earth and Environmental Science 59(1):012041.							
OECD Harmonized	Miscellaneous	Miscellaneous							
Template: HERO ID:	5432997								
				N					
Domain		Metric	Rating	Comments					
Domain 4: Test Organis	sms		27/4						
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.					
	Metric 10.	Sampling Methods	IN/A	The metric is not applicable to this study type.					
Domain 5: Outcome As	sessment								
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.					
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.					
Domain 6: Confounding	y/Variable Control								
	Metric 13:	Confounding Variables	Medium	Sources of variability were not addressed; however the omissions were not likely to have a substantial impact on study results.					
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.					
Domain 7: Data Present	tation and Analysis								
2011111 / 2011 - 10001	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery were re- ported.					
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.					
Domain 8: Other									
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.					
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.					
<b>Overall Qualit</b>	ty Determina	ation	High						

## PUBLIC RELEASE DRAFT May 2025 Miscellaneous

Study Citation: OECD Harmonized	Jacobs, L. W., Zabik, M. J. (1983). Importance of sludge-borne organic chemicals for land application programs. :418. Miscellaneous					
Template:						
HERO ID:	5490434					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		Not Reported; di-n-butylphthalate				
Confidentiality, Type, Guide	eline	None; experimental; experimental				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	urity	None; NR; NR				
Test Method Details, Test C	condition Details, and	Sewage sludge samples were collected form 204 municipal wastewater treatment plants in Michigan.; not applicable; not applicable				
Test Consistency						
Details System Type Design		not applicable				
System Type Design Sampling Frequency and Sa	umpling Details	lune - December 1080: 2 samples collected from each treatment plant				
Test Temperature	unphing Details	not applicable				
Pesulta Dataila		not applicable				
Analytical Mathed and Analytical Dataila		CC: extracted with methylene ableride				
Anarytical Method and Anarytical Details OC, extracted with methylene chloride		oc, extracted with inclusive children wight median 17.3 media day weight not applicable				
Deference Substance 1 D	ausues, and Kinetics	not application, incar 104 mg/kg ury weight, incutan 17.5 mg/kg ury weight, not application				
Substance Desults	elerence	noi applicable; noi keported				
Substance results						

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Test Substan	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	Medium	The test substance source or purity were not reported; however, the omissions or identi- fied impurities were not likely to have a substantial impact on the study results.
Domain 2: Test Design	L			
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
Domain 3: Test Condit	ions			
	Metric 5:	Test Method Suitability	Uninformative	Only Effluent concentrations reported; Influent concentrations not reported; WWTP type(s) not reported.
	Metric 6:	Testing Conditions	N/A	Not applicable (monitoring study).
	Metric 7:	Testing Consistency	N/A	Not applicable (monitoring study).
	Metric 8:	System Type and Design	Uninformative	WWTP type(s) not reported.

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Study Citation: OECD Harmonized Template:	Jacobs, L. W., Zal Miscellaneous	Jacobs, L. W., Zabik, M. J. (1983). Importance of sludge-borne organic chemicals for land application programs. :418. Miscellaneous						
HERO ID:	5490434							
			EVALUATION					
Domain		Metric	Rating	Comments				
Domain 4: Test Organis	sms							
	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.				
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.				
Domain 5: Outcome As	ssessment							
	Metric 11:	Test Substance Identity	N/A	Not applicable (monitoring study).				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed.				
Domain 6: Confoundin	g/Variable Control							
Domain of Comoundary	Metric 13:	Confounding Variables	N/A	Not applicable (monitoring study).				
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to this type of study.				
		Exposure						
Domain 7: Data Presen	tation and Analysis							
Domain 7. Data Presen	Metric 15:	Data Reporting	Medium	The target chemical and transformation product(s) concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.				
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	Not applicable (monitoring study).				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible				
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.				
<b>Overall Quali</b>	ty Determin	ation	Uninformative					

Study Citation: Li	Lin, L., Dong, L., Meng, X., Li, Q., Huang, Z., Li, C., Li, R., Yang, W., Crittenden, J. (2018). Distribution and sources of polycyclic aromatic hydrocarbons				
OECD Harmonized M	And phinanc acid esters in water and surface sediment from the Three Gorges Reservoir. Journal of Environmental Sciences 69:2/1-280.				
Template:					
HERO ID: 55	576760				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2. Di-n-butyl obthalate			
Confidentiality Type Guideline	٩	None: Experimental: Experimental			
Solvent Reactivity Storage St	ability	ND. ND. ND			
Padiolabel Source State Durit	w	No. Fue intermediate samples from Vanetza Diver, Accustondard Inc. (USA); ND: 00% Notes: Standard mixed solution of 6 target DAEs: DMD			
Radiolabel, Source, State, 1 uni	.y	DEP DRP RRP DEHP DNOP			
Test Method Details, Test Cond	lition Details, and	Surface water and surface sediment samples collected from tributaries of the Yangtze River in June 6–13 (water drawdown period) and December			
Test Consistency		14–21 (water impoundment period) in 2015; Not applicable; Not applicable			
Details					
System Type Design		Not applicable			
Sampling Frequency and Sampl	ling Details	June 6–13; December 14–21; Water samples extracted using SPE; sediment samples cleaned up using a glass chromatography column			
Test Temperature		Not reported			
Results Details		From graph - water: 12.1–724.2 ng/L Sediment: 82.9–4046.2 ng/g			
Analytical Method and Analytic	cal Details	GC-MS; Recoveries for water sample 86.9%-110.1%, sediment samples			
Transformation Products, Statis	stics, and Kinetics	Not applicable; Not applicable; Not applicable			
Reference Substance and Reference		Not applicable; Not applicable			

			EVALUATIO	N	
Domain		Metric	Rating	Comments	
Domain 1: Test Subs	tance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
	Metric 2:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.	
Domain 2: Test Desig	gn				
	Metric 3:	Study Controls	Medium	No analytical controls were reported but the omission is unlikely to have a substantial impact on the study results.	
	Metric 4:	Test Substance Stability	High	Sample storage conditions and processing were reported and appropriate.	
Domain 3: Test Cond	litions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	Medium	No environmental conditions or sample characteristics were reported.	
	Metric 7:	Testing Consistency	High	Samples were collected, processed, and analyzed consistently.	
	Metric 8:	System Type and Design	High	Field studies are assumed to be in dynamic equilibrium.	

Domain 4: Test Organisms

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Study Citation:	Lin, L., Dong, L., Meng, X., Li, Q., Huang, Z., Li, C., Li, R., Yang, W., Crittenden, J. (2018). Distribution and sources of polycyclic aromatic hydrocarbons						
OECD Harmonized	Miscellaneous	Miscellaneous					
HERO ID:	5576760						
		E	VALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.			
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	Low	Quantitative partition coefficients can not be reliably calculated from the data.			
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	N/A	This metric is not applicable to this type of study.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.			
Domain 7: Data Present	tation and Analysis						
	Metric 15:	Data Reporting	Low	Analytical detection limits omitted; concentrations reported in charts are not precise measurements needed to calculate partition coefficients.			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	This metric met the criteria for high confidence as expected for this type of study.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, the data is of limited/no capacity for informing environmen- tal partitioning.			
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.			
Overall Quali	ty Determin	ation	Low				

Study Citation:	Liu, H., Chu, Y., F	Fang, C. (2016). Removal of phthalic acid diesters in the municipal solid waste incineration plant leachate treatment process. Environ-				
OECD Harmonized	mental Engineering and Management Journal 15(9):2127-2133. Miscellaneous					
Template: HFRO ID:	5433350					
	5455550					
_		EXTRACTION				
Parameter		Data				
CASRN and Test Material		Not Reported; di-n-butyl phthalate				
Confidentiality, Type, Guid	leline	None; experimental; experimental				
Solvent, Reactivity, Storag	e, Stability	not reported; not reported; not reported; not reported				
Radiolabel, Source, State,	Purity	none; Tianjin Siyou Co. (Tianjin, China); not reported; >/= 99% Notes: DBP				
Test Method Details, Test	Condition Details, and	leachate treatment process.; raw leachate pH 5.92; DBP 250.5 ug/L initial concentration; BIO: Up-flow Anaerobic Sludge Blanket (UASB)- 7 day				
Test Consistency		hydraulic retention time; Membrane Bioreactor (MBR)- 3 day hydraulic retention time; Not Reported				
Details						
System Type Design		system included - raw leachate adjusting pool (ADJ), biochemical pool (BIO), ultrafiltration membrane unit (UFM), reverse osmosis membrane unit (ROM)				
Sampling Frequency and S	ampling Details	sample points at ADJ, BIO, UFM, ROM; glass bottle collection, preconditioned activated cartridges				
Test Temperature		not reported				
Results Details		64.0%, 7.0%, 27.1% removal for BIO, UFM, ROM units, respectively. Total removal 98.3%				
Analytical Method and Analytical Details		HPLC/UV; 84.2-98.7% recovery; 0.1 ug/L detection limit				
Transformation Products, S	Statistics, and Kinetics	not reported; 3 samples/sampling point; COD, BOD5, SS removal efficiencies 94.7%, 95.6%, 8.3%, respectively.				
Reference Substance and F	Reference	not reported; not reported				
Substance Results						

EVALUATION							
Domain		Metric	Rating	Comments			
Domain 1: Test Substa	ince						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.			
Domain 2: Test Design	1						
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.			
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.			
Domain 3: Test Condit	tions						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	Medium	There were omissions in testing conditions; however, sufficient data were reported to determine that the deviations and omissions were not likely to have a substantial impact on study results.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent.			
	Continued on next page						

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Dibutyl Phthalate Miscellaneous HERO ID: 5433350 Table: 1 of 1 ... continued from previous page **Study Citation:** Liu, H., Chu, Y., Fang, C. (2016). Removal of phthalic acid diesters in the municipal solid waste incineration plant leachate treatment process. Environmental Engineering and Management Journal 15(9):2127-2133. **OECD Harmonized** Miscellaneous **Template: HERO ID:** 5433350 **EVALUATION** Domain Metric Rating Comments Metric 8: System Type and Design N/A The metric is not applicable to this study type. Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology N/A The metric is not applicable to this study type. Metric 10: Sampling Methods N/A The metric is not applicable to this study type. Domain 5: Outcome Assessment Metric 11: Test Substance Identity Medium there was incomplete reporting of outcome assessment methods; however, such differences or absence of details were not likely to be severe or have a substantial impact on the study results. Metric 12: Test Substance Purity High The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed. Domain 6: Confounding/Variable Control Metric 13: Confounding Variables N/A none reported Metric 14: Health Outcomes Unrelated to N/A The metric is not applicable to this study type. Exposure Domain 7: Data Presentation and Analysis Metric 15: Data Reporting High The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported. Statistical Methods and Metric 16: High Statistical methods or kinetic calculations were clearly described and address the dataset(s). Kinetic Calculations Domain 8: Other Metric 17: Verification or Plausibility of Medium The study results were reasonable. Results Metric 18: QSAR Models N/A The metric is not applicable to this study type.

PUBLIC RELEASE DRAFT May 2025

**Overall Quality Determination** 

NEED TO FIX

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Study Citation:	Y Citation: Ma, T. T., Wu, L., Chen, L., Zhang, H., Teng, Y., Luo, Y. M. (2015). Phthalate esters contamination in soils and vegetables of plastic film greenhous suburb Nanjing, China and the potential human health risk. Environmental Science and Pollution Research 22(16):12018-12028.				
OECD Harmonized	Miscellaneous	•			
Template:					
HERO ID:	3016266				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; Di-n-butyl phthalate			
Confidentiality, Type, Guid	leline	None; Experimental; Experimental			
Solvent, Reactivity, Storage	e, Stability	NR; NR; Soil and vegetable samples stored at $-20^{\circ}$ C; NR			
Radiolabel, Source, State, Purity		NR; Field samples; Analytical standard: AccuStandard Incorporation (New Haven, Connecticut, USA); NR; NR Notes: Mixed standard solution of six target pollutants including DMP, DEP, butyl benzyl phthalate (BBP), di-n-butyl phthalate (DBP), bis(2-ethylhexyl) phthalate (DEHP), and DrOB			
Test Method Details, Test Condition Details, and Test Consistency Details		Soil and vegetable samples collected from plastic film greenhouses in 4 suburban areas of Nanjing, China: Gu Li village (GL), Hu Shu village (HS), Planck farm (PLK), and Suo Shi village (SS); Average pH of soils = 7.4, mean $OC = 14.6$ g/kg; available nitrogen, phosphorus, and potassiumwere 9.68, 1.44, and 10.28 g/kg, respectively; Not applicable			
System Type Design		sample processing cited to another source.			
Sampling Frequency and S	ampling Details	samples were collected in December 2011; soil samples collected with a soil corer; plants samples selected randomly for five fruit and compared after one quarter of each fruit was cut and mixed; edible parts were collected, washed with tap water, rinsed with distilled water and freeze-dried.			
Test Temperature		Not reported			
Results Details		DBP Conc ( $\mu g/kg$ )Soil1: 456 $\pm 2$ Chinese cabbage/leafy: 1403 $\pm 6$ Soil2: 514 $\pm 2$ Garlic bolt/leafy: 877 $\pm 15$ Soil3: 496 $\pm 2$ Asparagus lettuce/stem: 1387 $\pm 29$ Soil4: 486 $\pm 2$ Crown daisy chrysanthemum/leafy: 1183 $\pm 12$ Soil5: 420 $\pm 2$ Pakchoi/leafy: 210.8 $\pm 10$ Soil6: 399 $\pm 1$ Bovine heart shaped cabbage/leafy: 277 $\pm 0$ Soil7: 329 $\pm 1$ Ternip/root: 140 $\pm 21$ Soil8: 334 $\pm 1$ Pakchoi/leafy: 573 $\pm 12$ Soil9: 414 $\pm 1$ Celery/leafy: 460 $\pm 29$ Soil10: 488 $\pm 2$ Spinach/leafy: 537 $\pm 6$ Soil11: 496 $\pm 2$ Asparagus lettuce/stem: 900 $\pm 21$ Soil12: 436 $\pm 2$ Cayenne/solanaceous: 527 $\pm 0$ Soil13: 466 $\pm 2$ Pakchoi/leafy: 173 $\pm 10$ Soil14: 452 $\pm 2$ Florists chrysanthemum leaf/leafy: 630 $\pm 31$ Soil15: 524 $\pm 2$ Pakchoi/leafy: 553 $\pm 23$ Soil16: 543 $\pm 2$ Chinese cabbage/leafy: 277 $\pm 10$ Soil17: 512 $\pm 2$ Garlic bolt/leafy: 797 $\pm 21$ Soil18: 494 $\pm 2$ Chinese cabbage/leafy: 53 $\pm 10$ Soil19: 463 $\pm 38$ Pakchoi/leafy: 163 $\pm 10$			
Analytical Method and Analytical Details		GC-MS according to a modified version of USEPA method 8270C with an Agilent 7890GC 5975 MSD. Concentrations under the LOD assumed to be one third of that value.; two whole procedure blanks, two soil matrix blanks, and one CRM 136- 100 were analyzed to ensure the analysis reliability			
Transformation Products, Statistics, and Kinetics		Not applicable; Each value is the mean of three replicates $\pm$ SD. All data were processed with Microsoft Excel 2003 and the SPSS v.14.0 software package. Level of significance p <0.05; Not applicable			
Reference Substance and Reference Substance Results		Not applicable; Not applicable			

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	Source of analytical standard was reported; purity of mixed standard was not reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	Analytical controls were reported.		
Continued on next page						

		contin	ued from pre-	vious page				
Study Citation:	Ma, T. T., Wu, L suburb Nanjing, (	Ma, T. T., Wu, L., Chen, L., Zhang, H., Teng, Y., Luo, Y. M. (2015). Phthalate esters contamination in soils and vegetables of plastic film greenhouses of suburb Nanjing, China and the potential human health risk. Environmental Science and Pollution Research 22(16):12018-12028.						
OECD Harmonized	Miscellaneous	Miscellaneous						
Template:								
HERO ID:	3016266							
		]	EVALUATIO	N				
Domain	Metric Rating Comments			Comments				
	Metric 4:	Test Substance Stability	High	Sample storage conditions and processing were reported and appropriate.				
Domain 3: Test Conditi	ons							
Domain 5. Test Conditi	Metric 5:	Test Method Suitability	Medium	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	Medium	Some soil characteristics were reported.				
	Metric 7:	Testing Consistency	High	Samples were collected, processed, and analyzed consistently.				
	Metric 8:	System Type and Design	High	Field studies are assumed to be in dynamic equilibrium.				
Domain 4: Test Organis	sms							
	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.				
	Metric 10:	Sampling Methods	Medium	Plant characteristics were not reported.				
Domain 5: Outcome As	a a com an t							
Domain 5. Outcome As	Metric 11	Test Substance Identity	Medium	Quantitative partition coefficients were not explicitly calculated				
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study				
	Wiethe 12.	Test Substance Furity	Ingn	This metric met me chieffa for high connuclee as expected for this type of study.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	N/A	This metric is not applicable to this type of study.				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.				
		Exposure						
Domain 7. Data Present	tation and Analysis							
Domain 7. Dua 110501	Metric 15:	Data Reporting	Medium	Analytical detection limits were not specified				
	Metric 16:	Statistical Methods and	High	This metric met the criteria for high confidence as expected for this type of study				
		Kinetic Calculations	ing.					
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
<b>Overall Quali</b>	ty Determin	ation	High					

Study Citation: OECD Harmonized	(1982). Fate of Priority Pollutants in Publicly Owned Treatment Works, Volume I. Miscellaneous				
Template: HERO ID:	1265686				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		Not Reported; di-n-butyl phthalate			
Confidentiality, Type, Guide	eline	None; experimental; experimental			
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR			
Radiolabel, Source, State, F	Purity	No; NR; NR			
Test Method Details, Test Condition Details, and Test Consistency Details		influent, effluent and sludge samples from 50 treatment plants (plant descriptions are available); duplicate and field blanks were included; plant treatments: primary (P); secondary activated sludge (AS); secondary trickling filter (TF); secondary oxygen activated sludge (OAS); secondary rotating biological contactor (RBC); secondary aerated lagoon (AL); secondary parallel activated sludge and trickling filter (AS/TF); tertiary (T);			
Sustan Tuna Dasian		not reported			
System Type Design	ampling Details	non reponed			
Test Temperature	ampning Details	not applicable			
Results Details		% removal: primary (P): 36; activated sludge (AS): 68; trickling filter (TF): 50; oxygen activated sludge (OAS): 98; aerated lagoon (AL): 50; activated sludge and trickling filter (AS/TF): 97/50			
Analytical Method and Analytical Details		EPA base-neutral protocol; mean recovery 48-74% and $73\pm38\%$			
Transformation Products, Statistics, and Kinetics		not applicable; % detection @ influent concentration: 64% @ 1-140 ug/L (POTW 1-40); 80% @ 1-100 ug/L (POTW 51-60); effluent concentra- tions: 52% @ 1-97 ug/L (POTW 1-40); 78% @ 1-138 ug/L (POTW 51-60); sludge concentrations: 45% @ 1-6900 ug/L (POTW 1-40); 40% @ 40-3066 ug/L (POTW 51-60); average/median concentration in influent: 9/4 ug/L; not reported			
Reference Substance and Reference		not applicable; Not Reported			

Reference	Substance	and	Refe
Substance	Results		

	EVALUATION						
Domain		Metric	Rating	Comments			
Domain 1: Test Substance	e						
	Metric 1:	Test Substance Identity	High	The test substance was identified by common name.			
	Metric 2:	Test Substance Purity	N/A	The metric is not applicable to the study type.			
Domain 2: Test Design							
	Metric 3:	Study Controls	High	Concurrent blanks and controls were analyzed.			
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to the study type.			
Domain 3: Test Condition	IS						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.			
	Metric 7:	Testing Consistency	High	The conditions were documented.			
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.			

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Study Citation: OECD Harmonized Template:	(1982). Fate of Pri Miscellaneous	iority Pollutants in Publicly Owned Treatr	ment Works,	Volume I.		
HERO ID:	1265686					
		E		N		
Domain		Metric	Rating	Comments		
Domain 4: Test Organism	ns					
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.		
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.		
Domain 5: Outcome Ass	sessment					
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.		
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.		
Domain 6: Confounding	/Variable Control					
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation.		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.		
Domain 7: Data Presenta	ation and Analysis					
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported.		
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	High	Reported values were expected.		
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.		
Overall Qualit	y Determina	ation	N/A High	The metric is not applicable to the study type.		

Study Citation:	Ozretich, R. J., Sc MENT TISSUE A	hroeder, W. P. (1986). DETERMINATION OF SELECTED NEUTRAL PRIORITY ORGANIC POLLUTANTS IN MARINE SEDI- ND REFERENCE MATERIALS UTILIZING BONDED-PHASE SORBENTS. Analytical Chemistry 58(9):2041-2048.					
<b>OECD Harmonized</b>	Miscellaneous						
Template:							
HERO ID:	1316097						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		not reported; Not Reported					
Confidentiality, Type, Guid	deline	No; experimental; experimental					
Solvent, Reactivity, Storag	e, Stability	NR; NR; NR					
Radiolabel, Source, State,	Purity	NR; NR; NR Notes: NR					
Test Method Details, Test	Condition Details, and	Marine sediment samples (shipping channel -SC, Kings Slough - KS, deep disposal DD) and marine -animal tissue samples were spiked with 2.5					
Test Consistency		mg/kg test substance and analyzed.; SC 96% sand, 3% silt, 1% clay; KS 35% sand, 56% silt, 9% clay; DD 12%sand, 58% silt, 30% clay; g. SC					
Details		samples spiked with SC sediment spiked with 2.5, 1.0, 0.5, and 0.25 mg/k 2.5 mg/kg were analyzed after storage at 4 and -20C.					
System Type Design	amuliu a Dataila	not applicable					
Sampling Frequency and S	Sampning Details	not applicable, not applicable					
Test Temperature		not reported $P_{\text{res}} = \frac{1}{2} \left[ \frac{1}{2} + \frac{1}{2}$					
Results Details		Recovery from spiked sediment (at 2.5 mg/kg) = 68% (SC), 53% (KS), and 56% (DD), mean recovery = 59% and recovery from spiked homogenate (at 2.5 mg/kg) = 64%; overall recovery at 4 or -20C was ca. 70%; recoveries in SC sediment at 2.5, 1.0, 0.5, and 0.25 mg/kg = 75, 61, 45, and 44% respectively.					
Analytical Method and Analytical Details		GC-MS: Not Reported					
Transformation Products.	Statistics and Kinetics	not reported. Mean recovery in SC: significant differences in recoveries $P < 0.05$ : regression coefficient significantly different from zero $P < 0.05$ :					
Transformation Troducis, c	statistics, and relieues	not reported					
Reference Substance and F	Reference	not reported; not reported					
Substance Results							

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substar	nce				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively	
	Metric 2:	Test Substance Purity	Low	Source and purity were not reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study.	
	Metric 4:	Test Substance Stability	Low	No details reported.	
Domain 3: Test Conditi	ons				
	Metric 5:	Test Method Suitability	Uninformative	The test method did not address fate endpoints.	
	Metric 6:	Testing Conditions	Medium	Some test conditions were reported.	
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to this study.	
	Metric 8:	System Type and Design	N/A	Not applicable to this study type.	

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PUBLIC RELEASE DRAFT May 2025 Miscellaneous

		c	ontinued from previous page			
Study Citation:	Ozretich, R. J., MENT TISSUE	Ozretich, R. J., Schroeder, W. P. (1986). DETERMINATION OF SELECTED NEUTRAL PRIORITY ORGANIC POLLUTANTS IN MARINE SEDI- MENT TISSUE AND REFERENCE MATERIALS UTILIZING BONDED-PHASE SOBBENTS. Analytical Chemistry 58(9):2041-2048				
<b>OECD Harmonized</b>	Miscellaneous	Miscellaneous				
Template:						
HERO ID:	1316097					
			EVALUATION			
Domain		Metric	Rating	Comments		
Domain 4: Test Organi	isms					
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study.		
	Metric 10:	Sampling Methods	Medium	Test organism is not routinely used for similar study types.		
Domain 5: Outcome A	saasmant					
Domain 5. Outcome A	Metric 11.	Test Substance Identity	Low	The study is focused on demonstrating avtraction methods from sediments and animal		
	Wether 11.	Test Substance Identity	Low	tissues taken from the environment, rather than quantifying substances present in the media.		
	Metric 12:	Test Substance Purity	Medium	Some sampling methods were reported mostly concerning spiking levels, temperature, extraction, and analysis.		
Danain (; Canfana lin						
Domain 6: Confoundir	ng/ variable Control Matria 12:	Confounding Variables	NI/A	The metric is not emplicable to this study.		
	Metric 15: Matria 14:	Uselth Outcomes Uprelated to	IN/A N/A	The metric is not applicable to this study.		
	Meule 14.	Exposure	IN/A	The metric is not applicable to this study.		
		Exposure				
Domain 7: Data Preser	ntation and Analysis	8				
	Metric 15:	Data Reporting	Medium	Limited analytical details focused on extraction method development rather than moni- toring data.		
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Reported methods were appropriate for the data.		
Domain 8: Other						
Domain 0. Other	Metric 17:	Verification or Plausibility of	Low	No fate results were reported.		
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study.		
<b>Overall Oual</b>	itv Determi	nation	Uninformative			

Study Citation:	Peterson, D. R., Sta 3Q:85-124.	aples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC				
OECD Harmonized	Miscellaneous					
Template:	53/8337					
IIEKO ID.	5546552					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, Type, Guideline		no; wastewater removal; wastewater removal				
Solvent, Reactivity, Storage, Stability		NR; NR; NR				
Radiolabel, Source, State, Purity		NR; NR; NR				
Test Method Details, Test C	ondition Details, and	3 year study (1989-1991); Goteborg (Sweden) Regional Sewage Works; Not Reported				
Test Consistency						
Details System Type Design		Not Reported				
Sampling Frequency and Sa	mpling Details	Not Reported; Not Reported				
Test Temperature	1 0	Not Reported				
Results Details		94->99% removal: influent 36-86 ug/L; effluent 0.1-2.0 ug/L				
Analytical Method and Analytical Details		Not Reported				
Transformation Products, S	tatistics, and Kinetics	Not Reported; The contribution of biodegradation to the total removal cannot be evaluated from these data.; Not Reported				
Reference Substance and Re Substance Results	eference	Not Reported; Not Reported				

	EVALUATION				
Domain		Metric	Rating	Comments	
Domain 1: Test Substance					
]	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.	
]	Metric 2:	Test Substance Purity	Medium	The source or purity of the test substance was reported but may be available in the cited reference.	
Domain 2: Test Design					
]	Metric 3:	Study Controls	Low	Controls were not reported but may be available in the cited reference.	
]	Metric 4:	Test Substance Stability	Low	The substance stability was not reported but may be available in the cited reference.	
Domain 3: Test Conditions	5				
]	Metric 5:	Test Method Suitability	Medium	The test method details were not reported but may be available in the cited reference.	
]	Metric 6:	Testing Conditions	Medium	There were omissions in the testing conditions but more information may be available in the cited reference.	
]	Metric 7:	Testing Consistency	Low	Test consistency was not reported but may be available in the cited reference.	
]	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.	

Domain 4: Test Organisms

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		contin	ued from pre	vious page
Study Citation:	Peterson, D. R., S 30:85-124.	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC 30:85-124.		
OECD Harmonized	Miscellaneous			
Template:				
HERO ID:	5348332			
		]	EVALUATIO	Ň
Domain		Metric	Rating	Comments
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.
Domain 5: Outcome A	ssessment			
	Metric 11:	Test Substance Identity	Medium	There was incomplete reporting of outcome assessment methods; however, details may be available in the cited reference.
	Metric 12:	Test Substance Purity	Low	Details regarding sampling methods of the outcome(s) were not fully reported but may be available in the cited reference.
Domain 6: Confoundi	ng/Variable Control			
	Metric 13:	Confounding Variables	Low	Confounding variables were not reported but may be available in the cited reference.
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.
		Exposure		
Domain 7: Data Preser	ntation and Analysis			
	Metric 15:	Data Reporting	Medium	Details regarding the results were not reported but may be available in the cited reference.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetic calculations were not clearly described but may be available in the cited refer- ence.
		Kinetie Calculations		
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.
<b>Overall Qual</b>	ity Determin	ation	Low	

\* Related References: Cited: Paxéus N, Robinson P, Balmer P (1992) Water Sci Technol 25:249 (not in hero or distiller)

Metric 5:

Metric 6:

Metric 7:

Metric 8:

Metric 9:

Metric 10:

Domain 4: Test Organisms

Test Method Suitability

**Testing Conditions** 

Testing Consistency

Sampling Methods

System Type and Design

Outcome Assessment Methodology

Study Citation:	Peterson, D. R., St	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC				
OECD Harmania d	3Q:85-124.	3Q:85-124.				
OECD Harmonized	Miscellaneous					
HFRO ID.	5348332	53/8330				
HERO ID.						
Damanustan		Data	EXTRACTIO	N .		
rarameter		Data				
CASRN and Test Material		84-74-2: DBP				
Confidentiality. Type. Guid	leline	no: wastewater removal: wastewater	removal			
Solvent, Reactivity, Storage	e. Stability	NR: NR: NR				
Radiolabel, Source, State, I	Purity	NR; NR; NR; NR				
Test Method Details, Test (	Condition Details, and	2 g/L mixed liquid suspended solids;	Not Reported; Not Re	ported		
Test Consistency						
Details System Type Design	Details Not Departed					
System Type Design Sampling Frequency and S	ampling Details	Not Reported				
Test Temperature	ampling Details	Not Reported				
Results Details	Not Reported					
Analytical Method and An	alvtical Details	Not Reported: Not Reported				
Transformation Products. S	Statistics, and Kinetics	Not Reported; 0.083 L/g suspended solids/day; half-life 100 hours; Not Reported				
Reference Substance and R	Reference	Not Reported; Not Reported				
Substance Results						
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.		
	Metric 2:	Test Substance Purity	Medium	The source or purity of the test substance was reported but may be available in the cited reference.		
Domain 2: Test Design						
	Metric 3:	Study Controls	Low	Controls were not reported but may be available in the cited reference.		
	Metric 4:	Test Substance Stability	Low	The substance stability was not reported but may be available in the cited reference.		
Domain 2: Test Car dit:						

Continued on next page ...

Medium

Medium

Low

N/A

N/A

N/A

the cited reference.

The metric is not applicable to the study type.

The metric is not applicable to the study type.

The metric is not applicable to the study type.

The test method details were not reported but may be available in the cited reference.

Test consistency was not reported but may be available in the cited reference.

There were omissions in the testing conditions but more information may be available in

continued from previous page						
Study Citation:	Peterson, D. R., S 30:85-124.	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC 30:85-124				
<b>OECD Harmonized</b>	Miscellaneous					
Template:						
HERO ID:	5348332					
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 5: Outcome As	sessment					
	Metric 11:	Test Substance Identity	Medium	There was incomplete reporting of outcome assessment methods; however, details may be available in the cited reference.		
	Metric 12:	Test Substance Purity	Low	Details regarding sampling methods of the outcome(s) were not fully reported but may be available in the cited reference.		
Domain 6: Confounding/Variable Control						
	Metric 13:	Confounding Variables	Low	Confounding variables were not reported but may be available in the cited reference.		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.		
Domain 7: Data Present	ation and Analysis					
	Metric 15:	Data Reporting	Medium	Details regarding the results were not reported but may be available in the cited reference.		
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetic calculations were not clearly described but may be available in the cited reference.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.		
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.		
<b>Overall Quality Determination</b>			Low			

\* Related References: Cited: HERO ID: 10273281: Clark B, Henry GLH, Mackay D (1995) Environ Sci Technol 29:1488 (not in distiller)

Study Citation:	Peterson, D. R., St 3Q:85-124.	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC 3Q:85-124.				
OECD Harmonized	Miscellaneous					
Template:						
HERO ID:	5348332					
			EXTRACTION			
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, Type, Guid	leline	no; experimental; experimental				
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR; NR				
Radiolabel, Source, State, I	Purity	NR; WWTP; NR; NR Notes: NR				
Test Method Details, Test O	Condition Details, and	Analyzed influent and effluent concentrati	ons from two WWTPs, one treat	ing domestic sewage and the other industrial sewage.; present in con-		
Test Consistency		centration ranges of 1-10 ug/L in the influe	ent of both plants.; NR			
Details System Type Design		NP				
System Type Design	ampling Dataila					
Test Temporature	ampning Details					
		IND Depend DIDD even a DDD even and the 0200 in the demention short and 0500 in the industrial short				
	1 ( 10 ( 1	BBP and DIBP were r DBP was removed by 95% in the domestic plant and 95% in the industrial plant.				
Analytical Method and An	alytical Details	NK; NK				
Transformation Products, S	statistics, and Kinetics	NK; NK				
Reference Substance and R	Reference	NK; NK				
Substance Results						
			EVALUATION			
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ice					
	Metric 1:	Test Substance Identity	High	The test substance was identified.		
	Metric 2:	Test Substance Purity	Medium	Not reported in this secondary source; more details may be in the source cited.		
Domain 2: Test Design						
Domain 2. Test Design	Metric 3	Study Controls	Medium	Not reported in this secondary source: more details may be in the source cited		
	Matric 1:	Test Substance Stability	Medium	Not reported in this secondary source, more details may be in the source cited.		
	Metho 4.	Test Substance Stability	weululli	Not reported in this secondary source, more details may be in the source cited.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	Medium	Not reported in this secondary source; more details may be in the source cited.		

Continued on next page ...

Medium

Medium

Medium

Medium

N/A

Not reported in this secondary source; more details may be in the source cited.

Not reported in this secondary source; more details may be in the source cited.

Not reported in this secondary source; more details may be in the source cited.

Not reported in this secondary source; more details may be in the source cited.

This metric does not apply to this study type.

**Testing Conditions** 

Testing Consistency

Sampling Methods

System Type and Design

Outcome Assessment Methodology

Metric 6:

Metric 7:

Metric 8:

Metric 9:

Metric 10:

Domain 4: Test Organisms

		••	continued from previous page			
Study Citation:	Peterson, D. R., 30:85-124.	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC				
<b>OECD Harmonized</b>	Miscellaneous					
Template:						
HERO ID:	5348332					
			EVALUATION			
Domain		Metric	Rating	Comments		
Domain 5: Outcome As	ssessment					
	Metric 11:	Test Substance Identity	High	The outcome of interest was reported.		
	Metric 12:	Test Substance Purity	Medium	Not reported in this secondary source; more details may be in the source cited.		
Domain 6: Confounding/Variable Control						
	Metric 13:	Confounding Variables	Medium	Not reported in this secondary source; more details may be in the source cited.		
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric does not apply to this study type.		
Domain 7: Data Presen	tation and Analysis	3				
	Metric 15:	Data Reporting	Medium	Not sufficient evidence to rate this metric; more details may be available in the source cited.		
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	This metric does not apply to this study type.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.		
	Metric 18:	Results QSAR Models	N/A	This metric does not apply to this study type.		
<b>Overall Quali</b>	ty Determi	nation	NEED TO FIX			

\* Related References: Cited from Furtmann K (1993) Phthalate in der aquatischen Umwelt. PhD Thesis, UniversitätGesamthochschule Duisenberg. English Translation prepared for European Council forPlasticizers and Intermediates, Brussels, 1996.(Not in HERO at the time of extraction, could possibly be HERO ID 10748712 but its difficult to tell due to paper and citation being in a foreign language.

Study Citation:	Roslev, P., Vorkamp, K., Aarup, J., Frederiksen, K., Nielsen, P. H. (2007). Degradation of phthalate esters in an activated sludge wastewater treatment plant. Water Research 41(5):969-976					
<b>OECD Harmonized</b>	Miscellaneous					
Template:						
HERO ID:	675406					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, Type, Guid	eline	None; experimental; experimental				
Solvent, Reactivity, Storage, Stability		NR; NR; NR				
Radiolabel, Source, State, Purity		NR; NR; VWR-Merck (Copenhagen, Denmark); >99% Notes: NR				
Test Method Details, Test Condition Details, and Test Consistency Details		Removal in wastewater treatment using an activated sludge; plant uses biological removal of nitrogen and phosphorus operating with the Bio- denipho configuration with an anaerobic tank followed by alternating aerobic nitrifying andanoxic denitrifying conditions.; Aerobic/anaerobic conditions; hydraulic retention time for the wastewater is ca. 1 day, sludge concentration in process tanks = 4–7 g SS/L (equivalent to2–4 gVSS/L with a content of 0.5–1.0E12 bacteria/g VSS), sludge age 21–28 days, aerobic sludge age 6–8 days, and the sludge production is 5–6000kg SS/day.; Not Reported				
System Type Design		Aalborg East municipal WWTP, Alborg, Denmark				
Sampling Frequency and Sa	ampling Details	Flow proportional samples (24h); 3 to 5 different dates: water (Influent and effluent) and sludge (Aeration tank and digester) compartments sampled				
Test Temperature		Not Reported				
Results Details		90.7% kg/day loss of test material; influent concentration: $20.48 \pm 4.74$ ug/L Effluent concentration: $2.38 \pm 1.17$ ug/L Dewatered sludge concentration: $1.19 \pm 0.27$ ug/L				
Analytical Method and Analytical Details GC with flame ionization detector; Liquid and solid separation by membrane filtration, SPE extraction of the liquid fraction, and hot extraction of the solid		GC with flame ionization detector; Liquid and solid separation by membrane filtration, SPE extraction of the liquid fraction, and hot solvent extraction of the solid				
Transformation Products, S	tatistics, and Kinetics	not reported; standard deviations reported with mass balance; Not Reported				
Reference Substance and R Substance Results	eference	Not Reported; Not Reported				

			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ice					
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.		
	Metric 2:	Test Substance Purity	High	The source or purity of the test substance was reported or the test substance identity and purity were verified by analytical means (chemical analysis, etc.).		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.		
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.		
Domain 3: Test Conditions						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Continued on next page					

		contin	ued from pre	vious page			
Study Citation:	Roslev, P., Vorkar	Roslev, P., Vorkamp, K., Aarup, J., Frederiksen, K., Nielsen, P. H. (2007). Degradation of phthalate esters in an activated sludge wastewater treatment					
<b>OECD Harmonized</b>	Miscellaneous						
Template:							
HERO ID:	675406						
		1	EVALUATIO	N			
Domain		Metric	Rating	Comments			
	Metric 6:	Testing Conditions	Medium	There were omissions in testing conditions, however, sufficient data were reported to de-			
		6		termine that the omissions were not likely to have a substantial impact on study results.			
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.			
	Metric 8:	System Type and Design	Medium	There were some omissions in system type and design; however, the omissions were not likely to have a substantial impact on study results.			
Domain 4: Test Organis	sms						
-	Metric 9:	Outcome Assessment Methodology	High	The test inoculum source were reported and the inoculum are routinely used for similar study types and appropriate (e.g., aerobic microorganisms used for anaerobic biodegra- dation study) for the study method or route.			
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.			
Domain 5: Outcome As	ssessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.			
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed (e.g., sampling equipment, sample storage conditions) and no notable uncertainties or limitations were expected to influence results.			
Domain 6: Confounding	g/Variable Control						
Domain of Comoundary	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups (if applicable) were considered and accounted for in data evaluation and all reported variability or uncertainty was not likely to influence the outcome assessment			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.			
Domain 7. Data Dragant	tation and Analysia						
Domain /: Data Present	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported and analytical methods used were suitable for detection and quan- tification of the target chemical and sufficient evidence was presented to confirm that			
				parent compound disappearance was not likely due to some other process.			
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	Statistical methods or kinetic calculations were not reported.			
Domain 8: Other							
Domain 6. Outer	Metric 17:	Verification or Plausibility of	High	The study results were reasonable.			
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
		Contin	ued on next	page			

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PUBLIC RELEASE DRAFT May 2025 Miscellaneous

		continued from previous page	
Study Citation:	Roslev, P., Vorkamp, K., Aarup, J., Frederikse	n, K., Nielsen, P. H. (2007). Degradatio	n of phthalate esters in an activated sludge wastewater treatment
OECD Harmonized Template:	Miscellaneous		
HERO ID:	675406		
		EVALUATION	
Domain	Metric	Rating	Comments
<b>Overall Quali</b>	ty Determination	High	

Study Citation:	Saini, G., Pant, S., Singh, S. O., Kazmi, A. A., Alam, T. (2016). A comparative study of occurrence and fate of endocrine disruptors: Diethyl phthalate and					
OECD Harmonized	ASP- and SDR-based wastewater treatment plants. Environmental monitoring and Assessment 188(11):009.					
Template:						
HERO ID:	3469369					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, Type, Guide	eline	None; Experimental; Experimental				
Solvent, Reactivity, Storage	, Stability	NA; NR; 4°C; NR				
Radiolabel, Source, State, P	Purity	NA; Two WWTPs in Jagjeetpur, Hardwar (Uttarakhand), India; NA; NA Notes: Analytical standards obtained from Sigma-Aldrich Chemie GmbH				
	-	(Germany), >99% purity				
Test Method Details, Test C	Condition Details, and	Influent, effluent, and sludge samples collected from SSTPs in India to determine pollutant removal efficiency and distribution.; Not reported; BOD				
Test Consistency		(influent, effluent): $212\pm31$ , $37\pm24$ mg/LTotal coliform (TC): $1.0E7\pm9.6E6$ , $1.0E6\pm1.4E6$ MPN/100 mL				
Details System Type Design		Activated sludge process				
Sampling Frequency and Sa	ampling Details	Composite samples, sampling bottles rinsed with sample 2-3x before collection: Monthly, over April to December				
Test Temperature		Not reported				
Results Details		Removal efficiency: 82.81 to 97.54% ; average 92.67% Removal highest in May and December				
Analytical Method and Ana	lytical Details	GC-MS with VF-5 MS capillary column, in EI mode; Sample extraction conducted according to USEPA Method 606: wastewater extracted 3x with n-hexane:DCM, concentrated under N2, purified with Florisil column, eluted by n-hexane/diethylether; sludge extracted with DCM in				
Transformation Products, Statistics, and Kinetics Phthalic acid, benzoic acid, phenol, CO2, and water; Pearson correlation coefficients. Pollutant removal correlated with TC removal slight relationship with BOD removal (R = 0.406596); Not applicable		Phthalic acid, benzoic acid, phenol, CO2, and water; Pearson correlation coefficients. Pollutant removal correlated with TC removal ( $R = 0.87591$ ), slight relationship with BOD removal ( $R = 0.406596$ ); Not applicable				
Reference Substance and Reference Not reported; Not reported						

	EVALUATION						
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	nce						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	High	The sample source was reported; the analytical standard source and purity was reported.			
Domain 2: Test Design							
	Metric 3:	Study Controls	Medium	Field blanks and analytical blanks were not explicitly included.			
	Metric 4:	Test Substance Stability	High	Minimal sample storage details were reported, sample processing was reported and followed USEPA method.			
Domain 3: Test Conditi	ions						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	Medium	Limited WWTP operational stages were reported, no operational parameters were re- ported.			
	Metric 7:	Testing Consistency	High	Samples were collected, processed, and analyzed consistently.			
			Continued on next p	age			

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		contin	ued from pre	vious page				
Study Citation:	Saini, G., Pant, S. dibutyl phthalate	Saini, G., Pant, S., Singh, S. O., Kazmi, A. A., Alam, T. (2016). A comparative study of occurrence and fate of endocrine disruptors: Diethyl phthalate and dibutyl phthalate in ASP- and SBR-based wastewater treatment plants. Environmental Monitoring and Assessment 188(11):609						
<b>OECD Harmonized</b>	Miscellaneous	Miscellaneous						
Template:								
HERO ID:	3469369							
		]	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.				
Domain 4. Test Organ	isms							
Domain in Test organ	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
		1 0						
Domain 5: Outcome A	Assessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the outcomes of interest.				
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and conducted at an appropriate frequency.				
Domain 6: Confoundi	ng/Variable Control							
Domain 0. Comound	Metric 13:	Confounding Variables	High	Variation in removal efficiency was discussed				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.				
		Exposure						
Domain 7: Data Prese	ntation and Analysis							
	Metric 15:	Data Reporting	Medium	Raw data only reported graphically, extraction efficiency and limits of detection not reported, analytical method appropriate.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were described and appropriate.				
Domain 8: Other	N 17		TT: 1					
	Metric 17:	Verification or Plausibility of	Hıgh	The results were reasonable.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Oual	ity Determin	ation	High					
	ity Determin	auvii	Ingh					

Study Citation: OECD Harmonized Template: HERO ID:	Saini, G., Pant, S., Singh, S. O., Kazmi, A. A., Alam, T. (2016). A comparative study of occurrence and fate of endocrine disruptors: Diethyl phthalate and dibutyl phthalate in ASP- and SBR-based wastewater treatment plants. Environmental Monitoring and Assessment 188(11):609. Miscellaneous				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material		84-74-2; DBP			
Confidentiality, Type, Guide	eline	None; Experimental; Experimental			
Solvent, Reactivity, Storage	, Stability	NA; NR; 4°C; NR			
Radiolabel, Source, State, P	urity	NA; Two WWTPs in Jagjeetpur, Hardwar (Uttarakhand), India; NA; NA Notes: Analytical standards obtained from Sigma-Aldrich Chemie GmbH			
		(Germany), >99% purity			
Test Method Details, Test C	ondition Details, and	Influent, effluent, and sludge samples collected from SSTPs in India to determine pollutant removal efficiency and distribution.; Not reported; COD			
Test Consistency		(influent, effluent): $21/\pm9/$ , $25\pm12$ mg/LTotal suspended solids (TSS) (influent, effluent): $158\pm73$ , $18.4\pm11$ mg/LTotal coliform (TC): $1.1E8\pm1.4E7$ MpN/100 mJ			
System Type Design		Sequencing batch reactor			
Sampling Frequency and Sa	mpling Details	Composite samples, sampling bottles rinsed with sample 2-3x before collection; Monthly, over April to December			
Test Temperature		Not reported			
Results Details		Removal efficiency: 67.62 to 96.53% ; average 85.42% Removal highest in May, July, August, September, and December.			
Analytical Method and Ana	lytical Details	GC-MS with VF-5 MS capillary column, in EI mode; Sample extraction conducted according to USEPA Method 606: wastewater extracted			
		3X with n-nexane:DCM, concentrated under N2, purified with Florisil column, eluted by n-nexane/diethylether; sludge extracted with DCM in volatilization/condensation device			
Transformation Products, St	tatistics, and Kinetics	Phthalic acid, benzoic acid, phenol, CO2, and water; Pearson correlation coefficients. Removal correlated with COD ( $R = 0.4412$ ), TSS ( $R =$			
		0.5689), and TC ( $R = 0.4865$ ) removal; Not applicable			
Reference Substance and Re	eference	Not reported; Not reported			
Substance Results					

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Substa	ance			
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	High	The sample source was reported; the analytical standard source and purity was reported.
Domain 2: Test Design	n			
	Metric 3:	Study Controls	Medium	Field blanks and analytical blanks were not explicitly included.
	Metric 4:	Test Substance Stability	High	Minimal sample storage details were reported, sample processing was reported and followed USEPA method.
Domain 3: Test Condi	tions			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	Medium	Limited WWTP operational stages were reported, no operational parameters were re- ported.
	Metric 7:	Testing Consistency	High	Samples were collected, processed, and analyzed consistently.
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.

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		continu	ued from prev	vious page
Study Citation:	Saini, G., Pant, S. dibutyl phthalate	, Singh, S. O., Kazmi, A. A., Alam, T. (20 in ASP- and SBR-based wastewater treatn	16). A companent plants. En	rative study of occurrence and fate of endocrine disruptors: Diethyl phthalate and nvironmental Monitoring and Assessment 188(11):609.
<b>OECD Harmonized</b>	Miscellaneous		1	
Template:				
HERO ID:	3469369			
		Η	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 4: Test Organis	sms			
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	sessment			
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the outcomes of interest.
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and conducted at an appropriate frequency.
Domain 6: Confounding	g/Variable Control		TT' 1	
	Metric 13:	Confounding variables	High	Variation in removal efficiency was discussed.
	Metric 14:	Exposure	N/A	The metric is not applicable to this study type.
		Inpoole		
Domain 7: Data Present	tation and Analysis			
	Metric 15:	Data Reporting	Medium	Raw data only reported graphically, extraction efficiency and limits of detection not reported, analytical method appropriate.
	Metric 16:	Statistical Methods and	High	Statistical methods were described and appropriate.
		Kinetic Calculations		
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	High	The results were reasonable.
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.
Ovorall Qualit	ty Dotormin	ation	High	
	ly Determin	auvii	Ingli	

Study Citation:	Salaudeen, T., Okoh, O., Agunbiade, F., Okoh, A. (2018). Fate and impact of phthalates in activated sludge treated municipal wastewater on the water						
OECD Harmonized	Miscellaneous	Miscellaneous					
Template: HERO ID:	4728386						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Di-n-butyl phthalate					
Confidentiality, Type, Guide	eline	None; Experimental; Experimental					
Solvent, Reactivity, Storage	, Stability	NR; NR; NR					
Radiolabel, Source, State, P	Purity	NR; Accu Standard, Inc USA; NR; 99.9% Notes: DEHP					
Test Method Details, Test Condition Details, and Test Consistency		removal efficiency calculated as the ratio of the difference between the total influent and total effluent concentration to the total influent concentra- tions multiplied by 100; 3 micro or small WWTPs investigated: Adelaids, Alice, and Seymour; Not applicable					
Details							
System Type Design	1' D ( '1	wwirP processes included: Screening; Gni removal; Sedimentation; Activated Studge; Secondary Clarifier; Chiorination					
Sampling Frequency and Sampling Details		composite samples of each of influent, secondary effluent and final effluents from all the selected WW1P including river water were taken once per day on a monthly basis for six months from February to July 2016.; sludge extraction method					
Test Temperature		Not reported					
Results Details		Removal efficiency: in secondary effluent = $94.53\%$ and final effluent = $95.45\%$ (Adelaids), in secondary effluent = $97.37\%$ and final effluent = $99.47\%$ (Alice), and in secondary effluent = $93.84\%$ and final effluent = $93.74\%$ (Seymour)					
Analytical Method and Ana	lytical Details	GC-MS; LOD = $0.85 \mu$ g/L for DBP; LOQ ranged from 1.75-3.99 $\mu$ g/L for all analytes; analytical blanks included					
Transformation Products, St	tatistics, and Kinetics	Not applicable; relative standard deviation of less than 15% was reported; significance for statistical analysis was set at p values $< 0.05$ .; Mean concentrations = influent: 195.14 µg/L, effluent: 8.88 µg/L, sludge: 27.99 µg/g (Adelaide); influent: 1146.37 µg/L, effluent: 6.08 µg/L, sludge: 1093.87 µg/g (Alice); influent: 78.29 µg/L, effluent: 4.90 µg/L, sludge: 429.67 µg/g (Seymour)					
Reference Substance and Re Substance Results	eference	Not applicable; Not applicable					

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substance						
	Metric 1:	Test Substance Identity	High	Test substance identified using common nomenclature.		
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	Analytical blank samples were included.		
	Metric 4:	Test Substance Stability	High	Details regarding the storage and stability of the test substance after sampling were not reported but the omission is not likely to have a substantial impact on the study results.		
Domain 3: Test Conditi	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable.		
	Metric 6:	Testing Conditions	Medium	Some of the test conditions were not reported.		
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to the study type.		
Continued on next page						

		contin	ued from pre	vious page				
Study Citation:	Salaudeen, T., Ok bodies in the East	Salaudeen, T., Okoh, O., Agunbiade, F., Okoh, A. (2018). Fate and impact of phthalates in activated sludge treated municipal wastewater on the water bodies in the Eastern Cape. South Africa. Chemosphere 203(Elsevier):336-344.						
<b>OECD Harmonized</b>	Miscellaneous	Miscellaneous						
Template:								
HERO ID:	4728386							
		]	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.				
Domain 4: Test Organ	isms							
	Metric 9:	Outcome Assessment Methodology	Medium	The treatment process was described sufficiently but some details were not reported.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.				
Domain 5: Outcome A	Assessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for the endpoint of interest.				
	Metric 12:	Test Substance Purity	High	The sampling methods were reported and appropriate.				
Domain 6: Confoundi	ng/Variable Control							
	Metric 13:	Confounding Variables	High	Uncertainty was accounted for in the measurements.				
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to this study type.				
		Exposure						
Domain 7: Data Prese	ntation and Analysis							
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.				
	Metric 16:	Statistical Methods and	High	Statistical methods and kinetic calculations were reported.				
		Kinetic Calculations						
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The results were reasonable based on reported results from other studies.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Oual	ity Determin	ation	High					
	ny Duu iiiii	anon	Ingn					

Study Citation:	Salaudeen, T., Okoh, O., Agunbiade, F., Okoh, A. (2018). Phthalates removal efficiency in different wastewater treatment technology in the Eastern Cape, South Africa. Environmental Monitoring and Assessment 190(5):299.					
OECD Harmonized	Harmonized Miscellaneous					
Template: HERO ID:	5490290					
EXTRACTION						
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, Type, Guideline		None; Experimental; Experimental				
Solvent, Reactivity, Storage, Stability		NR; NR; NR				
Radiolabel, Source, State, Purity		NR; AccuStandard, Inc.; NR; 96.8%				
Test Method Details, Test Condition Details, and Test Consistency		The removal capacity of different wastewater treatment plants (WWTP) Eastern Cape, South Africa; A standard working mixture of 100 $\mu$ gmL-1 in methanol was prepared from the stock solution and stored under 4°C in amber bottles.; Not Reported				
Details System Type Design		Bedford WWTP used oxidation pond 0.5-2 MI /d Influent TDS 342.37 +70.2 mg/L Effluent TDS 188.59 +4.1 mg/L Influent turbidity 637.67				
System Type Design		$\pm 13.9$ NTU, Effluent turbidity 119.12 $\pm 18.9$ NTU, Influent TSS 184.87 $\pm 18.8$ mg/L, Effluent TSS 57.4 $\pm 10.8$ mg/L.				
Sampling Frequency and Sampling Details		Collected from each of the three selected WWTPs on a monthly basis for a period of 6 months from February to July 2016; Each water sample was first dechlorinated by adding 40–50 mg of sodium thiosulfate followed by acidification to a pH of $\leq 2$ with 50% HCl.				
Test Temperature		Storage temperature 4°C; Extraction temperature 60°C				
Results Details		Mean Influent: 594.9 $\pm$ 282 µg/L, Mean Final Effluent: 9.84 $\pm$ 2.89 µg/L, Mean Sludge: 592.9 $\pm$ 101 µg/g				
Analytical Method and Analytical Details		Solid-phase extraction method followed by gas chromatography-mass spectrometry (GC-MS) analysis (Agilent 17890B coupled with 5977A MSD).; Filtration through glass wool. Solid-phase extraction in duplicate with n-hexane, dichloromethane, and methanol. Eluents reduced in rotary evaporator and blown under dry stream of N2 at 30°C.				
Transformation Products, Statistics, and Kinetics		Not Reported; Regression analysis. Regression coefficient 1.000 DBP. Recoveries for PAE's ranged from 5-10 µg/L, surrogate standard 75-123%. Recoveries for PAE's ranged from 5-10 µg/L, surrogate standard 75-123%. Not Reported				
Reference Substance and Reference Substance Results		External calibration; Mean concentration ( $\mu$ gL-1) of PAEs in WWTP at Bedford				

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.		
	Metric 2:	Test Substance Purity	High	The test substance purity was reported and appropriate.		
Domain 2: Test Design						
	Metric 3:	Study Controls	High	Appropriate blanks were used to determine background contamination.		
	Metric 4:	Test Substance Stability	High	The collection, storage, and preparation of the field samples containing the test sub- stance were reported and appropriate.		
Domain 3: Test Conditions						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	The testing conditions of the WWTP were reported.		
Continued on next page						

		contin	ued from prev	vious page				
Study Citation:	Salaudeen, T., Okoh, O., Agunbiade, F., Okoh, A. (2018). Phthalates removal efficiency in different wastewater treatment technology in the Eastern Cape, South Africa. Environmental Monitoring and Assessment 190(5):299.							
OECD Harmonized Template:	Miscellaneous							
HERO ID:	5490290							
EVALUATION								
Domain		Metric	Rating	Comments				
	Metric 7:	Testing Consistency	High	Testing was done across winter, autumn, and summer but sampling methods were con- sistent and variations were reported.				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.				
Domain 4: Test Organis	sms							
Domain 1. Test organis	Metric 9:	Outcome Assessment Methodology	Medium	Some of the details regarding the wastewater properties were not reported but the omis- sions are unlikely to have a substantial impact on the study results.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	The sampling methods were appropriate.				
Domain 6: Confounding	y/Variable Control							
	Metric 13:	Confounding Variables	High	Uncertainty was reported in the measurements and do not impact the study results.				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.				
		Exposure						
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	High	The data reporting was appropriate.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The statistical analysis was clearly described and appropriate.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.				
<b>Overall Quality Determination</b>								
Study Citation:	Salaudeen, T., Oko	h, O., Agunbiade, F., Okoh, A. (2018). Phthalates removal efficiency in different wastewater treatment technology in the Eastern Cape,						
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OECD Harmonized	South Africa. Envi Miscellaneous	ronmental Monitoring and Assessment 190(5):299.						
Template:	111000114110040							
HERO ID:	5490290							
		EXTRACTION						
Parameter		Data						
CASRN and Test Material		84-74-2; Dibutyl phthalate						
Confidentiality, Type, Guide	eline	None; Experimental; Experimental						
Solvent, Reactivity, Storage	, Stability	NR; NR; NR						
Radiolabel, Source, State, P	Purity	NR; AccuStandard, Inc.; NR; 96.8%						
Test Method Details, Test C Test Consistency	Condition Details, and	The removal capacity of different wastewater treatment plants (WWTP) Eastern Cape, South Africa; A standard working mixture of $100 \mu gmL - 1$ in methanol was prepared from the stock solution and stored under 4°C in amber bottles.; Not Reported						
System Type Design		Alice WWTP used activated sludge, 0.5-2 ML/d, Influent TDS 196.64 $\pm$ 12.3 mg/L, Effluent TDS 147.19 $\pm$ 5.1 mg/L, Influent turbidity 547.67 $\pm$ 136.2 NTU, Effluent turbidity 17.82 $\pm$ 6.9 NTU, Influent TSS 179.87 $\pm$ 36.5 mg/L, Effluent TSS 6.76-3 $\pm$ 2.6 mg/L.						
Sampling Frequency and Sa	ampling Details	Collected from each of the three selected WWTPs on a monthly basis for a period of 6 months from February to July 2016; Each water sample was first dechlorinated by adding 40–50 mg of sodium thiosulfate followed by acidification to a pH of $\leq 2$ with 50% HCl.						
Test Temperature		Storage temperature 4°C; Extraction temperature 60°C						
Results Details		Mean Influent: $1100 \pm 429 \mu$ g/L, Mean Final Effluent: $6.47 \pm 3.60 \mu$ g/L, Mean Sludge: $1094 \pm 89.3 \mu$ g/g						
Analytical Method and Ana	lytical Details	Solid-phase extraction method followed by gas chromatography-mass spectrometry (GC-MS) analysis (Agilent 17890B coupled with 5977A MSD).; Filtration through glass wool. Solid-phase extraction in duplicate with n-hexane, dichloromethane, and methanol. Eluents reduced in rotary evaporator and blown under dry stream of N2 at 30°C.						
Transformation Products, S	tatistics, and Kinetics	Not reported; Regression analysis. Regression coefficient 1.000 DBP. Recoveries for PAE's ranged from 5-10 µg/L, surrogate standard 75-123%.; Not Reported						
Reference Substance and Re Substance Results	eference	External calibration; Not Reported						

	EVALUATION				
Domain		Metric	Rating	Comments	
Domain 1: Test Substand	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.	
	Metric 2:	Test Substance Purity	High	The test substance purity was reported and appropriate.	
Domain 2: Test Design					
	Metric 3:	Study Controls	High	Appropriate blanks were used to determine background contamination.	
	Metric 4:	Test Substance Stability	High	The collection, storage, and preparation of the field samples containing the test sub- stance were reported and appropriate.	
Domain 3: Test Condition	ons				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	High	The testing conditions of the WWTP were reported.	
	Metric 7:	Testing Consistency	High	Testing was done across winter, autumn, and summer but sampling methods were con- sistent and variations were reported.	
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.	
	Continued on next page				

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Study Citation:	Salaudeen, T., Oko South Africa. Env	oh, O., Agunbiade, F., Okoh, A. (2018). I ironmental Monitoring and Assessment 1	Phthalates rem 90(5):299.	oval efficiency in different wastewater treatment technology in the Eastern Cape,
OECD Harmonized	Miscellaneous	C		
Template:				
HERO ID:	5490290			
		I	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 4: Tast Organis	1920			
Domain 4. Test Organis	Metric 9:	Outcome Assessment Methodology	Medium	Some of the details regarding the wastewater properties were not reported but the omis-
	Matric 10:	Sampling Methods	N/A	sions are unlikely to have a substantial impact on the study results.
	Wieurie 10.	Sampling Methods	IN/A	The metric is not applicable to the study type.
Domain 5: Outcome As	ssessment			
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.
	Metric 12:	Test Substance Purity	High	The sampling methods were appropriate.
Domain 6: Confounding	g/Variable Control	~ ^		
	Metric 13:	Confounding Variables	High	Uncertainty was reported in the measurements and do not impact the study results.
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.
		Exposure		
Domain 7: Data Present	tation and Analysis			
	Metric 15:	Data Reporting	High	The data reporting was appropriate.
	Metric 16:	Statistical Methods and	High	The statistical analysis was clearly described and appropriate.
		Kinetic Calculations	8	
Domain & Other				
Domain 6. Other	Matric 17:	Varification or Plausibility of	High	The study regults are reasonable
	wieure 17.	Results	rigii	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
			TT: 1	
<b>Overall Quali</b>	ty Determination	ation	High	

Study Citation:	Salaudeen, T., Oko	h, O., Agunbiade, F., Okoh, A. (2018). Phthalates removal efficiency in different wastewater treatment technology in the Eastern Cape,				
<b>OECD Harmonized</b>	Miscellaneous	ronmental Monitoring and Assessment 190(3):299.				
Template:						
HERO ID:	5490290					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, Type, Guidel	line	None; Experimental; Experimental				
Solvent, Reactivity, Storage,	Stability	NR; NR; NR				
Radiolabel, Source, State, Pu	ırity	NR; AccuStandard, Inc.; NR; 96.8%				
Test Method Details, Test Co	ondition Details, and	The removal capacity of different wastewater treatment plants (WWTP) Eastern Cape, South Africa; A standard working mixture of 100 µgmL-1				
Test Consistency		in methanol was prepared from the stock solution and stored under 4°C in amber bottles.; Not Reported				
Details		Dedie WAWTD and biefloor encode die eine and als he desire hed				
System Type Design	11 D . 11	Berlin w will Pused bioniters, anaerooic afgestion, and studge drying bed.				
Sampling Frequency and San	npling Details	Collected from each of the three selected WW1Ps on a monthly basis for a period of 6 months from February to July 2016; Each water sample was first dechlorinated by adding 40–50 mg of sodium thiosulfate followed by acidification to a pH of $\leq 2$ with 50% HCl.				
Test Temperature		4°C				
Results Details		Mean Influent: 180.69 $\pm$ 129 µg/L, Mean Final Effluent: 4.18 $\pm$ 0.85 µg/L, Mean Sludge: 399.45 $\pm$ 151.6 µg/g				
Analytical Method and Analy	ytical Details	Solid-phase extraction method followed by gas chromatography-mass spectrometry (GC-MS) analysis (Agilent 17890B coupled with 5977A MSD).; Filtration through glass wool. Solid-phase extraction in duplicate with n-hexane, dichloromethane, and methanol. Eluents reduced in rotary evaporator and blown under dry stream of N2 at 30°C.				
Transformation Products, Sta	atistics, and Kinetics	Not Reported; Regression analysis. Regression coefficient 0.993 DBP. Recoveries for PAE's ranged from 5-10 µg/L, surrogate standard 75-123%. Recoveries for PAE's ranged from 5-10 µg/L, surrogate standard 75-123%.; Not Reported				
Reference Substance and Ref Substance Results	ference	Not Reported; External calibration				

	EVALUATION				
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.	
	Metric 2:	Test Substance Purity	High	The test substance purity was reported and appropriate.	
Domain 2: Test Design					
	Metric 3:	Study Controls	High	Appropriate blanks were used to determine background contamination.	
	Metric 4:	Test Substance Stability	High	The collection, storage, and preparation of the field samples containing the test sub- stance were reported and appropriate.	
Domain 3: Test Condition	ons				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	High	The testing conditions of the WWTP were reported.	
	Metric 7:	Testing Consistency	High	Testing was done across winter, autumn, and summer but sampling methods were con- sistent and variations were reported.	
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.	
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Study Citation:	Salaudeen, T., Ok South Africa. Env	oh, O., Agunbiade, F., Okoh, A. (2018). I	Phthalates rem 90(5):299.	oval efficiency in different wastewater treatment technology in the Eastern Cape,
<b>OECD Harmonized</b>	Miscellaneous	6		
Template:				
HERO ID:	5490290			
		]	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 4. Test Organis	me			
Domain 4. Test Organis	Metric 9:	Outcome Assessment Methodology	Medium	Some of the details regarding the wastewater properties were not reported but the omis- sions are unlikely to have a substantial impact on the study results.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.
Domain 5: Outcome As	ssessment			
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.
	Metric 12:	Test Substance Purity	High	The sampling methods were appropriate.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	High	Uncertainty was reported in the measurements and do not impact the study results.
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.
		Exposure		
Domain 7: Data Presen	tation and Analysis			
	Metric 15:	Data Reporting	High	The data reporting was appropriate.
	Metric 16:	Statistical Methods and	High	The statistical analysis was clearly described and appropriate.
		Kinetic Calculations		
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	High	The study results are reasonable.
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quali	ty Determin	ation	High	

Study Citation: OECD Harmonized	Shao, X. L., Ma, J. Miscellaneous	. (2009). Fate and mass balance of 13 kinds of endocrine disrupting chemicals in a sewage treatment plant. :5342-5345.			
HERO ID:	1336562				
		EXTRACTION			
Parameter		Data			
CASRN and Test Material	I	84-74-2. Dibutyl nhthalate			
Confidentiality, Type, Gui	deline	None; Experimental; Experimental			
Solvent, Reactivity, Storag	ge, Stability	NR; NR; NR			
Radiolabel, Source, State,	Purity	NR; Beijing Chemical Plant; NR; >99%			
Test Method Details, Test Test Consistency	Condition Details, and	DBP concentrations in the primary influent of a wastewater treatment plant, as well as in the effluent of the primary and secondary sedimentation tanks, were measured.; Sewage treatment plant processes 220,000 tons of wastewater daily (20% industrial).; Not reported			
Details System Type Design		Treatment process: (1) grit chamber, (2) primary sedimentation, (3) conventional activated sludge treatment with an anaerobic tank and 4 aerobic tanks, and (4) secondary clarification			
Sampling Frequency and S	Sampling Details	The samples were collected over four sampling campaigns during one year. Samples were collected from influent of primary clarifier and effluent of both the primary and secondary sedimentation tanks in brown glass vessels.; Water samples were collected and adjusted to $pH < 2$ and stored at 4°C. Samples underwent solid phase extraction followed by HPLC.			
Test Temperature		Not reported			
Results Details		Total removal (%): 85.9±4.0			
Analytical Method and Ar	nalytical Details	High performance liquid chromatography; Not reported			
Transformation Products,	Statistics, and Kinetics	Not reported; Mass balance results in secondary treatment system: Biodegradation: 58.9%; Adsorption to sludge: 11.3%; Daily % of DBP in secondary sedimentation effluent: 29.8%; Not reported			
Reference Substance and I Substance Results	Reference	Not reported; Not reported			

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Substa	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.
	Metric 2:	Test Substance Purity	High	The test substance purity was reported and appropriate.
Domain 2: Test Design	1			
	Metric 3:	Study Controls	Medium	No controls were reported but the omission is unlikely to have a substantial impact on the study results.
	Metric 4:	Test Substance Stability	High	The test substance homogeneity in the collected samples and the storage conditions of the samples are appropriate.
Domain 3: Test Condit	ions			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	Medium	Some details regarding the conditions in the treatment plant were not reported but the omissions are unlikely to have a substantial impact on the study results.
	Metric 7:	Testing Consistency	High	The testing conditions were consistent across the study groups.
			Continued on next p	bage

Page 653 of 720

		continu	ied from prev	vious page
Study Citation:	Shao, X. L., Ma, J	. (2009). Fate and mass balance of 13 kin	ds of endocrir	ne disrupting chemicals in a sewage treatment plant. :5342-5345.
OECD Harmonized	Miscellaneous			
HFRO ID.	1336562			
	1550502			
<b>D</b>		F	EVALUATIO	N
Domain		Metric	Rating	Comments
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.
Domain 4: Test Organis	ms			
	Metric 9:	Outcome Assessment Methodology	Medium	Some details regarding the inoculum were not reported but the omissions are unlikely to have a substantial impact on the study results.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.
Domain 5: Outcome As	sessment			
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.
	Metric 12:	Test Substance Purity	High	The sampling methods were described and were appropriate.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	High	Uncertainty was reported in the calculations and unlikely to influence the study results.
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to the study type.
		Exposure		
Domain 7: Data Present	ation and Analysis			
	Metric 15:	Data Reporting	Medium	The data was clearly reported, including concentrations and removal percentages. There were some details not reported regarding the analytical method but the omissions are unlikely to have a substantial impact on the study results.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The statistical analysis was appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	Low	Due to limited information, the plausibility of the study results could not be evaluated.
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to the study type.
<b>Overall Qualit</b>	ty Determina	ation	High	

OECD Harmonized Miscellaneous       Miscellaneous         Wiscellaneous       Miscellaneous         Template: HERO ID:       4728707         Parameter       Data         CASRN and Test Material       84-74-2; Dibutyl phthalate         Confidentiality, Type, Guideline       None; Experimental; Experimental         Solvent, Reactivity, Storage, Stability       Ne; NR; NR; NR         Radiolabel, Source, State, Purity       NR; NR Notes: DNBP         Test Method Details, rest Codition Details, and Test Consistency       Removal from wastewater after primary and tertiary waste water treatment; Phthalate esters detected at concentration levels of 0.33 to 9.20 ppm in the inflow and 0.29 to 6.89 ppm in the outflow (primary); 0.52 to 16.92 ppm in the inflow and 0.09 to 1.29 ppm in the outflow (tertiary); Not applicable         System Type Design       Puerto Nuevo: primary waste water treatment; Caguas: tertiary waste water treatment         Sampling Frequency and Sampling Details       Four sampling events occurred from September to December 2012 at each plant; Composite samples collected at regular intervals or 24h at inflow and outflow stations; all samples were taken in amber glass bottles and stored below 4C during transportation; samples stored at 4C for no more than 2 days prior to analysis         Test Temperature       Not applicable         Results Details       -52/5 removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17	Study Citation:	Soler-Llavina, S. N	1., Ortiz-Zayas, J. R. (2017). Emergent contaminants in the wastewater effluents of two highly populated tropical cities. Journal of Water			
Template: HERO ID:       4728707         Extraction         Parameter       Extraction         CASRN and Test Material       84-74-2; Dibutyl phthalate         Confidentiality, Type, Guideline       None; Experimental; Experimental         Solvent, Reactivity, Storage, Stability       NR; NR; NR; NR         Radiolabel, Source, State, Purity       NR; NR; NR; NR Notes: DNBP         Rest Method Details, Test Condition Details, and Test Consistency       Removal from wastewater after primary and tertiary waste water treatment; Phthalate esters detected at concentration levels of 0.33 to 9.20 ppm in the inflow and 0.29 to 6.89 ppm in the outflow (primary); 0.52 to 16.92 ppm in the inflow and 0.09 to 1.29 ppm in the outflow (tertiary); Not applicable         System Type Design       Puerto Nuevo: primary waste water treatment; Caguas: tertiary waste water treatment         Sampling Frequency and Sampling Details       Four samples were taken in amber glass bottles and stored below 4C during transportation; samples stored at 4C for no more than 2 days prior to analysis         Test Temperature       Not applicable         Results Details       Samples den man inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment solid phase extraction and gas chromatography-mass spectrometry; linear response of the curves produced R-squared of greater than 0.99 for all analytes	<b>OECD Harmonized</b>	Miscellaneous	75-004.			
HERO ID:       4728707         EXTRACTION         Parameter       Data         CASRN and Test Material       84-74-2; Dibutyl phthalate         Confidentiality, Type, Guideline       None; Experimental; Experimental         Solvent, Reactivity, Storage, Stability       NR; NR; NR         Radiolabel, Source, State, Purity       NR; waste water; NR; NR Notes: DNBP         Test Method Details, Test Condition Details, and Test Consistency       Removal from wastewater after primary and tertiary waste water treatment; Phthalate esters detected at concentration levels of 0.33 to 9.20 ppm in the inflow and 0.29 to 6.89 ppm in the outflow (primary); 0.52 to 16.92 ppm in the outflow (tertiary); Not applicable         System Type Design       Puerto Nuevo: primary waste water treatment; Caguas: tertiary waste water treatment         Sampling Frequency and Sampling Details       Four sampling events occurred from September to December 2012 at each plant; Composite samples collected at regular intervals or 24h at inflow and outflow stations; all samples were taken in amber glass bottles and stored below 4C during transportation; samples stored at 4C for no more than 2 days prior to analysis         Test Temperature       Not applicable         Results Details       -36.2% removal based on % change of mean inflow (8.07 ppm) and outflow (5.15 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment solid phase extraction and gas chromatography-mass spectrometry; linear response of the curves produced R-square	Template:					
ParameterDataCASRN and Test Material84-74-2; Dibutyl phthalateConfdentiality, Type, GuidelineNore: Experimental: ExperimentalSolvent, Reactivity, Storage, StabilityNice: Styperimental: ExperimentalSolvent, Reactivity, Storage, StabilityNice: Styperimental: ExperimentalRadiolabel, Source, State, PurityNice: Styperimental (Experimental)Test Method Details, Test Condition DetailsNice: Styperimental (Experimental)Test Method Details, Test Condition DetailsRemoval from wastewater after primary and tertiary waste water treatment; Phthalate esters detected at concentration levels of 0.33 to 9.20 ppmTest Method Details, Test Condition DetailsRemoval from wastewater after primary and tertiary waste water treatment; Phthalate esters detected at concentration levels of 0.33 to 9.20 ppmDetailsRemoval from wastewater after primary and tertiary waste water treatment; Phthalate esters detected at concentration levels of 0.33 to 9.20 ppmSystem Type DesignPuerto Nuevo: primary waste water treatment; Caguas: tertiary waste water treatment;System Type DesignFour sampling events occurred from September to December 2012 at each plant; Composite samples collected at regular intervals or 24 hat inflow and outflow stations; all samples were taken in amber glass bottles and stored below 4C during transportation; samples stored at 4C for no more that 2 days prior to analysisTest TemperatureNot applicableResults Details-36.2% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment; baid phase ration and gas chromatography-mass spectrometry; linear response of the curves produced R-squared of geneat	HERO ID:	4728707				
ParameterDataCASRN and Test Material84-74-2; Dibutyl phthalateConfidentiality, Type, GuidelineNone; Experimental; ExperimentalSolvent, Reactivity, Storage, StabilityNR; NR; NRRadiolabel, Source, State, PurityNR; waste water; NR; NR Notes: DNBPTest Method Details, Test Condition Details, and Test Method Details, Test Condition Details, and test ConsistencyRemoval from wastewater after primary and tertiary waste water treatment; Phthalate esters detected at concentration levels of 0.33 to 9.20 ppm in the inflow and 0.29 to 6.89 ppm in the outflow (primary); 0.52 to 16.92 ppm in the inflow and 0.09 to 1.29 ppm in the outflow (tertiary); Not applicableSystem Type DesignPuerto Nuevo: primary waste water treatment; Caguas: tertiary waste water treatmentSampling Frequency and Sampling DetailsFour sampling events occurred from September to December 2012 at each plant; Composite samples collected at regular intervals or 24h at inflow and outflow stations; all samples were taken in amber glass bottles and stored below 4C during transportation; samples stored at 4C for no more than 2 days prior to analysisTest Temperature-36.2% removal based on % change of mean inflow (8.07 ppm) and outflow (5.15 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after primary treatment; based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment analytes			EXTRACTION			
CASRN and Test Material84-74-2; Dibutyl phthalateConfidentiality, Type, GuidelineNone; Experimental; ExperimentalSolvent, Reactivity, Storage, StabilityNR; NR; NRRadiolabel, Source, State, PurityNR; waste water; NR; NR Notes: DNBPTest Method Details, and Test ConsistencyRemoval from wastewater after primary and tertiary waste water treatment; Phthalate esters detected at concentration levels of 0.33 to 9.20 ppmDetailsapplicableSystem Type DesignPuerto Nuevo: primary waste water treatment; Caguas: tertiary waste water treatmentSampling Frequency and Sampling DetailsFour sampling events occurred from September to December 2012 at each plant; Composite samples collected at regular intervals or 24h at inflow and outflow stations; all samples were taken in amber glass bottles and stored below 4C during transportation; samples stored at 4C for no more than 2 days prior to analysisTest TemperatureNot applicableResults Details-36.2% removal based on % change of mean inflow (8.07 ppm) and outflow (5.15 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after primary treatment solid phase extraction and gas chromatography-mass spectrometry; linear response of the curves produced R-squared of greater than 0.99 for all analytics	Parameter		Data			
CASRN and Test Material8474-2; Dibutyl pthalateConfidentiality, Type, GuidelineNone; Experimental; ExperimentalSolvent, Reactivity, Storage, StabilityNR; NR; NRRadiolabel, Source, State, PurityNR; waste water; NR; NR Notes: DNBPPast Method Details, Test Condition Details, and Test ConsistencyRemoval from wastewater after primary and tertiary waste water treatment; Phthalate esters detected at concentration levels of 0.33 to 9.02 ppm in the inflow and 0.29 to 6.89 ppm in the outflow (primary); 0.52 to 16.92 ppm in the inflow and 0.09 to 1.29 ppm in the outflow (tertiary); Not applicableSystem Type DesignPuerto Nuevo: primary waste water treatment; Caguas: tertiary waste water treatmentSampling Frequency and Sampling DetailsFour sampling events occurred from September to December 2012 at each plant; Composite samples collected at regular intervals or 24th at inflow and outflow stations; all samples were taken in amber glass bottles and stored below 4C during transportation; samples stored at 4C for no more than 2 days prior to analysisTest Temperature-56.2% removal based on % change of mean inflow (13.02 ppm) and outflow (5.15 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after primary treatment; 92.3% removal analytes						
Confidentiality, Type, GuidelineNone; Experimental; ExperimentalSolvent, Reactivity, Storage, StabilityNR; NR; NRRadiolabel, Source, State, PurityNR; waste water; NR; NR Notes: DNBPTest Method Details, Test Condition Details, and Test ConsistencyRemoval from wastewater after primary and tertiary waste water treatment; Phthalate esters detected at concentration levels of 0.33 to 9.20 ppm in the inflow and 0.29 to 6.89 ppm in the outflow (primary); 0.52 to 16.92 ppm in the inflow and 0.09 to 1.29 ppm in the outflow (tertiary); Not applicableSystem Type DesignPuerto Nuevo: primary waste water treatment; Caguas: tertiary waste water treatmentSampling Frequency and Sampling DetailsFour sampling events occurred from September to December 2012 at each plant; Composite samples collected at regular intervals or 24h at inflow and outflow stations; all samples were taken in amber glass bottles and stored below 4C during transportation; samples stored at 4C for no more than 2 days prior to analysisTest TemperatureNot applicableResults Details-36.2% removal based on % change of mean inflow (8.07 ppm) and outflow (5.15 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm	CASRN and Test Material		84-74-2; Dibutyl phthalate			
Solvent, Reactivity, Storage, StabilityNR; NR; NRRadiolabel, Source, State, PurityNR; waste water; NR; NR Notes: DNBPTest Method Details, Test Condition Details, and Test ConsistencyRemoval from wastewater after primary and tertiary waste water treatment; Phthalate esters detected at concentration levels of 0.33 to 9.20 ppm in the inflow and 0.29 to 6.89 ppm in the outflow (primary); 0.52 to 16.92 ppm in the inflow and 0.09 to 1.29 ppm in the outflow (tertiary); Not applicableSystem Type DesignPuerto Nuevo: primary waste water treatment; Caguas: tertiary waste water treatmentSampling Frequency and Sampling DetailsFour sampling events occurred from September to December 2012 at each plant; Composite samples collected at regular intervals or 24h at inflow and outflow stations; all samples were taken in amber glass bottles and stored below 4C during transportation; samples stored at 4C for no more than 2 days prior to analysisTest TemperatureNot applicableResults Details-36.2% removal based on % change of mean inflow (8.07 ppm) and outflow (5.15 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment based on % change of mean inflow (13.02 ppm)	Confidentiality, Type, Guide	eline	None; Experimental; Experimental			
Radiolabel, Source, State, PurityNR; waste water; NR; NR Notes: DNBPTest Method Details, Test Condition Details, and Test Consistency DetailsRemoval from wastewater after primary and tertiary waste water treatment; Phthalate esters detected at concentration levels of 0.33 to 9.20 ppm in the inflow and 0.29 to 6.89 ppm in the outflow (primary); 0.52 to 16.92 ppm in the inflow and 0.09 to 1.29 ppm in the outflow (tertiary); Not applicableSystem Type DesignPuerto Nuevo: primary waste water treatment; Caguas: tertiary waste water treatmentSampling Frequency and Sampling DetailsFour sampling events occurred from September to December 2012 at each plant; Composite samples collected at regular intervals or 24h at inflow and outflow stations; all samples were taken in amber glass bottles and stored below 4C during transportation; samples stored at 4C for no more than 2 days prior to analysisTest TemperatureNot applicableResults Details-36.2% removal based on % change of mean inflow (8.07 ppm) and outflow (5.15 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment; solid phase extraction and gas chromatography-mass spectrometry; linear response of the curves produced R-squared of greater than 0.99 for all analytes	Solvent, Reactivity, Storage	, Stability	NR; NR; NR			
Test Method Details, Test Condition Details, and Test ConsistencyRemoval from wastewater after primary and tertiary waste water treatment; Phthalate esters detected at concentration levels of 0.33 to 9.20 ppm in the inflow and 0.29 to 6.89 ppm in the outflow (primary); 0.52 to 16.92 ppm in the inflow and 0.09 to 1.29 ppm in the outflow (tertiary); Not applicableSystem Type DesignPuerto Nuevo: primary waste water treatment; Caguas: tertiary waste water treatmentSampling Frequency and Sampling DetailsFour sampling events occurred from September to December 2012 at each plant; Composite samples collected at regular intervals or 24h at inflow and outflow stations; all samples were taken in amber glass bottles and stored below 4C during transportation; samples stored at 4C for no more than 2 days prior to analysisTest TemperatureNot applicableResults Details-36.2% removal based on % change of mean inflow (8.07 ppm) and outflow (5.15 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment solid phase extraction and gas chromatography-mass spectrometry; linear response of the curves produced R-squared of greater than 0.99 for all analytes	Radiolabel, Source, State, P	Purity	NR; waste water; NR; NR Notes: DNBP			
Test Consistencyin the inflow and 0.29 to 6.89 ppm in the outflow (primary); 0.52 to 16.92 ppm in the inflow and 0.09 to 1.29 ppm in the outflow (tertiary); Not applicableSystem Type DesignPuerto Nuevo: primary waste water treatment; Caguas: tertiary waste water treatmentSampling Frequency and Sampling DetailsFour sampling events occurred from September to December 2012 at each plant; Composite samples collected at regular intervals or 24h at inflow and outflow stations; all samples were taken in amber glass bottles and stored below 4C during transportation; samples stored at 4C for no more than 2 days prior to analysisTest TemperatureNot applicableResults Details-36.2% removal based on % change of mean inflow (8.07 ppm) and outflow (5.15 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatmentAnalytical Method and Analytical Detailssolid phase extraction and gas chromatography-mass spectrometry; linear response of the curves produced R-squared of greater than 0.99 for all analytes	Test Method Details, Test C	ondition Details, and	Removal from wastewater after primary and tertiary waste water treatment; Phthalate esters detected at concentration levels of 0.33 to 9.20 ppm			
DetailsapplicableSystem Type DesignPuerto Nuevo: primary waste water treatment; Caguas: tertiary waste water treatmentSampling Frequency and Sampling DetailsFour sampling events occurred from September to December 2012 at each plant; Composite samples collected at regular intervals or 24h at inflow and outflow stations; all samples were taken in amber glass bottles and stored below 4C during transportation; samples stored at 4C for no more than 2 days prior to analysisTest TemperatureNot applicableResults Details-36.2% removal based on % change of mean inflow (8.07 ppm) and outflow (5.15 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatmentAnalytical Method and Analytical Detailssolid phase extraction and gas chromatography-mass spectrometry; linear response of the curves produced R-squared of greater than 0.99 for all analytes	Test Consistency		in the inflow and 0.29 to 6.89 ppm in the outflow (primary); 0.52 to 16.92 ppm in the inflow and 0.09 to 1.29 ppm in the outflow (tertiary); Not			
System Type DesignFuerto Nuevo, primary wase water treatment, caguas, ertuary wase water treatmentSampling Frequency and Sampling DetailsFour sampling events occurred from September to December 2012 at each plant; Composite samples collected at regular intervals or 24h at inflow and outflow stations; all samples were taken in amber glass bottles and stored below 4C during transportation; samples stored at 4C for no more than 2 days prior to analysisTest TemperatureNot applicableResults Details-36.2% removal based on % change of mean inflow (8.07 ppm) and outflow (5.15 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatmentAnalytical Method and Analytical Detailssolid phase extraction and gas chromatography-mass spectrometry; linear response of the curves produced R-squared of greater than 0.99 for all analytes	Details System Type Design		applicable Duarto Nuavo: primary wasta watar traatmant: Cognos: tartiary wasta watar traatmant			
Sampling Frequency and sampling DetailsFour samples vertex of a sample events of centred from september to December 2012 at each plant, composite samples context at regular intervals of 2-41 at inflow and outflow stations; all samples were taken in amber glass bottles and stored below 4C during transportation; samples stored at 4C for no more than 2 days prior to analysisTest TemperatureNot applicableResults Details-36.2% removal based on % change of mean inflow (8.07 ppm) and outflow (5.15 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatmentAnalytical Method and Analytical Detailssolid phase extraction and gas chromatography-mass spectrometry; linear response of the curves produced R-squared of greater than 0.99 for all analytes	System Type Design	umpling Details	Four sampling events occurred from Sentember to December 2012 at each plant. Composite samples collected at regular intervals or 24h at inflow			
Test TemperatureNot applicableResults Details-36.2% removal based on % change of mean inflow (8.07 ppm) and outflow (5.15 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatmentAnalytical Method and Analytical Detailssolid phase extraction and gas chromatography-mass spectrometry; linear response of the curves produced R-squared of greater than 0.99 for all analytes	Sampling Prequency and Sa	unphing Details	and outflow stations; all samples were taken in amber glass bottles and stored below 4C during transportation; samples stored at 4C for no more than 2 days prior to analysis			
Results Details-36.2% removal based on % change of mean inflow (8.07 ppm) and outflow (5.15 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatmentAnalytical Method and Analytical Detailssolid phase extraction and gas chromatography-mass spectrometry; linear response of the curves produced R-squared of greater than 0.99 for all analytes	Test Temperature		Not applicable			
Analytical Method and Analytical Details based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment solid phase extraction and gas chromatography-mass spectrometry; linear response of the curves produced R-squared of greater than 0.99 for all analytes	Results Details		-36.2% removal based on % change of mean inflow (8.07 ppm) and outflow (5.15 ppm) concentrations after primary treatment; 92.3% removal			
Analytical Method and Analytical Details solid phase extraction and gas chromatography-mass spectrometry; linear response of the curves produced R-squared of greater than 0.99 for all analytes			based on % change of mean inflow (13.02 ppm) and outflow (1.17 ppm) concentrations after tertiary treatment			
	Analytical Method and Ana	lytical Details	solid phase extraction and gas chromatography-mass spectrometry; linear response of the curves produced R-squared of greater than 0.99 for all analytes			
Transformation Products, Statistics, and Kinetics Not applicable; paired t-tests; ANOVA; p value <0.05; Not applicable	Transformation Products, St	tatistics, and Kinetics	Not applicable; paired t-tests; ANOVA; p value <0.05; Not applicable			
Reference Substance and Reference Not applicable; Not applicable	Reference Substance and Re	eference	Not applicable; Not applicable			

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substand	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.	
	Metric 2:	Test Substance Purity	Low	Test substance analytical standards were not reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	Low	Analytical controls/blanks not reported.	
	Metric 4:	Test Substance Stability	N/A	This metric is not applicable to this type of study.	
Domain 3: Test Condition	ons				
	Metric 5:	Test Method Suitability	High	This metric met the criteria for high confidence as expected for this type of study.	
	Metric 6:	Testing Conditions	N/A	This metric is not applicable to this type of study.	
	Metric 7:	Testing Consistency	N/A	This metric is not applicable to this type of study.	
	Metric 8:	System Type and Design	Medium	Limited detail reported.	
Continued on next page					

		continu	ed from previou	s page
Study Citation:	Soler-Llavina, S. and Health 15(6):	M., Ortiz-Zayas, J. R. (2017). Emergent cor 873-884	ntaminants in the	wastewater effluents of two highly populated tropical cities. Journal of Water
<b>OECD Harmonized</b>	Miscellaneous			
Template:				
HERO ID:	4728707			
		Ε	VALUATION	
Domain		Metric	Rating	Comments
Domain 4: Test Organis	ms			
U	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.
Domain 5. Outcome Ac	aaamant			
Domain 5. Outcome As	Metric 11.	Test Substance Identity	Medium	This metric met the criteria for medium confidence as expected for this type of study
	Metric 12:	Test Substance Purity	Medium	This metric met the criteria for medium confidence as expected for this type of study.
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	Medium	This metric met the criteria for medium confidence as expected for this type of study. Confounding variables were not addressed.
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.
		Exposure		
Domain 7: Data Present	ation and Analysis			
	Metric 15:	Data Reporting	Low	Limited analytical detail reported.
	Metric 16:	Statistical Methods and	High	This metric met the criteria for high confidence as expected for this type of study.
		Kinetic Calculations		
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	Low	The study results are reasonable.
	Metric 18.	Results OSAR Models	N/A	The metric is not applicable to this study type.

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Study Citation:	Tomei, M. C., Mosca Angelucci, D., Mascolo, G., Kunkel, U. (2019). Post-aerobic treatment to enhance the removal of conventional and emerging micropollutants in the digestion of waste sludge. Waste Management 96:36-46							
<b>OECD Harmonized</b>	Miscellaneous	Miscellaneous						
Template:								
HERO ID:	5692000							
		EXTRACTION						
Parameter		Data						
CASRN and Test Material	l	84-74-2; Dibutyl phthalate						
Confidentiality, Type, Gui	deline	None; WWTP waste sludge treatment removal efficiency; WWTP waste sludge treatment removal efficiency						
Solvent, Reactivity, Storag	ge, Stability	NA; NR; Stored at 4 deg C prior to analysis; NR						
Radiolabel, Source, State,	Purity	NA; Waste sludge from "Roma-Nord" WWTP in Rome, Italy; Not Reported; NA						
Test Method Details, Test	Condition Details, and	Waste sludge from WWTP in Italy further treated by semi-continuous mesophilic and aerobic reactors in order to determine removal efficiency						
Test Consistency		of pollutants of interest.; Sludge origin: WWTP "Roma-Nord" in Rome, ItalyTotal solids = 39.71 g/LVolatile solids = 27.44 g/LCOD = 39.87						
Details		g/LTOC = 309.44 g/kg dwFeed rate: 0.47 L/d (anaerobic reactor), 0.37 L/d (aerobic reactor)SRT: 15 d (mesophilic anaerobic reactor), 12 d						
System Type Design		(aerobic reactor)DU (aerobic reactor): ~ 3 mg/L; Not Reported Two 7.4 L diageters operated in semi-sentiments model waste sludge fed to the mesonbilic apparable reserves a fraction of which was then fed to						
System Type Design		the aerobic reactor. Both reactors fitted with mechanical stirrers						
Sampling Frequency and Sampling Details		Daily; Samples collected daily and analyzed as 7-10 dey composites, oven dried (60 deg C) prior to analysis.						
Test Temperature		Series 1: 37 deg C (anaerobic reactor), 20 deg C (aerobic reactor); Series II: 37 deg C (anaerobic and aerobic reactors)						
Results Details		100% removed in the anaerobic reactor at both temperatures.						
Analytical Method and Analytical Details		EPA Method 3545 and 8270; LOD = 5 ug/kg dw						
Transformation Products,	Statistics, and Kinetics	NR; NR; NA						
Reference Substance and I Substance Results	Reference	NA; NA						

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substance	e				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
	Metric 2:	Test Substance Purity	N/A	Not applicable for WWTP removal studies.	
Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	Not applicable for WWTP removal studies.	
	Metric 4:	Test Substance Stability	High	Sludge sample storage and preparation conditions were reported.	
Domain 3: Test Conditio	ns				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	High	Aerobic and anaerobic conditions were reported, temperature was reported, SRT and sludge characteristics were reported.	
	Metric 7:	Testing Consistency	High	Operational conditions were consistent across the study duration.	
	Metric 8:	System Type and Design	N/A	Not applicable.	

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Study Citation:	Tomei, M. C., M micropollutants in	Tomei, M. C., Mosca Angelucci, D., Mascolo, G., Kunkel, U. (2019). Post-aerobic treatment to enhance the removal of conventional and emerging micropollutants in the digestion of waste sludge. Waste Management 96:36-46.						
<b>OECD Harmonized</b>	Miscellaneous	6 6	U					
Template:								
HERO ID:	5692000							
		ŀ	EVALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 4: Test Organis	ms							
	Metric 9:	Outcome Assessment Methodology	N/A	Not applicable.				
	Metric 10:	Sampling Methods	N/A	Not applicable.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining removal effi- ciency and removal efficiency was reported by the study authors.				
	Metric 12:	Test Substance Purity	High	Sampling methods and frequency were appropriate.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	Medium	Variability and uncertainty were not explicitly addressed.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Not applicable.				
Domain 7: Data Present	ation and Analysis							
	Metric 15:	Data Reporting	Medium	The analytical method was reported by name with limited details, but it was an EPA standard method. Limit of detection was reported but not extraction efficiency. Raw influent and effluent concentrations were not reported.				
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	Statistical and kinetic calculations were not conducted.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Results	Medium	The results were plausible based on available method details, but were not compared to previous studies.				
	Metric 18:	QSAR Models	N/A	Not applicable.				
Overall Qualit	ty Determin	ation	High					

Study Citation:	Tran, B. C., Teil, M. J., Blanchard, M., Alliot, F., Chevreuil, M. (2014). BPA and phthalate fate in a sewage network and an elementary river of France.					
OECD Harmonized	onized Miscellaneous					
Template:	2519056					
	2317030	Εντριζοτι				
Parameter		Data				
CASRN and Test Material		84-74-2; Di-n-butyl phthalate				
Confidentiality, Type, Guidelin	ne	None; Experimental; Experimental				
Solvent, Reactivity, Storage, S	Stability	isooctane; NR; NR; NR				
Radiolabel, Source, State, Purity		NR; Wastewater influent; Wastewater contaminant; NR Notes: Analytical standard: standard solution of 6 phthalates, DMP, DEP, DnBP, BBP, DEHP, DnOP, from Supelco (via Sigma–Aldrich)				
Test Method Details, Test Cor	ndition Details, and	DnBP concentrations in WWTP inputs = $4.1 \pm 1.6$ ug/L, output = $0.14 \pm 0.10$ ug/L; removal efficiencies estimated by differences between WWTP				
Test Consistency		input and output concentrations.; Wastewater fluxes entering ranged from 270 to 532 m3/d during 2010-2011; transit time inside was ca. 17 hours.;				
Details		The annual mean decrease between inputs and outputs for biological oxygen demand (BOD5), chemical oxygen demand (COD) and suspended matter were of 98%, 91% and 95.2%, respectively, during 2010–2011				
System Type Design		WWTP employs a combined tank (decantation and activated sludge)which treated 157000 m3 of wastewater by biological process and produced about 32 t/year of dry sludge				
Sampling Frequency and Sampling Details		Not reported; WWTP input filtered through glass fiber filters to separate dissolved and Sed phases; phases treated with solvent mixture (75% hexane and 25% methylene chlorine for dissolved phase or hexane/acetone (50/50 vol/vol) for sediment), then concentrated				
Test Temperature		Not reported				
Results Details		96.6% removal efficiency by degradation and decantation				
Analytical Method and Analytical Details		GC/MS; MDL corresponded to the concentration of a signal/noise ratio of 9 (DEHP detected in the blanks $\leq$ 10 ng); limits of quantification (LOQ) corresponded to average blank values. When they were below IDLs, the MDLs were considered.				
Transformation Products, Stat	tistics, and Kinetics	Not reported; Not reported; Not reported				
Reference Substance and Reference Substance Results		Not reported; Not reported				

	EVALUATION						
Domain		Metric	Rating	Comments			
Domain 1: Test Substan	ice						
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.			
	Metric 2:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.			
Domain 2: Test Design							
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.			
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.			
Domain 3: Test Condition	ons						
	Metric 5:	Test Method Suitability	High	This metric met the criteria for high confidence as expected for this type of study.			
	Metric 6:	Testing Conditions	High	This metric met the criteria for high confidence as expected for this type of study.			
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to this study type.			
Continued on next page							

	continued from previous page							
Study Citation:	Tran, B. C., Teil, Influence of hydro	Tran, B. C., Teil, M. J., Blanchard, M., Alliot, F., Chevreuil, M. (2014). BPA and phthalate fate in a sewage network and an elementary river of France.						
<b>OECD Harmonized</b>	Miscellaneous							
Template:								
HERO ID:	2519056							
		E	VALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.				
Domain 4: Test Organis	sms							
C	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	This metric met the criteria for high confidence as expected for this type of study.				
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	N/A	The metric is not applicable to this study type.				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.				
		Exposure						
Domain 7: Data Presen	tation and Analysis							
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.				
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	The metric is not applicable to this study type.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	This metric met the criteria for high confidence as expected for this type of study.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
<b>Overall Quali</b>	ty Determina	ation	High					

Study Citation:	U.S. EPA, (1974).	Pesticides in the Illinois waters of Lake Michigan.				
OECD Harmonized	Miscellaneous	Aiscellaneous				
Template:						
HERO ID:	1333424					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		not reported; Not Reported				
Confidentiality, Type, Guide	eline	No; experimental; experimental				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	Purity	NR; NR; NR Notes: NR				
Test Method Details, Test C	Condition Details, and	Monitoring study of Lake Michigan sediments (approx 40-80 yards offshore, tributary streams and ravine sediments in Illinois (approx 50 yards				
Details		Coho salmon alewife): NR: NR				
System Type Design		NR				
Sampling Frequency and Sa	ampling Details	NR; Samples collected in 1970-1972. Water grab samples and composite samples collected. Whole fish and fillet collected and frozen until analysis. Direct sediment samples collected.				
Test Temperature		NR				
Results Details		Dibutyl phthalate was not detected in 24 open water sediments; was found in 3 of 24 open water sediments <1 to 3 miles off shore at concentrations ranging from 1.02-7.18 ppb; and found in 2 out of 13 samples up to 50 yards upstream from the lake at concentrations of 25.00-120.00; dibutyl phthalate was not detected in the Waukegan River or Pettibone creek in 1971, in 1972 concentrations ranged between 55.0-250.00 ppt; di- dibutyl phthalate was detected in effluents in 17/17 samples in 1972 at concentrations of trace-250.0 ppt. Dibutyl phthalate was found in edible portions of fish at concentrations of ND to 0.1 ppm.				
Analytical Method and Ana	lytical Details	Samples analyzed according to FWPCA Method for Chlorinated Hydrocarbon Pesticides in Water and Wastewater; deviations:1000 mL Erlenmeyer fitted with Snyder distillation columns flasks; Varian Aerograph 204 with 2 columns and Ni detector; LOD = 2 ppb (fish), 200 ppb (sediment), 20 ppt (water).; % recovery = 85-95% (fish), 90% (sediment and water)				
Transformation Products, St	tatistics, and Kinetics	NR; NR				
Reference Substance and Re Substance Results	eference	NR; NR				

			EVALUATION		
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ice				
	Metric 1:	Test Substance Identity	High	The test substance was identified.	
	Metric 2:	Test Substance Purity	Medium	Source was reported; analytical standard not reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study.	
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study.	
Domain 3: Test Conditions					
	Metric 5:	Test Method Suitability	N/A	The metric is not applicable to this study.	
	Metric 6:	Testing Conditions	N/A	The metric is not applicable to this study.	
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		con	tinued from previous	page
Study Citation: OECD Harmonized	U.S. EPA, (1974). Miscellaneous	Pesticides in the Illinois waters of Lak	e Michigan.	
HERO ID:	1333424			
			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to this study.
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study.
Domain 4: Test Organis	sms			
C C	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study.
	Metric 10:	Sampling Methods	Low	The test organisms were reported with minimal detail.
Domain 5: Outcome As	ssessment			
	Metric 11:	Test Substance Identity	Low	The assessment methodology did not specifically or quantitatively address or report the outcome of interest (transport/WWTP removal).
	Metric 12:	Test Substance Purity	High	Sampling methods of the outcome were reported.
Domain 6: Confoundin	g/Variable Control			
Domain 0. Comoundain	Metric 13:	Confounding Variables	N/A	The metric is not applicable to this study.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study.
Domain 7: Data Presen	tation and Analysis			
	Metric 15:	Data Reporting	Medium	Limited detail regarding sample locations.
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis was not conducted.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study.
Overall Quali	ty Determin	ation	Medium	

Study Citation:	Van Rensburg, J. F.	Van Rensburg, J. F. J., Hassett, A., Theron, S., Wiechers, S. G. (1981). The fate of organic micropollutants through an integrated wastewater treatment/water					
OFCD Harmonizad	reclamation system	n. :537-552.					
Template.	wiscenatieous						
HERO ID:	1482384						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		Not Reported; Dibutyl phthalate					
Confidentiality, Type, Guid	leline	no; experimental; experimental					
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR					
Radiolabel, Source, State, Purity		NR; wastewater; NR; NR Notes: NR					
Test Method Details, Test (	Condition Details, and	Pilot plant for removal of micropollutants using integrated wastewater treatment/water reclamation system; Treatment: modified lime flotation					
Test Consistency		biological system for treatment of raw sewage at 60 m3/d; not reported					
System Type Design		pilot plant WWT in Pretoria; treatment systems include: denitrification reactor, biological clarifier, dual media filter, chemical mixing, thickener,					
		active carbon, chemical clarifier, anaerobic digester, chlorination, nitrification pond with aeration, roughing filter, flow division					
Sampling Frequency and S	ampling Details	not reported; effluent samples were collected					
Test Temperature		not reported					
Results Details		0.8 µg/dm3 dibutyl phthalate was detected in final water					
Analytical Method and Ana	alytical Details	GC with FID and ECD using internal standards; not reported					
Transformation Products, S	Statistics, and Kinetics	not reported; not reported; not reported					
Reference Substance and R	Reference	not reported; not reported					
Substance Results							

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substance	2					
	Metric 1:	Test Substance Identity	High	The test substance was identified.		
	Metric 2:	Test Substance Purity	N/A	This metric is not applicable to this type of study.		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	This metric is not applicable to this type of study.		
	Metric 4:	Test Substance Stability	N/A	This metric is not applicable to this type of study.		
Domain 3: Test Condition	IS					
	Metric 5:	Test Method Suitability	Low	Pilot plant; not a fully operational WWTP.		
	Metric 6:	Testing Conditions	Medium	Some treatment step details were omitted.		
	Metric 7:	Testing Consistency	N/A	This metric is not applicable to this type of study.		
	Metric 8:	System Type and Design	High	The system was described and appropriate.		
Domain 4: Test Organisms Metric 9: Outcome Assessment Methodology N/A This metric is not applicable to this type of study.						
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		••	. continued from previous page						
Study Citation:	Van Rensburg, . reclamation sys	Van Rensburg, J. F. J., Hassett, A., Theron, S., Wiechers, S. G. (1981). The fate of organic micropollutants through an integrated wastewater treatment/water reclamation system. :537-552.							
OECD Harmonized	Miscellaneous								
Template: HERO ID:	1482384								
			EVALUATION						
Domain		Metric	Rating	Comments					
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.					
Domain 5: Outcome A	ssessment								
	Metric 11:	Test Substance Identity	Uninformative	Influent concentrations were not reported; overall removal not assessed.					
	Metric 12:	Test Substance Purity	High	Sampling was appropriate.					
Domain 6: Confoundin	g/Variable Control	l							
	Metric 13:	Confounding Variables	N/A	This metric is not applicable to this type of study.					
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.					
Domain 7: Data Presen	tation and Analysi	S							
	Metric 15:	Data Reporting	Uninformative	Analytical details were not reported.					
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	This metric is not applicable to this type of study.					
Domain 8: Other									
	Metric 17:	Verification or Plausibility of	Uninformative	Removal efficiency was not reported.					
	Metric 18:	Results QSAR Models	N/A	This metric is not applicable to this type of study.					
<b>Overall Quali</b>	ty Determi	nation	Uninformative						

Study Citation:	Wang, R., Ji, M.,	Zhai, H., Liu, Y. (2020). Occurrence of phthalate esters and microplastics in urban secondary effluents, receiving water bodies and						
OECD Harmonized	Miscellaneous	Miscellaneous						
Template: HERO ID:	6968279							
		EXTRACTION						
Parameter		Data						
CASRN and Test Material		not reported; dibutyl phthalate						
Confidentiality, Type, Guide	eline	No; Monitoring study; Monitoring study						
Solvent, Reactivity, Storage	, Stability	NR; NR; NR						
Radiolabel, Source, State, P	urity	NR; Wastewater; NR; NA Notes: Analytical standard DBP was from Dr. Ehrenstorfer (Germany) company and made as a stock solution in n-						
Test Method Details, Test Condition Details, and Test Consistency Details		hexane Monitoring of PAEs in urban secondary effluents and receiving water bodies with no observable flow.; A portion of the secondary effluent from the WWTPs was directly dischargedinto an urban river or lake, the other effluent portion was furthertreated in subsequent RWTPs for reuse. Processes at 4 RWTPs (in four WWTPs) included: RWTP S: air flotation, ultrafiltration, reverse osmosis and chlorination; RWTP X: coagulation- sedimentation, microfiltration, reverse osmosis and ozonation; RWTP B: coagulation-sedimentation, V-filter filtration and chlorination; RWTP H:						
System Type Design		high-efficiency clarification, sand filtration and chlorination.; 4 WWTPs/RWTPs with different sequential treatments evaluated Major treatment process included: Multi-unit Anoxic/Oxic, Oxidation ditch-Anaerobic/Anoxic/Oxic, and DE oxidation ditch + multi-unit						
Sampling Frequency and Sa	mpling Details	Anoxic/Oxic Not reported; Sampling conducted Dec 20-27, 2017 (winter) and April 4-10, 2018 (spring) at four municipal WWTPs (2 in Tianjin, 1 in Xi'an (Shaanxi Province) and 1 in Beijing); secondary effluent samples, receiving water body samples, and samples from each unit of the RWTPs were collected						
Test Temperature		not reported						
Results Details		DBP concentrations in urban secondary effluents ranged from 0.0206 (µg/L spring) to 0.1034 µg/L (winter); concentrations in receiving waters: up to 0.12 µg/L (Lake/Winter) and as low as <0.01 µg/L (Lake/Spring), and ranged from 0.03-0.12 µg/L (Rivers/Winter) and <0.01-0.08 µg/L (Rivers/Spring).						
Analytical Method and Ana	lytical Details	SPE of water samples followed by GC-MS; MDLs in supporting document						
Transformation Products, St	tatistics, and Kinetics	not reported; not reported; Removal rate for each RWTP unit = $(Ci-Ce)/C$ and removal mass = $(Ci-Ce) \times V$ ; Ci: analyte concentration in influent of one unit, Ce: analyte concentration in effluent of the unit, V: daily reclaimed flow. DEHP and DBP were the main PAE species in all samples from the RWTPs. For all plants total removal PAE rates were 50.5-64.3% (removal mass 10.5-18.8 g/day) in winter and 47.7-81.6% (removal mass 4.1-11.5 g/day) in spring; filtration and reverse osmosis processes were responsible for the greatest removal efficiencies overall; in general chlorination was found to increase the levels of PAEs in spring.						
Reference Substance and Re Substance Results	eference	not reported; not reported						
		EVALUATION						

			EVALUATIO	N	
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified.	
	Metric 2:	Test Substance Purity	High	Monitoring study; analytical standard reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.	
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.	
Continued on next page					

Study Clitation:       Wang, R. J. M. X. Zhi, H. L. II, Y. (2020). Occurrence of plubulance storm and microplastics in urban secondary effluents, receiving water bodies and improplayment water instance storm and microplastics in urban secondary effluents, receiving water bodies and improplayment water instance storm and microplastics in urban secondary effluents, receiving water bodies and improplayment water instance storm and microplastics in urban secondary effluents, receiving water bodies and improplayment water instance storm and microplastics in urban secondary effluents, receiving water bodies and improplayment water instance storm and microplastics in urban secondary effluents, receiving water bodies and improplayment water instance storm and microplastics in urban secondary effluents, receiving water bodies and improplayment water instance in the study type.         Domain 3: Test Conditions       Ketric 5:       Test Method Suitability       N/A       Temetric is not applicable to this study type.         Domain 4: Test Organity:       Metric 8:       Outcome Assessment Methodology       N/A       Temetric was not applicable to this study type.         Domain 5: Outcom Assessment Methodology       N/A       The metric was not applicable to this study type.         Domain 6: Confounding Variables       Metric 19:       Test Substance Remity       Melium       Teoretown assessment methodology did and addities or report the outcome of interest specifically for the interest hendical knower, details may be reported in the supporting details may be reported in the supporting details for the interest hendical knower, details may be reported in the supporting details for the interest hending duratitables in the interest hendical knower and app			contin	nued from pre-	vious page			
OFECD Harmonized       Miscellaneous         Timplete:       6968279         Domain       Metric       Rating       Comments         Domain 3: Test Conditions       Metric 6:       Test Method Suitability       N/A       The metric is not applicable to this study type.         Metric 5:       Test Method Suitability       N/A       The metric is not applicable to this study type.         Metric 7:       Testing Conditions       High       WWTP processor were described.         Metric 7:       Testing Conditions       High       WTP processor were described.         Domain 4: Test Organisms       Metric 6:       Outcome Assessment Methodology       N/A         Metric 10:       Sampling Methods       N/A       The metric was not applicable to this study type.         Domain 5: Outcome Assessment       Metric 11:       Test Substance Purity       High       The concome assessment methodology di not address or report the outcome of interest specifically for the target chemical: however, details may be reported in the supporting deciment.         Domain 6: Confounding/Variable Control       Metric 12:       Test Substance Purity       High       Reported sampling methods were appropriate.         Domain 7: Data Presentation and Analysis       Metric 15:       Data Reporting       N/A       The metric is not applicable to this study type.         Metric 16:	Study Citation:	Wang, R., Ji, M., Zhai, H., Liu, Y. (2020). Occurrence of phthalate esters and microplastics in urban secondary effluents, receiving water bodies and reclaimed water treatment processes. Science of the Total Environment 737:140219						
HERO ID:       6968279         Domain       Metric       EVALUATION Rating       Comments         Domain 3: Test Conditions       Test Method Suitability       N/A       The metric is not applicable to this study type.         Metric 6:       Test Method Suitability       N/A       The metric is not applicable to this study type.         Metric 7:       TestIng Conditions       High       WWTP processes were described.         Metric 8:       System Type and Design       N/A       The metric was not applicable to this study type.         Domain 5: Outcome Assessment       Methodology       N/A       The metric was not applicable to this study type.         Domain 5: Outcome Assessment       Methodology       N/A       The metric was not applicable to this study type.         Domain 6: Confounding/Variable Control       Metric 11:       Test Substance Identity       Medium       The metric is not applicable to this study type.         Domain 6: Confounding/Variable Control       Metric 12:       Test Substance Identity       Medium       The metric is not applicable to this study type.         Domain 7: Datu Presentation and Analysis       Metric 13:       Confounding/Variables       N/A       The metric is not applicable to this study type.         Domain 7: Datu Presentation and Analysis       Metric 16:       Statistical Methods and Kineric Calculations       High	OECD Harmonized	Miscellaneous						
Domain         Metric         EVALUATION Rating         Comments           Domain 3: Test Conditions         Metric 5: Metric 6: Testing Conditions         N/A         The metric is not applicable to this study type.           Metric 6: Metric 7: Metric 8: System Type and Design         N/A         The metric was not applicable to this study type.           Domain 4: Test Organisms         Metric 8: Metric 9: Metric 9: Metric 10: Sampling Methods         Outcome Assessment Methodology Metric 10: Sampling Methods         N/A         The metric was not applicable to this study type.           Domain 5: Outcome Assessment Metric 12: Test Substance Identity         Medium Metric 11: Metric 12: Test Substance Identity         Medium Metric 11: Test Substance Identity         Medium Metric 12: Test Substance Identity         Medium Metric 12: Test Substance Identity         Medium Metric 13: Metric 14: Health Outcomes Unrelated to N/A         The metric is not applicable to this study type.           Domain 7: Data Presentation and Analysis Metric 16: Statistical Methods and Kinetic Calculations         N/A         The metric is not applicable to this study type.           Domain 8: Other         Metric 17: Wetrification or Plausibility of Kinetic Calculations         Low Kinetic Calculations         Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported. However, limited by detail in the supporting document.           Domain 7: Data Presentation and Analysis Metric 16: Statistical Methods and Kinetic Calculations         Low Kinetic C	HERO ID:	6968279						
Domain         Metric         Rating         Comments           Domain 3: Test Conditions         Test Method Suitability         N/A         The metric is not applicable to this study type.           Metric 6:         Testing Conditions         High         WWTP processes were described.           Metric 7:         Testing Conditions         High         The conditions of each plant were documented.           Domain 4: Test Organisms         Metric 9:         Outcome Assessment Methodology         N/A         The metric was not applicable to this study type.           Domain 5: Outcome Assessment         Metric 10:         Sampling Methods         N/A         The metric was not applicable to this study type.           Domain 5: Outcome Assessment         Metric 11:         Test Substance Identity         Medium         The outcome assessment methodology gid not address or report the outcome of interest specifically for the target chemical: however, details may be reported in the supporting document.           Metric 12:         Test Substance Identity         Medium         The metric is not applicable to this study type.           Domain 6: Confounding/Variable Control         Metric 13:         Confounding Variables         N/A         The metric is not applicable to this study type.           Domain 7: Data Presentation and Analysis         Data Reporting         Low         Analytical and quantitative details regarding the outcome of interest specificall				FVAL HATIO	Ň			
Domain 3: Test Conditions       Metric 5:       Test Method Suitability       N/A       The metric is not applicable to this study type.         Metric 6:       Testing Consistency       High       WWTP processes were described.         Metric 7:       Testing Consistency       High         Metric 8:       System Type and Design       N/A       The metric was not applicable to this study type.         Domain 4: Test Organisms       Metric 9:       Outcome Assessment Methodology       N/A       The metric was not applicable to this study type.         Domain 5: Outcome Assessment       Metric 11:       Test Substance Identity       Medium       The outcome assessment methodology did not address or report the outcome of interest specifically for the target chemical; however, details may be reported in the supporting document.         Metric 12:       Test Substance Purity       High       Reported sampling methods were appropriate.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       N/A         Metric 14:       Health Outcomes Unrelated to       N/A       The metric is not applicable to this study type.         Domain 7: Data Presentation and Analysis       Data Reporting       Low       Analytical and quantitative details regarding the outcome of interest specifically for the target chemical, however, details may be reported in the supporting document.         Domain 8: Other       Metric 1	Domain		Metric	Rating	Comments			
Domain 3: Test Conditions       VA       The metric is not applicable to this study type.         Metric 6:       Testing Conditions       High       WUTP processes were described.         Metric 7:       Testing Consistency       High       The conditions of each plant were documented.         Metric 8:       System Type and Design       N/A       The metric was not applicable to this study type.         Domain 4: Test Organisms       Metric 9:       Outcome Assessment Methodology       N/A       The metric was not applicable to this study type.         Domain 5: Outcome Assessment       Metric 10:       Sampling Methods       N/A       The metric was not applicable to this study type.         Domain 5: Outcome Assessment       Metric 11:       Test Substance Identity       Medium       The outcome assessment methodology did not address or report the outcome of interest specifically for the target chemical; however, details may be reported in the supporting document.         Metric 12:       Test Substance Purity       High       Reported sampling methods were appropriate.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       N/A       The metric is not applicable to this study type.         Domain 7: Data Presentation and Analysis       Metric 16:       Statistical Methods and       High       Calculations were clearly described.         Metric 16:       Statistical Metho				0				
Metric 5:     Test Method Suitability     N/A     The metric is not applicable to this study type.       Metric 6:     Testing Conditions     High     WWP processes were described.       Metric 7:     Testing Conditions     N/A     The conditions of each plant were documented.       Metric 8:     System Type and Design     N/A     The metric was not applicable to this study type.       Domain 4: Test Organisms     Outcome Assessment Methodology     N/A     The metric was not applicable to this study type.       Domain 5: Outcome Assessment     Metric 10:     Sampling Methods     N/A     The metric was not applicable to this study type.       Domain 5: Outcome Assessment     Metric 11:     Test Substance Identity     Medium     The outcome assessment methodology did not address or report the outcome of interest specifically for the target chemical; however, details may be reported in the supporting document.       Metric 12:     Test Substance Purity     High     Recorded sampling methods were appropriate.       Domain 6: Confounding/Variable Control Metric 13:     Confounding Variables     N/A     The metric is not applicable to this study type.       Domain 7: Data Presentation and Analysis     Metric 16:     Statistical Methods and High     High     Calculations       Domain 8: Other     Metric 17:     Verification or Plausibility of Kinetic Calculations     Low     The study results were reasonable; however, finited by detail in the supporting docum	Domain 3: Test Conditi	ons						
Metric 6:     Testing Conditions     High WWP processes were described.       Metric 7:     Testing Conditions     High WWP processes were described.       Metric 8:     System Type and Design     N/A     The metric was not applicable to this study type.       Domain 4: Test Organisms     Metric 9:     Outcome Assessment Methodology     N/A     The metric was not applicable to this study type.       Domain 5: Outcome Assessment     Metric 10:     Sampling Methods     N/A     The metric was not applicable to this study type.       Domain 5: Outcome Assessment     Metric 11:     Test Substance Identity     Medium     The outcome assessment methodology did not address or report the outcome of interest specifically for the target chemical; however, details may be reported in the supporting document.       Metric 12:     Test Substance Purity     High     Reported sampling methods were appropriate.       Domain 6: Confounding/Variable Control     Metric 13:     Confounding Variables     N/A     The metric is not applicable to this study type.       Domain 7: Data Presentation and Analysis     Data Reporting     Low     Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported, however, details may be reported in the supporting document.       Domain 7: Data Presentation and Analysis     Data Reporting     Low     Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported, however, details may		Metric 5:	Test Method Suitability	N/A	The metric is not applicable to this study type.			
Metric 7:     Testing Consistency     High     The conditions of each plant were documented.       Metric 8:     System Type and Design     N/A     The metric was not applicable to this study type.       Domain 4: Test Organisms     Metric 9:     Outcome Assessment Methodology     N/A     The metric was not applicable to this study type.       Domain 5: Outcome Assessment     Metric 10:     Sampling Methods     N/A     The metric was not applicable to this study type.       Domain 5: Outcome Assessment     Metric 11:     Test Substance Identity     Medium     The outcome assessment methodology did not address or report the outcome of interest specifically for the target chemical; however, details may be reported in the supporting document.       Domain 6: Confounding/Variable Control     Metric 13:     Confounding Variables     N/A     The metric is not applicable to this study type.       Domain 7: Data Presentation and Analysis     Metric 15:     Data Reporting     Low     Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported; however, details may be reported in the supporting document.       Domain 7: Data Presentation and Analysis     Metric 16:     Statistical Methods and Kinetic Calculations     High     Calculations were clearly described.       Domain 8: Other     Metric 17:     Verification or Plausibility of Results     Low     The thetric is not applicable to this study type.       Overeall Quality Determination		Metric 6:	Testing Conditions	High	WWTP processes were described.			
Metric 8:     System Type and Design     N/A     The metric was not applicable to this study type.       Domain 4: Test Organisms Metric 9:     Outcome Assessment Methodology Metric 10:     N/A     The metric was not applicable to this study type.       Domain 5: Outcome Assessment Metric 11:     Test Substance Identity     N/A     The metric was not applicable to this study type.       Domain 5: Outcome Assessment Metric 12:     Test Substance Identity     Medium Specifically for the target chemical; however, details may be reported in the supporting document.       Domain 6: Confounding/Variable Control Metric 13:     Confounding Variables Metric 13:     N/A     The metric is not applicable to this study type.       Domain 7: Data Presentation and Analysis Metric 16:     Data Reporting Kinetic Calculations     Low     Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported; however, details may be reported in the supporting document.       Domain 7: Data Presentation and Analysis Metric 16:     Data Reporting     Low     Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported; however, details may be reported in the supporting document.       Domain 8: Other     Metric 17:     Verification or Plausibility of Results     Low     The study results were reasonable; however, limited by detail in the supporting docu- ment which was not available.       Overall Quality Determination     High     Low     The metric is not applicable to this study type.<		Metric 7:	Testing Consistency	High	The conditions of each plant were documented.			
Domain 4: Test Organisms       Metric 10:       Outcome Assessment Methodology       N/A       The metric was not applicable to this study type.         Domain 5: Outcome Assessment       Metric 10:       Sampling Methods       N/A       The metric was not applicable to this study type.         Domain 5: Outcome Assessment       Metric 11:       Test Substance Identity       Medium       The outcome assessment methodology did not address or report the outcome of interest specifically for the target chemical; however, details may be reported in the supporting document.         Metric 12:       Test Substance Purity       High       Reported sampling methods were appropriate.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       N/A       The metric is not applicable to this study type.         Domain 7: Data Presentation and Analysis       Metric 15:       Data Reporting       Low       Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported; however, details may be reported in the supporting document.         Domain 7: Data Presentation and Analysis       Data Reporting       Low       Analytical and quantitative details regarding the outcome of interest specifically for the target chemical; however, ideatils may be reported in the supporting document.         Domain 8: Other       Metric 17:       Verification or Plausibility of Results       Low       The study results were reasonable; however, limited by detail in the suppo		Metric 8:	System Type and Design	N/A	The metric was not applicable to this study type.			
Domain 4: rest organisation       Metric 9:       Outcome Assessment Methodology       N/A       The metric was not applicable to this study type.         Domain 5: Outcome Assessment       Metric 11:       Test Substance Identity       Medium       The outcome assessment methodology did not address or report the outcome of interest specifically for the target chemical; however, details may be reported in the supporting document.         Metric 12:       Test Substance Purity       High       Reported sampling methods were appropriate.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       N/A       The metric is not applicable to this study type.         Domain 7: Data Presentation and Analysis       Metric 15:       Data Reporting       Low       Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported, however, details may be reported in the supporting document.         Domain 8: Other       Metric 17:       Verification or Plausibility of Results       Low       Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported, however, details may be reported in the supporting document.         Domain 8: Other       Metric 17:       Verification or Plausibility of Results       Low       The metric is not applicable to this study type.         Overall Quality Determination       Klingh       Low       The metric is not applicable to this study type.	Domain 4. Test Orregi							
Metric 10:       Sampling Methods       N/A       The metric was not applicable to this study type.         Domain 5:       Outcome Assessment       Metric 11:       Test Substance Identity       Medium       The outcome assessment methodology did not address or report the outcome of interest specifically for the target chemical; however, details may be reported in the supporting document.         Domain 5:       Outcome Assessment       Metric 12:       Test Substance Identity       Medium       The outcome assessment methodology did not address or report the outcome of interest specifically for the target chemical; however, details may be reported in the supporting document.         Domain 6:       Confounding/Variable Control       Metric 13:       Confounding Variables       N/A       The metric is not applicable to this study type.         Domain 7:       Data Presentation and Analysis       Metric 15:       Data Reporting       Low       Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were nor reported; however, details may be reported in the supporting document.         Domain 7:       Data Presentation and Analysis       Data Reporting       Low       Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were nor reported; however, details may be reported in the supporting document.         Domain 8:       Other       Metric 17:       Verification or Plausibility of Results       Low       The study results were reasonable; how	Domain 4: Test Organis	Matria 0:	Outcome Assessment Methodology	NI/A	The metric was not emplicable to this study type			
Internet 10.       Sampling Metricus       IVA       The neutric was not applicable to this study type.         Domain 5: Outcome Assessment       Metric 11:       Test Substance Identity       Medium       The outcome assessment methodology did not address or report the outcome of interest specifically for the target chemical; however, details may be reported in the supporting document.         Metric 12:       Test Substance Purity       High       Reported sampling methods were appropriate.         Domain 6:       Confounding/Variable Control       Metric 13:       Confounding Variables       N/A         Metric 14:       Health Outcomes Unrelated to Exposure       N/A       The metric is not applicable to this study type.         Domain 7:       Data Presentation and Analysis Metric 15:       Data Reporting       Low       Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported; however, details may be reported in the supporting document.         Domain 8:       Other       Metric 17:       Verification or Plausibility of Results       Low       The study results were reasonable; however, limited by detail in the supporting document which was not available.         Domain 8:       Other       Metric 18:       QSAR Models       N/A       The metric is not applicable to this study type.         Overall Quality Determination       High       Low       The study results were reasonable; however, limited by det		Metric 9.	Sampling Mathada	N/A	The metric was not applicable to this study type.			
Domain 5: Outcome Assessment       Metric 11:       Test Substance Identity       Medium       The outcome assessment methodology did not address or report the outcome of interest specifically for the target chemical; however, details may be reported in the supporting document.         Metric 12:       Test Substance Purity       High       Reported sampling methods were appropriate.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       N/A       The metric is not applicable to this study type.         Domain 7: Data Presentation and Analysis       Metric 15:       Data Reporting       Low       Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported; however, details may be reported in the supporting document.         Domain 8: Other       Metric 17:       Verification or Plausibility of Results       Low       The study results were reasonable; however, limited by detail in the supporting document which was not available.         Otherall Quality Determination       High		Metric 10.	Sampling Methods	IN/A	The metric was not applicable to this study type.			
Metric 11:       Test Substance Identity       Medium       The outcome assessment methodology did not address or report the outcome of interest specifically for the target chemical; however, details may be reported in the supporting document.         Metric 12:       Test Substance Purity       High       Reported sampling methods were appropriate.         Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       N/A       The metric is not applicable to this study type.         Metric 14:       Health Outcomes Unrelated to Exposure       N/A       The metric is not applicable to this study type.         Domain 7: Data Presentation and Analysis       Data Reporting       Low       Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported; however, details may be reported in the supporting document.         Metric 16:       Statistical Methods and Kinetic Calculations       High       Calculations were clearly described.         Domain 8: Other       Metric 17:       Verification or Plausibility of Results       Low       The study results were reasonable; however, limited by detail in the supporting document which was not available.         Metric 18:       QSAR Models       N/A       The metric is not applicable to this study type.         Overall Quality Determination       High       Low       The study results were reasonable; however, limited by detail in the supporting document which was not available.	Domain 5: Outcome As	ssessment						
Metric 12:     Test Substance Purity     High     Reported sampling methods were appropriate.       Domain 6: Confounding/Variable Control Metric 13:     Confounding Variables Metric 14:     N/A     The metric is not applicable to this study type.       Domain 7: Data Presentation and Analysis Metric 15:     Data Reporting     Low     Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported; however, details may be reported in the supporting document.       Domain 7: Data Presentation and Analysis Metric 16:     Data Reporting     Low     Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported; however, details may be reported in the supporting document.       Domain 8: Other     Metric 17:     Verification or Plausibility of Results     Low     The study results were reasonable; however, limited by detail in the supporting docu- ment which was not available.       Overall Quality Determination     High		Metric 11:	Test Substance Identity	Medium	The outcome assessment methodology did not address or report the outcome of interest			
Metric 12:     Test Substance Purity     High     Reported sampling methods were appropriate.       Domain 6: Confounding/Variable Control     Metric 13:     Confounding Variables     N/A     The metric is not applicable to this study type.       Metric 14:     Health Outcomes Unrelated to Exposure     N/A     The metric is not applicable to this study type.       Domain 7: Data Presentation and Analysis     Metric 15:     Data Reporting     Low     Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported; however, details may be reported in the supporting document.       Metric 16:     Statistical Methods and Kinetic Calculations     High     Calculations were clearly described.       Domain 8: Other     Metric 17:     Verification or Plausibility of Results     Low     The study results were reasonable; however, limited by detail in the supporting document, which was not available.       Overall Quality Determination     High					specifically for the target chemical; however, details may be reported in the supporting document.			
Domain 6: Confounding/Variable Control       Metric 13:       Confounding Variables       N/A       The metric is not applicable to this study type.         Metric 14:       Health Outcomes Unrelated to Exposure       N/A       The metric is not applicable to this study type.         Domain 7: Data Presentation and Analysis       Metric 15:       Data Reporting       Low       Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported; however, details may be reported in the supporting document.         Metric 16:       Statistical Methods and Kinetic Calculations       High       Calculations were reasonable; however, lemited by detail in the supporting document.         Domain 8: Other       Metric 17:       Verification or Plausibility of Results       Low       The study results were reasonable; however, limited by detail in the supporting document which was not available.         Overall Quality Determination       N/A       The metric is not applicable to this study type.		Metric 12:	Test Substance Purity	High	Reported sampling methods were appropriate.			
Domain 6: Confounding/Variable Control         Metric 13:       Confounding Variables         Metric 14:       Health Outcomes Unrelated to         Exposure       N/A         Domain 7: Data Presentation and Analysis         Metric 15:       Data Reporting         Low       Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported; however, details may be reported in the supporting document.         Metric 16:       Statistical Methods and Kinetic Calculations         Domain 8: Other       Metric 17:         Metric 18:       QSAR Models         N/A       The metric is not applicable to this study type.         Metric 18:       QSAR Models         N/A       The metric is not applicable to this study type.								
Metric 15:       Confounding variables       N/A       The metric is not applicable to this study type.         Metric 14:       Health Outcomes Unrelated to Exposure       N/A       The metric is not applicable to this study type.         Domain 7: Data Presentation and Analysis       Metric 15:       Data Reporting       Low       Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported; however, details may be reported in the supporting document.         Metric 16:       Statistical Methods and Kinetic Calculations       High       Calculations were clearly described.         Domain 8: Other       Metric 17:       Verification or Plausibility of Results       Low       The study results were reasonable; however, limited by detail in the supporting document were this study type.         Overall Quality Determination       High	Domain 6: Confounding	g/variable Control		<b>NT/A</b>				
Metric 14:       Health Outcomes Unrelated to Exposure       N/A       The metric is not applicable to this study type.         Domain 7: Data Presentation and Analysis Metric 15:       Data Reporting       Low       Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported; however, details may be reported in the supporting document.         Metric 16:       Statistical Methods and Kinetic Calculations       High       Calculations were clearly described.         Domain 8: Other       Metric 17:       Verification or Plausibility of Results       Low       The study results were reasonable; however, limited by detail in the supporting docu- ment which was not available.         Overall Quality Determination       High		Metric 13:	Confounding variables	N/A	The metric is not applicable to this study type.			
Domain 7: Data Presentation and Analysis       Metric 15:       Data Reporting       Low       Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported; however, details may be reported in the supporting document.         Metric 16:       Statistical Methods and Kinetic Calculations       High       Calculations were clearly described.         Domain 8: Other       Metric 17:       Verification or Plausibility of Results       Low       The study results were reasonable; however, limited by detail in the supporting document which was not available.         Metric 18:       QSAR Models       N/A       The metric is not applicable to this study type.         Overall Quality Determination       High		Metric 14:	Exposure	IN/A	The metric is not applicable to this study type.			
Domain 7: Data Presentation and Analysis       Metric 15:       Data Reporting       Low       Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported; however, details may be reported in the supporting document.         Metric 16:       Statistical Methods and Kinetic Calculations       High       Calculations were clearly described.         Domain 8: Other       Metric 17:       Verification or Plausibility of Results       Low       The study results were reasonable; however, limited by detail in the supporting document which was not available.         Metric 18:       QSAR Models       N/A       The metric is not applicable to this study type.         Overall Quality Determination       High       High			Exposure					
Metric 15:       Data Reporting       Low       Analytical and quantitative details regarding the outcome of interest specifically for the target chemical were not reported; however, details may be reported in the supporting document.         Metric 16:       Statistical Methods and Kinetic Calculations       High       Calculations were clearly described.         Domain 8: Other       Metric 17:       Verification or Plausibility of Results       Low       The study results were reasonable; however, limited by detail in the supporting document which was not available.         Metric 18:       QSAR Models       N/A       The metric is not applicable to this study type.         Overall Quality Determination       High       High	Domain 7: Data Presen	tation and Analysis						
Metric 16:       Statistical Methods and Kinetic Calculations       High       Calculations were clearly described.         Domain 8: Other       Metric 17:       Verification or Plausibility of Results       Low       The study results were reasonable; however, limited by detail in the supporting document which was not available.         Overall Quality Determination       High		Metric 15:	Data Reporting	Low	Analytical and quantitative details regarding the outcome of interest specifically for the			
Metric 16:       Statistical Methods and Kinetic Calculations       High       Calculations were clearly described.         Domain 8: Other       Metric 17:       Verification or Plausibility of Results       Low       The study results were reasonable; however, limited by detail in the supporting document which was not available.         Metric 18:       QSAR Models       N/A       The metric is not applicable to this study type.         High					target chemical were not reported; however, details may be reported in the supporting			
Metric 16:       Statistical Methods and Kinetic Calculations       High       Calculations were clearly described.         Domain 8: Other       Metric 17:       Verification or Plausibility of Results       Low       The study results were reasonable; however, limited by detail in the supporting document which was not available.         Metric 18:       QSAR Models       N/A       The metric is not applicable to this study type.         Overall Quality Determination       High       Calculations were clearly described.					document.			
Kinetic Calculations         Domain 8: Other         Metric 17:       Verification or Plausibility of Results         Metric 18:       QSAR Models         N/A       The metric is not applicable to this study type.         Overall Quality Determination       High		Metric 16:	Statistical Methods and	High	Calculations were clearly described.			
Domain 8: Other          Metric 17:       Verification or Plausibility of Results       Low       The study results were reasonable; however, limited by detail in the supporting document which was not available.         Metric 18:       QSAR Models       N/A       The metric is not applicable to this study type.         High			Kinetic Calculations					
Metric 17:       Verification or Plausibility of Results       Low Metric 18:       The study results were reasonable; however, limited by detail in the supporting document which was not available.         N/A       The metric is not applicable to this study type.         Overall Quality Determination       High	Domain 8: Other							
Results     N/A     The metric is not applicable to this study type.       Overall Quality Determination     High		Metric 17:	Verification or Plausibility of	Low	The study results were reasonable; however, limited by detail in the supporting docu-			
Metric 18:     QSAR Models     N/A     The metric is not applicable to this study type.       Overall Quality Determination     High			Results	2017	ment which was not available.			
Overall Quality Determination High		Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.			
Overall Quality Determination High			_					
	<b>Overall Quali</b>	ty Determina	ation	High				

Study Citation:	Wang, X. K., Guo, W. L., Meng, P. R., Gan, J. A. (2002). Analysis of phthalate esters in air, soil and plants in plastic film greenhouse. Chinese Chemical						
<b>OECD Harmonized</b>	Miscellaneous						
Template:							
HERO ID:	5518156						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		84-74-2; Dibutyl phthalate					
Confidentiality, Type, Guide	eline	None; Experimental; Experimental					
Solvent, Reactivity, Storage	, Stability	NR; NR; NR					
Radiolabel, Source, State, P	Purity	NR; monitoring study; standard obtained from Jinan Chemical Works; NR; analytical grade standard Notes: DBP					
Test Method Details, Test C	Condition Details, and	Monitoring of phthalate esters in air, soil and plants in a plastic green house used for 2 years; Air samples: collected using GDX-102 resin(60-80					
Test Consistency		mesh) by using air sampling pump; soil samples: collected in and out-side of greenhouse; Not reported					
System Type Design		Greenhouse air, plants, and soil inside and outside					
Sampling Frequency and Sa	ampling Details	air, plant, and soil samples collected in December 2000; 6 samples from each media were collected					
Test Temperature	1 0	Not reported					
Results Details		Concentration in air: $1910\pm480$ ng/m3, in soil inside (depth): $2.6\pm0.5$ (5cm), $3.6\pm1.1$ (10cm), $3.2\pm0.9$ (15cm), $2.5\pm0.8$ (25cm), in soil outside (depth): $1.5\pm0.6$ (5cm), $1.4\pm0.7$ (10cm), $1.2\pm0.7$ (15cm), $0.9\pm0.4$ (25cm); Concentration in plants: $1.7\pm1.1$ mg/kg (Chinese cabbage), $0.9\pm0.5$ mg/kg (cucumber), $1.3\pm0.7$ mg/kg (summer squash)					
Analytical Method and Ana	lytical Details	HPLC, UV detection wavelength was 228 nm; Recovery from spiked plant samples: 95.7±5.2% and soil samples: 97.6±6.2%					
Transformation Products, St	tatistics, and Kinetics	Not applicable; Not reported; Not applicable					
Reference Substance and Re Substance Results	eference	Not applicable; Not applicable					

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
	Metric 2:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 3: Test Condition	ons			
	Metric 5:	Test Method Suitability	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 6:	Testing Conditions	Low	Conditions were not reported; soil characteristics were not included.
	Metric 7:	Testing Consistency	N/A	This metric is not applicable to this type of study.
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 4: Test Organis	ms			

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		continu	ued from pre-	vious page				
Study Citation:	Wang, X. K., Guo Letters 13(6):557-	Wang, X. K., Guo, W. L., Meng, P. R., Gan, J. A. (2002). Analysis of phthalate esters in air, soil and plants in plastic film greenhouse. Chinese Chemical Letters 13(6):557-560						
<b>OECD Harmonized</b>	Miscellaneous	500.						
Template:								
HERO ID:	5518156							
		Η	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.				
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	This metric met the criteria for high confidence as expected for this type of study.				
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	N/A	This metric is not applicable to this type of study.				
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to this type of study.				
		Exposure						
Domain 7: Data Present	ation and Analysis							
	Metric 15:	Data Reporting	Medium	Some analytical details were omitted.				
	Metric 16:	Statistical Methods and	N/A	This metric is not applicable to this type of study.				
		Kinetic Calculations						
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	Medium	The results are reasonable.				
	Metric 18:	Results QSAR Models	N/A	This metric is not applicable to this type of study.				
Overall Quali	ty Determina	ation	High					

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Study Citation:	Wang, Y. Q., Hu, W., Cao, Z. H., Fu, X. Q., Zhu, T. (2005). Occurrence of endocrine-disrupting compounds in reclaimed water from Tianjin, Chir Analytical and Bioanalytical Chemistry 383(5):857-863.					
OECD Harmonized	Miscellaneous					
Template:						
HERO ID:	533749					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material	l	84-74-2; Di-n-butyl phthalate				
Confidentiality, Type, Gui	deline	None; Experimental; Experimental				
Solvent, Reactivity, Storag	ge, Stability	ethyl acetate; NR; Stored at -18°C prior to use; NR				
Radiolabel, Source, State,	Purity	NR; Aldrich; Standard solutions prepared in ethyl acetate; 99% Notes: DnBP				
Test Method Details, Test	Condition Details, and	Analyte sampling at various points in a reclaimed water treatment process using coagulation, continuous micro-membrane filtration (CMF), and				
Test Consistency		ozonation in that order.; Coagulation-flocculation treatment: polyaluminum chloride (PAC) as coagulant (15 mg/L); continuous micro membrane				
Details		filtration (CMF) treatment (0.2 µm pore size); ozonation treatment (dosage: 5–6 mg/L); Not applicable.				
System Type Design		Monitoring of WWTP samples				
Sampling Frequency and S	Sampling Details	Seven rounds of sampling were conducted from October 2003 to September 2004.; Average flow rate during sampling period = 20000 m3/day				
Test Temperature		Not reported				
Results Details		Average removal efficiency = $48\%$				
Analytical Method and Analytical Details		SPE and GC-MS; LOD = $0.13-0.2 \ \mu g/L$ for phthalates				
Transformation Products,	Statistics, and Kinetics	Not reported; Average concentration (7 samples): Influent = 483 ng/L, coagulation 450 ng/L, CMF = 343 ng/L, ozonation 250 ng/L.; Not applicable.				
Reference Substance and I	Reference	Not applicable.; Not applicable.				
Substance Results						

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.
	Metric 2:	Test Substance Purity	High	Test substance source and purity reported and measured by analytical methods.
Domain 2: Test Design				
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 3: Test Condition	ons			
	Metric 5:	Test Method Suitability	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 6:	Testing Conditions	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 7:	Testing Consistency	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.

Domain 4: Test Organisms

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		continue	ed from pre	vious page
Study Citation:	Wang, Y. Q., Hu, Analytical and Big	W., Cao, Z. H., Fu, X. Q., Zhu, T. (2005 panalytical Chemistry 383(5):857-863	). Occurrer	ce of endocrine-disrupting compounds in reclaimed water from Tianjin, China.
<b>OECD Harmonized</b>	Miscellaneous	sunarytical chemistry 505(5).057 005.		
Template:				
HERO ID:	533749			
		E	ALUATIO	N
Domain		Metric	Rating	Comments
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	sessment			
	Metric 11:	Test Substance Identity	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 6: Confounding	Variable Control			
Domain 0. Comounding	Metric 13:	Confounding Variables	N/A	No confounding variables were noted
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.
		Exposure		
Domain 7: Data Present	ation and Analysis			
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 16:	Statistical Methods and	N/A	The metric is not applicable to this study type.
		Kinetic Calculations		
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Qualit</b>	ty Determin	ation	High	

Study Citation:	Wu, J., Ma, T., Zhou, Z., Yu, N.,a, He, Z., Li, B., Shi, Y., Ma, D. (2019). Occurrence and fate of phthalate esters in wastewater treatment plants in Qingdao,						
OFCD Hormonized	China. Human and Ecological Risk Assessment 25(6):1547-1563.						
Template	Miscellaneous						
HERO ID:	5442818						
		EXTRACTION					
Parameter		Data					
CASDN and Track Material							
CASKIN and Test Material	dalina	84-74-2; DI-n-butyi phinalale					
Confidentiality, Type, Guidenne		None; Experimental; Experimental					
Padiolabel Source State	Durity	NR, NR, NR, NR					
Test Method Details, Test Condition Details, and		WWTP Removal efficiency; Qingdao, China Rivers: Chengyang, Licun, and Haibo, which employ different treatment processes; A procedural blank solvent blank spiked blank and sample duplicate were tested for every 10 samples for quality control and quality assurance (OC/OA)					
Details							
System Type Design		6890 gas chromatograph connected to a 5973 mass spectrometer(GC-MS) (Agilent technologies, Avondale, PA, USA) equipped with electron impact and selective ion monitoring modes.					
Sampling Frequency and S	Sampling Details	57 sewage and 9 sludge samples; PAEs were extracted from 100 mL liquid samples thrice using 50 mL n-hexane, evaporated extracts were reduced to 1 mL and measured using as chrometography-mass spectrometry (GC-MS)					
Test Temperature		column initial temperature of 80°C maintained for 1.0 min, increased to 180C at a rate of 20C/min with 10 min holding time, and increased to 300C					
Results Details		at 2C/min and maintained for 10 min Removal % Chengyang: 58.58, Licun: 57.49, Haibo: NA					
Analytical Method and Analytical Details		GC-MS equipped with electron impact and selective ion monitoring modes; instrument detection limits ranged from 1-9 pg					
Transformation Products,	Statistics, and Kinetics	Not reported; Not reported; Not reported					
Reference Substance and I Substance Results	Reference	Not reported; Not reported					

			EVALUATION	N	
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.	
	Metric 2:	Test Substance Purity	Medium	Purity of standard solution was not provided but not likely to influence the study results.	
Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	This metric is not applicable to this type of study.	
	Metric 4:	Test Substance Stability	Medium	Details regarding the test substance homogeneity, preparation, and storage conditions were not reported but their omission is not likely to influence the study results.	
Domain 3: Test Condition	ons				
	Metric 5:	Test Method Suitability	High	This metric met the criteria for high confidence as expected for this type of study.	
	Metric 6:	Testing Conditions	High	This metric met the criteria for high confidence as expected for this type of study.	
	Metric 7:	Testing Consistency	High	This metric met the criteria for high confidence as expected for this type of study.	
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.	
Continued on next page					

		continu	ied from pre	vious page					
Study Citation:	Wu, J., Ma, T., Zh China. Human an	Wu, J., Ma, T., Zhou, Z., Yu, N.,a, He, Z., Li, B., Shi, Y., Ma, D. (2019). Occurrence and fate of phthalate esters in wastewater treatment plants in Qingdao, China Human and Ecological Risk Assessment 25(6):1547-1563							
<b>OECD Harmonized</b>	Miscellaneous								
Template:									
HERO ID:	5442818								
		ŀ	EVALUATIO	N					
Domain		Metric	Rating	Comments					
Domain 4: Test Organi	sms								
0	Metric 9:	Outcome Assessment Methodology	High	This metric met the criteria for high confidence as expected for this type of study.					
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.					
Domain 5: Outcome A	ssassmant								
Domain 5. Outcome A	Metric 11.	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest					
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study					
			111811						
Domain 6: Confoundin	g/Variable Control								
	Metric 13:	Confounding Variables	High	No confounding variables were noted or identified.					
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.					
		Exposure							
Domain 7: Data Presen	tation and Analysis								
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.					
	Metric 16:	Statistical Methods and	N/A	This metric is not applicable to this type of study.					
		Kinetic Calculations							
Domain 8: Other									
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.					
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.					
Overall Ouali	ty Determin	ation	High						
	iy Dettermin	anvii	Ingn						

Study Citation: Wu, Q., Lam, J. C. W., Kwok, K. Y., Tsui, M. M. P., Lam, P. K. S. (2017). Occurrence and fate of endogenous steroid hormones, alkylphenol ethoxyla						
OECD Harmonized	Miscellaneous	nthalates in municipal sewage treatment systems. Journal of Environmental Sciences 61(Elsevier):49-58.				
Template:	4700/5/					
HERO ID:	4/28656					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Di-n-butyl phthalate				
Confidentiality, Type, Guid	deline	None; Experimental; Experimental				
Solvent, Reactivity, Storag	e, Stability	NR; NR; NR				
Radiolabel, Source, State,	Purity	NR; waste water; NR; ≥98% Notes: DNBP				
Test Method Details, Test Condition Details, and Test Consistency Details		Removal efficiency calculated as the ratio of the difference between concentration in influent and effluent to the concentration in the influent times 100; PS: primary sedimentation; CEPT: chemical enhanced primary treatment; AS: activated sludge; SF: sand filtration; Cl2: chlorination disinfection; UV: UV disinfection; RO: reverse osmosis; Sewage and sludge samples were collected from four sewage treatment plants located in Hong Kong				
System Type Design		sewage treatment plants				
Sampling Frequency and Sampling Details		The influent, effluent and samples were collected from plants for three consecutive days from June to August 2013; Samples were immediately transferred on ice to the lab, filtered through 0.45- $\mu$ m glass fiber filters and stored at 4°C for next day analysis.				
Test Temperature		Not applicable				
Results Details		Removal efficiency: PS: ca50%; CEPT: ca100%; AS: ca. 75%; SF: ca. 95%; Cl2: ca. 20; UV and RO removal not reported				
Analytical Method and Analytical Details		LC-MS/MS used for identification and quantification; LOD = 0.01-1 ng/L and LOQ 0.01-2.5 ng/mL; not specified for individual analytes				
Transformation Products, Statistics, and Kinetics		Not applicable; SigmaStat 3.5; normality tests; ANOVA; significance level was set at p = 0.05; Not applicable				
Reference Substance and F Substance Results	Reference	Not applicable; Not applicable				

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Subst	ance			
	Metric 1:	Test Substance Identity	High	Test substance was identified clearly.
	Metric 2:	Test Substance Purity	High	The purity of the test substance was reported; more detail in SI (not publicly available).
Domain 2: Test Desig	n			
	Metric 3:	Study Controls	Medium	Analytical blank samples were not reported.
	Metric 4:	Test Substance Stability	High	Details regarding the storage and stability of the test substance after sampling were reported.
Domain 3: Test Condi	itions			
	Metric 5:	Test Method Suitability	High	The test method was suitable.
	Metric 6:	Testing Conditions	Medium	Some of the test conditions were not reported; more detail in SI (not publicly available).
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to the study type.
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.

## Continued on next page ...

		continu	ied from pre	vious page				
Study Citation:	Wu, Q., Lam, J. C bisphenol A and p	Wu, Q., Lam, J. C. W., Kwok, K. Y., Tsui, M. M. P., Lam, P. K. S. (2017). Occurrence and fate of endogenous steroid hormones, alkylphenol ethoxylates, bisphenol A and phthalates in municipal sewage treatment systems. Journal of Environmental Sciences 61(Elsevier):49-58						
<b>OECD Harmonized</b>	Miscellaneous	Miscellaneous						
Template:								
HERO ID:	4728656							
		ŀ	EVALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 4: Test Organis	ms							
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for the endpoint of interest.				
	Metric 12:	Test Substance Purity	High	The sampling methods were reported and appropriate.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	High	Uncertainty was accounted for in the measurements.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this study type.				
Domain 7: Data Present	ation and Analysis							
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods and kinetic calculations were reported.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Qualit	ty Determin	ation	High					

Study Citation: OECD Harmonized Template:	Wu, Y., Chen, X. 2 distribution of phth Research 25(18):17 Miscellaneous	I, Y., Chen, X. X., Zhu, T. K., Li, X., Chen, X. H., Mo, C. H., Li, Y. W., Cai, Q. Y., Wong, M. H. (2018). Variation in accumulation, transport, and tribution of phthalic acid esters (PAEs) in soil columns grown with low- and high-PAE accumulating rice cultivars. Environmental Science and Pollution search 25(18):17768-17780. scellaneous				
HERO ID:	4728507					
Daramatar		EXTRACTION				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, Type, Guide	eline	None; Experimental; Experimental				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	urity	NR; Aladdin Chemistry Co. (Shanghai, China); NR; 98.7% analytical grade Notes: DBP				
Test Method Details, Test C	ondition Details, and	two rice cultivars, Peizataifeng and Fenyousimiao, were grown in leaching columns packed with contaminated paddy soil collected from				
Test Consistency Details		Guangzhou, China; DBP Concentrations in pore water of Perzatatieng at 0-10, 10-20, 20-30, 50-40, and 40-50 cm were ca. 7.5, 7.4, 4.7, 2.5, and 2.4 μg/L, respectively, and in pore water of Fenyousimia were ca. 12, 7, 7, 2, and 8 μg/L, respectively; Concentrations in rice tissues (root, stem, leaf, and grain) ranged from 0.80 to 8.81 mg/kg				
System Type Design		Soil leaching column; experimentaldesign are illustrated in Supplementary Data; soil: 27.1 g/kg OM, 1.40 g/kg total nitrogen, 1.76 g/kgtotal phosphorus, and 18.0 g/kg total potassium, pH 6.05, 36.4% sand, 46.2% silt, and 17.4% clay				
Sampling Frequency and Sampling Details		plant and soil samples were collected at the jointing and ripening stages of rice (50 and 100 days after transplanting, respectively; samples of the five rice plants were collected together from each soil column; soil and pore water samples were collected from sampling ports on both sides of the soil column; extraction of water samples was conducted within 12h after collection				
Test Temperature		Not reported				
Results Details		BCF (values in Supplementary Data), the ratio of PAE concentrations in rice tissues to environment; bioconcentration factors of Peizataifeng were higher than those of Fengyousimiao indicating that Peizataifeng had a greater ability to accumulate the test substance. After 50 and 100 days of rice growth, the test substance could be detected at all layers of soil.				
Analytical Method and Ana	lytical Details	soil and plant extraction method: USEPA 3540C with modifications; pore-water and leachate samples were extracted and purified by solid phase extraction; analysis via GC/MS; Recoveries ranged from 82.9-92.2%; MDL: 0.03 µg/kg				
Transformation Products, St	atistics, and Kinetics	Not reported; Statistical analyses (calculating average value, std dev, regression, and Pearson correlation performed using SPSS 24.0 for Windows; $p < 0.05$ ; Not reported				
Reference Substance and Re Substance Results	eference	Non-spiked and sterile controls included; Not Reported				

			EVALUATION	N
Domain		Metric	Rating	Comments
Domain 1: Test Substand	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.
Domain 2: Test Design	Metric 3: Metric 4:	Study Controls Test Substance Stability	High Medium	Controls were included. The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were
			Continued on next p	not likely to have a substantial impact on study results.

		continu	ued from pre	vious page		
Study Citation:	Wu, Y., Chen, X. X., Zhu, T. K., Li, X., Chen, X. H., Mo, C. H., Li, Y. W., Cai, Q. Y., Wong, M. H. (2018). Variation in accumulation, transport, and distribution of phthalic acid esters (PAEs) in soil columns grown with low- and high-PAE accumulating rice cultivars. Environmental Science and Pollution Research 25(18):17768-17780.					
<b>OECD Harmonized</b>	Miscellaneous					
Template:						
HERO ID:	4728507					
		H	EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 3: Test Conditio	me					
Domain 5. Test Conditio	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance		
	Metric 6	Testing Conditions	Medium	Limited detail on testing conditions and monitoring		
	Metric 7:	Testing Consistency	N/A	This metric is not applicable to this study type		
	Metric 8:	System Type and Design	Medium	Equilibrium conditions not reported. The details of the experimental design are illus- trated in Supplementary Documents, not publicly available.		
Domain 4: Test Organis	ms					
	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this study type.		
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this study type.		
		1 0				
Domain 5: Outcome Ass	sessment					
	Metric 11:	Test Substance Identity	Low	Detail in Supplementary Documents, not publicly available.		
	Metric 12:	Test Substance Purity	Low	Detail in Supplementary Documents, not publicly available.		
Domain 6: Confounding	/Variable Control					
	Metric 13:	Confounding Variables	N/A	This metric is not applicable to this study type.		
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to this study type.		
		Exposure				
Domain 7: Data Presents	ation and Analysis					
	Metric 15:	Data Reporting	Low	Detail, including BCF values, are in Supplementary Documents, which was not publicly available.		
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Methods for statistical analysis were reported.		
Domain 8: Other						
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible. Supplementary Documents would add value to the study.		
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this study type.		
Overall Qualit	y Determin	ation	Low			

Standar Citestians	We V Com I 71	han C. Zhan V. Zhan A. Oi H. (2010). Dhthalata gallution driven ha tha industrial alactics monthat a surgest du af the plastic				
Study Citation:	wu, Y., Sun, J., Zl	wu, i., Sun, J., Zheng, C., Zhang, A., Zhang, A., Qi, H. (2019). Futuative pollution driven by the industrial plastics market: a case study of the plastic market in Yuwao City. China. Environmental Science and Pollution Personal 26(11):11224-11223				
OFCD Harmonized	market in Yuyao City, China. Environmental Science and Pollution Research 26(11):11224-11233.					
Tomplato:	Wilseenaneous					
HFRO ID.	5433502					
	5455502					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		Not Reported; di-n-butyl phthalate				
Confidentiality, Type, Guid	leline	None; Monitoring; Monitoring				
Solvent, Reactivity, Storag	e, Stability	hexane; NR; NR				
Radiolabel, Source, State,	Purity	None; Zhen Xiang Technology Co., Ltd. (Beijing, China); NR; NR Notes: DnBP				
Test Method Details, Test	Condition Details, and	soil and vegetation samples were collected at 21 sites downwind of a plastic market in Yuyao City, Zhejiang Province, China.; Sample locations				
Test Consistency		are indicated on map; not applicable (field samples)				
Details System Type Design		not applicable (field samples)				
System Type Design	amuliu a Dataila	collected in May 2017 : compling method referenced: field and procedural blanks included				
Sampling Frequency and S	sampning Details	collected in May 2017.; sampling method referenced; field and procedural blanks included				
Test Temperature		not applicable (neld samples)				
Results Details		soil concentrations: 340–771 ng/g: mean 500 ng/g (specific sample site concentrations reported in supplemental material); vegetation concentra- tions: reported in supplemental material				
Analytical Method and Analytical Details		GC-MSD: average recovery for surrogate DnBP-D4 78 $\pm$ 18% (soil). 97 $\pm$ 17% (vegetation): method detection limit 0.08-4.5 and 0.46-18 ng/g for				
That fire the and that fire beauto		soil and vegetation, respectively (specific results reported in supplementary material)				
Transformation Products, Statistics, and Kinetics		not applicable (field samples); t test; Pearson's correlation analysis and regression modeling.; 98.4% of PAE in soil were combined DEHP, DBzP,				
		DiBP, DnBP; 7.6% of PAE in vegetation was DnBP				
Reference Substance and F	Reference	not applicable; The recoveries of PAEs spiked soil samples were 60.46%-121.77% and spiked vegetable samples were 69.30%-114.36%				
Substance Results						

	EVALUATION						
Domain		Metric	Rating	Comments			
Domain 1: Test Substa	nce						
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.			
	Metric 2:	Test Substance Purity	High	The source of the test substance was reported.			
Domain 2: Test Design							
	Metric 3:	Study Controls	High	Concurrent blanks were included.			
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.			
Domain 3: Test Condit	ions						
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.			
	Metric 6:	Testing Conditions	High	Samples were collected at the same sample cites concurrently.			
	Metric 7:	Testing Consistency	High	Field samples collected consistently.			
Continued on next page							

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PUBLIC RELEASE DRAFT May 2025 Miscellaneous

		00	ontinued from previous page					
Study Citation:	Wu, Y., Sun, J., market in Yuyao	Wu, Y., Sun, J., Zheng, C., Zhang, X., Zhang, A., Qi, H. (2019). Phthalate pollution driven by the industrial plastics market: a case study of the plastic market in Yuyao City, China. Environmental Science and Pollution Research 26(11):11224-11233.						
<b>OECD Harmonized</b>	Miscellaneous	Miscellaneous						
Template:								
HERO ID:	5433502							
			EVALUATION					
Domain		Metric	Rating	Comments				
	Metric 8:	System Type and Design	High	Equilibrium was established.				
Domain 4: Test Organi	sms							
2 oniani il 1000 organi	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	ssessment							
	Metric 11:	Test Substance Identity	Low	Deficiencies in the outcome assessment methodology of the assessment or reporting were likely to have a substantial impact on results.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed.				
Domain 6: Confoundin	g/Variable Control							
	Metric 13:	Confounding Variables	Uninformative	There were sources of variability and uncertainty in the measurements and statistical techniques or between study groups resulting in serious flaws that make the study unusable. The source of deposition not identified; atmospheric cycling/transport not ascertained.				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.				
		Exposure						
Domain 7: Data Presen	tation and Analysis							
	Metric 15:	Data Reporting	Low	There was insufficient evidence presented to confirm the process for chemical deposi- tion.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset(s).				
Domain 8: Other			Ŧ					
	Metric 17:	Verification or Plausibility of	Low	Due to limited information, evaluation of the reasonableness of the study results was not				
	Metric 18:	Results QSAR Models	N/A	possible. The metric is not applicable to this study type.				
Overall Quali	ty Determir	nation	Uninformative					

Study Citation: OECD Harmonized	<ul> <li>V Citation: Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructe wetlands. Chemical Engineering Journal 275:198-205.</li> <li>D Harmonized Miscellaneous</li> </ul>					
HERO ID:	3072185					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		83-73-2; Di-n-butyl phthalate				
Confidentiality, Type, Guide	eline	None; Experimental; Experimental				
Solvent, Reactivity, Storage	, Stability	Analytical grade methanol; NR; NR; 4°C				
Radiolabel, Source, State, P	Purity	No; Dr. Ehrenstorfer (Germany); NR; 99.4% Notes: DBP				
Test Method Details, Test C	Condition Details, and	Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP con-				
Test Consistency		centration 9.2 $\pm$ 1.5 ug/L; pH 7.0 $\pm$ 0.2; dissolved oxygen 1.5 $\pm$ 0.2 mg/L; chemical oxygen demand 207.2 $\pm$ 18.5 mg/L; suspended solids 39.9 $\pm$ 13.9				
Details System Type Design		mg/L; ammonium nitrogen 21.4 $\pm$ 2.2 mg/L; total phosphale 2.9 $\pm$ 0.1; parameters were measured and recorded.				
System Type Design	ampling Details	influent and effluent: For a 6-day period ( $n = 6$ ) composite water samples were collected over each 24-hour day from the Constructed Wetlands				
Sampling Frequency and Sampling Details		influent and effluent points, for a total of 12 samples.; collected in 1-L glass amber sampling bottle; sample pH values were adjusted to 3; samples were stored at 4°C before analysis (within 48 h).				
Test Temperature		29.2±3.3°C				
Results Details		54% DBP removal; effluent parameters (% removal): temp $28.9\pm3^{\circ}$ C; pH $6.9\pm0.1$ ; dissolved oxygen $2.8\pm0.1$ mg/L; chemical oxygen demand $55.6\pm19.1$ (73%) mg/L; suspended solids $10.2\pm2.6$ (74%) mg/L; ammonium nitrogen $7.6\pm1.9$ (65%) mg/L; total phosphate $1.6\pm0.1$ (45%)				
Analytical Method and Ana	lytical Details	Solid phase extraction; GC-FID; limit of quantification 0.08-0.23 ug/L; compound recovery 74-108%; Procedural blanks, solvent blanks, spikes, internal standards and QC samples were included in the extraction and analysis.				
Transformation Products, Statistics, and Kinetics not reported; ±5%; Sum of squares of deviations 7623.69, 31.27, 144.16, 1578.80; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 25 15.63, 72.08, 789.40 all based on flow type, substrate, plant, haudralic load rates, respectively.						
Reference Substance and Reference not applicable; Not Reported not applicable; Not Reported						

			EVALUATIO	N	
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.	
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.	
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported.	
Domain 3: Test Condition	ons				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.	
	Metric 7:	Testing Consistency	High	The conditions of the exposure were documented.	
Continued on next page					

		contin	ued from pre	vious page				
Study Citation:	Xiaoyan, T., Suyu wetlands. Chemic	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.						
OECD Harmonized	Miscellaneous							
Template: HERO ID:	3072185							
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 8:	System Type and Design	High	Equilibrium was established. The system type and design were capable of appropriately maintaining substance concentrations.				
Domain 4: Test Organis	ms							
Domain in Test organis	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.				
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.				
Domain 5: Outcome As	sessment		TT: 1					
	Metric 11:	lest Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.				
Domain 6: Confounding	Wariable Control							
Domain 6. Comounding	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements were considered and ac- counted for in data evaluation.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.				
Domain 7: Data Present	ation and Analysis	Dete Denestine	TT: -1					
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported.				
	Metric 16:	Statistical Methods and	High	Statistical methods or kinetic calculations were clearly described and address the				
		Kinetic Calculations		dataset.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.				
	Metric 18:	Results QSAR Models	N/A	This metric is not applicable to this type of study.				
<b>Overall Quali</b>	ty Determina	ation	High					

Study Citation:	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.					
<b>OECD Harmonized</b>	monized Miscellaneous					
Template:						
HERO ID:	3072185					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		83-73-2; Di-n-butyl phthalate				
Confidentiality, Type, Guide	eline	None; Experimental; Experimental				
Solvent, Reactivity, Storage	, Stability	Analytical grade methanol; NR; NR; 4°C				
Radiolabel, Source, State, P	urity	No; Dr. Ehrenstorfer (Germany); NR; 99.4% Notes: DBP				
Test Method Details, Test Condition Details, and Test Consistency		Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration $9.2\pm1.5 \text{ ug/L}$ ; pH $7.0\pm0.2$ ; dissolved oxygen $1.5\pm0.2 \text{ mg/L}$ ; chemical oxygen demand $207.2\pm18.5 \text{ mg/L}$ ; suspended solids $39.9\pm13.9 \text{ mg/L}$ ; ammonium nitrogen $21.4\pm2.2 \text{ mg/L}$ ; total phosphate $2.9\pm0.1$ ; parameters were measured and recorded				
System Type Design		vertical subsurface-flow; vesuvianite (25–45 mm, porosity of 75%); unplanted; 0.25 m/day hydraulic loading rate				
Sampling Frequency and Sampling Details		influent and effluent; For a 6-day period (n = 6), composite water samples were collected over each 24-hour day, from the Constructed Wetlands influent and effluent points, for a total of 12 samples.; collected in 1-L glass amber sampling bottle; sample pH values were adjusted to 3; samples were stored at $4^{\circ}$ C before analysis (within 48 h).				
Test Temperature		29.2±3.3°C				
Results Details		59% DBP removal; effluent parameters (% removal): temp $28.2\pm2.3^{\circ}$ C; pH 7.1 $\pm0.1$ ; dissolved oxygen $3.5\pm0.2$ mg/L; chemical oxygen demand $58.9\pm24.0$ (72%) mg/L; suspended solids $8.2\pm1.0$ (79%) mg/L; ammonium nitrogen $5.3\pm2.2$ (75%) mg/L; total phosphate $1.8\pm0.2$ (38%)				
Analytical Method and Analytical Details		Solid phase extraction; GC-FID; limit of quantification 0.08-0.23 ug/L; compound recovery 74-108%; Procedural blanks, solvent blanks, spikes, internal standards and QC samples were included in the extraction and analysis.				
Transformation Products, Statistics, and Kinetics not reported; $\pm 5\%$ ; Sum of squares of deviations 7623.69, 31.27, 144.16, 1578.80; degree of 15.63, 72.08, 789.40 all based on flow type, substrate, plant, haudralic load rates, respectively.		not reported; $\pm 5\%$ ; Sum of squares of deviations 7623.69, 31.27, 144.16, 1578.80; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 2514.22, 15.63, 72.08, 789.40 all based on flow type, substrate, plant, haudralic load rates, respectively.				
Reference Substance and Reference Substance Results		not applicable; Not Reported				

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.	
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.	
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported.	
Domain 3: Test Conditions					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.	
	Metric 7:	Testing Consistency	High	The conditions of the exposure were documented.	
	Metric 8:	System Type and Design	High	Equilibrium was established. The system type and design were capable of appropriately maintaining substance concentrations.	
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		continu	ed from pre	vious page
Study Citation:	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
OECD Harmonized	Miscellaneous			
Template:				
HERO ID:	3072185			
		E	VALUATIO	N
Domain		Metric	Rating	Comments
Domain 4: Test Organis	ms			
e	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.
Domain 5: Outcome As	sessment		TT' 1	
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.
Domain 6: Confounding	y/Variable Control			
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements were considered and ac- counted for in data evaluation.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.
Domain 7: Data Present	ation and Analysis			
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.
Overall Quality Determination			High	

Study Citation:	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed					
·	wetlands. Chemical Engineering Journal 275:198-205.					
OECD Harmonized	monized Miscellaneous					
Template:						
HERO ID:	3072185					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		83-73-2; Di-n-butyl phthalate				
Confidentiality, Type, Guide	eline	None; Experimental; Experimental				
Solvent, Reactivity, Storage	, Stability	Analytical grade methanol; NR; NR; 4°C				
Radiolabel, Source, State, Purity		No; Dr. Ehrenstorfer (Germany); NR; 99.4% Notes: DBP				
Test Method Details, Test Condition Details, and Test Consistency		Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration $9.2\pm1.5$ ug/L; pH $7.0\pm0.2$ ; dissolved oxygen $1.5\pm0.2$ mg/L; chemical oxygen demand $207.2\pm18.5$ mg/L; suspended solids $39.9\pm13.9$				
Details System Type Design		mg/L; ammonium nitrogen 21.4 $\pm$ 2.2 mg/L; total phosphate 2.9 $\pm$ 0.1; parameters were measured and recorded.				
Sampling Frequency and Sampling Details		influent and effluent; For a 6-day period (n = 6), composite water samples were collected over each 24-hour day, from the Constructed Wetlands influent and effluent points, for a total of 12 samples.; collected in 1-L glass amber sampling bottle; sample pH values were adjusted to 3; samples were stored at 4°C before analysis (within 48 h).				
Test Temperature		29.2±3.3°C				
Results Details		66% DBP removal; effluent parameters (% removal): temp 27.9 $\pm$ 1.9°C; pH 7.0 $\pm$ 0.1; dissolved oxygen 3.9 $\pm$ 0.2 mg/L; chemical oxygen demand 43.4 $\pm$ 17.6 (79%) mg/L; suspended solids 7.4 $\pm$ 5.5 (82%) mg/L; ammonium nitrogen 3.6 $\pm$ 1.2 (83%) mg/L; total phosphate 1.6 $\pm$ 0.1 (47%)				
Analytical Method and Analytical Details		Solid phase extraction; GC-FID; limit of quantification 0.08-0.23 ug/L; compound recovery 74-108%; Procedural blanks, solvent blanks, spikes, internal standards and QC samples were included in the extraction and analysis.				
Transformation Products, Statistics, and Kinetics not reported; $\pm 4\%$ ; Sum of squares of deviations 7623.69, 31.27, 144.16, 1578.80; degree of freedom 3, 2, 2, 2; mean square 15.63, 72.08, 789.40 all based on flow type, substrate, plant, haudralic load rates, respectively.		not reported; $\pm 4\%$ ; Sum of squares of deviations 7623.69, 31.27, 144.16, 1578.80; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 2514.22, 15.63, 72.08, 789.40 all based on flow type, substrate, plant, haudralic load rates, respectively.				
Reference Substance and Reference Substance Results		not applicable; Not Reported				

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.	
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.	
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported.	
Domain 3: Test Conditions					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.	
	Metric 7:	Testing Consistency	High	The conditions of the exposure were documented.	
	Metric 8:	System Type and Design	High	Equilibrium was established. The system type and design were capable of appropriately maintaining substance concentrations.	
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		continu	ied from pre	vious page			
Study Citation:	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.						
OECD Harmonized	Miscellaneous						
Template:							
HERO ID:	3072185						
		F	VALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 4: Test Organis	ms						
	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.			
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.			
Domain 5: Outcome As	sessment						
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.			
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.			
Domain 6: Confounding	g/Variable Control						
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements were considered and ac- counted for in data evaluation.			
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.			
Domain 7: Data Present	ation and Analysis						
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported.			
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.			
Domain 8: Other							
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.			
	Metric 18:	Results QSAR Models	N/A	This metric is not applicable to this type of study.			
<b>Overall Quality Determination</b>			High				
Study Citation:	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. <i>Chamical Engineering Journal</i> 275:108–205						
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OECD Harmonized	Miscellaneous						
Template: HERO ID:	3072185						
		EXTRACTION					
Parameter		Data					
CASRN and Test Material		83-73-2; Di-n-butyl phthalate					
Confidentiality, Type, Guide	eline	None; Experimental; Experimental					
Solvent, Reactivity, Storage	, Stability	Analytical grade methanol; NR; NR; 4°C					
Radiolabel, Source, State, P	urity	No; Dr. Ehrenstorfer (Germany); NR; 99.4% Notes: DBP					
Test Method Details, Test Condition Details, and Test Consistency		Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration $9.2\pm1.5 \text{ ug/L}$ ; pH 7.0 $\pm0.2$ ; dissolved oxygen $1.5\pm0.2 \text{ mg/L}$ ; chemical oxygen demand $207.2\pm18.5 \text{ mg/L}$ ; suspended solids $39.9\pm13.9$					
Details		mg/L; ammonium nitrogen $21.4\pm2.2$ mg/L; total phosphate $2.9\pm0.1$ ; parameters were measured and recorded.					
System Type Design		upward subsurface-flow; gravel substrate (10-20 mm, porosity of 50%); Arundo donax var. versicolor plants; 0.25 m/day hydraulic loading rate					
Sampling Frequency and Sampling Details		influent and effluent; For a 6-day period (n = 6), composite water samples were collected over each 24-hour day, from the Constructed Wetlands influent and effluent points, for a total of 12 samples.; collected in 1-L glass amber sampling bottle; sample pH values were adjusted to 3; samples were stored at 4°C before analysis (within 48 h).					
Test Temperature		29.2±3.3°C					
Results Details		34% DBP removal; effluent parameters (% removal): temp 28.0 $\pm$ 2.4°C; pH 6.9 $\pm$ 0.2; dissolved oxygen 1.3 $\pm$ 0.2 mg/L; chemical oxygen demand 64.1 $\pm$ 5.8 (69%) mg/L; suspended solids 10.1 $\pm$ 1.8 (75%) mg/L; ammonium nitrogen 17.8 $\pm$ 2.0 (17%) mg/L; total phosphate 2.6 $\pm$ 0.2 (14%)					
Analytical Method and Analytical Details Solid phase extracti internal standards a		Solid phase extraction; GC-FID; limit of quantification 0.08-0.23 ug/L; compound recovery 74-108%; Procedural blanks, solvent blanks, spikes, internal standards and QC samples were included in the extraction and analysis.					
Transformation Products, Statistics, and Kinetics not reported; $\pm 8\%$ ; Sum of squares of deviations 7623.69, 31.27, 144.16, 1578.80; degree of freedom 3, 2, 2, 2; mean square (SS/I 15.63, 72.08, 789.40 all based on flow type, substrate, plant, haudralic load rates, respectively.		not reported; $\pm 8\%$ ; Sum of squares of deviations 7623.69, 31.27, 144.16, 1578.80; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 2514.22, 15.63, 72.08, 789.40 all based on flow type, substrate, plant, haudralic load rates, respectively.					
Reference Substance and Re Substance Results	eference	not applicable; Not Reported					

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.		
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.		
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.		
	Metric 7:	Testing Consistency	High	The conditions of the exposure were documented.		
	Metric 8:	System Type and Design	High	Equilibrium was established. The system type and design were capable of appropriately maintaining substance concentrations.		
Continued on next page						

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Study Citation:	Xiaoyan, T., Suyu wetlands. Chemic	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.						
OECD Harmonized	Miscellaneous	0 0						
Template:								
HERO ID:	3072185							
		E	VALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 4: Test Organis	ms							
-	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.				
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.				
Domain 6: Confounding	z/Variable Control							
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements were considered and ac- counted for in data evaluation.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.				
Domain 7: Data Present	ation and Analysis							
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Results	High	Reported values were within expected range.				
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.				
<b>Overall Qualit</b>	ty Determina	ation	High					

Study Citation:	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.					
<b>OECD Harmonized</b>	Miscellaneous					
Template:						
HERO ID:	3072185					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		83-73-2; Di-n-butyl phthalate				
Confidentiality, Type, Guide	eline	None; Experimental; Experimental				
Solvent, Reactivity, Storage	, Stability	Analytical grade methanol; NR; NR; 4°C				
Radiolabel, Source, State, Purity		No; Dr. Ehrenstorfer (Germany); NR; 99.4% Notes: DBP				
Test Method Details, Test Condition Details, and Test Consistency		Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration $9.2\pm1.5$ ug/L; pH 7.0 $\pm0.2$ ; dissolved oxygen $1.5\pm0.2$ mg/L; chemical oxygen demand $207.2\pm18.5$ mg/L; suspended solids $39.9\pm13.9$				
Details		mg/L; ammonium nitrogen 21.4±2.2 mg/L; total phosphate 2.9±0.1; parameters were measured and recorded.				
System Type Design		upward subsurface-flow; vesuvianite (25-45 mm, porosity of 75%); Thalia dealbata plants; 0.125 m/day hydraulic loading rate				
Sampling Frequency and Sampling Details		influent and effluent; For a 6-day period (n = 6), composite water samples were collected over each 24-hour day, from the Constructed Wetlands influent and effluent points, for a total of 12 samples.; collected in 1-L glass amber sampling bottle; sample pH values were adjusted to 3; samples were stored at $4^{\circ}$ C before analysis (within 48 h).				
Test Temperature		29.2±3.3°C				
Results Details		39% DBP removal; effluent parameters (% removal): temp 28.1 $\pm$ 3.2°C; pH 6.9 $\pm$ 0.3; dissolved oxygen 0.9 $\pm$ 0.2 mg/L; chemical oxygen demand 58.8 $\pm$ 17.4 (72%) mg/L; suspended solids 13.6 $\pm$ 2.8 (66%) mg/L; ammonium nitrogen 12.3 $\pm$ 2.3 (42%) mg/L; total phosphate 1.9 $\pm$ 0.5 (36%)				
Analytical Method and Ana	lytical Details	Solid phase extraction; GC-FID; limit of quantification 0.08-0.23 ug/L; compound recovery 74-108%; Procedural blanks, solvent blanks, spikes, internal standards and QC samples were included in the extraction and analysis.				
Transformation Products, St	tatistics, and Kinetics	not reported; $\pm 7\%$ ; Sum of squares of deviations 7623.69, 31.27, 144.16, 1578.80; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 2514.22, 15.63, 72.08, 789.40 all based on flow type, substrate, plant, haudralic load rates, respectively.				
Reference Substance and Re Substance Results	eference	not applicable; Not Reported				

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.	
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.	
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported.	
Domain 3: Test Condition	ons				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.	
	Metric 7:	Testing Consistency	High	The conditions of the exposure were documented.	
	Metric 8:	System Type and Design	High	Equilibrium was established. The system type and design were capable of appropriately maintaining substance concentrations.	
Continued on next page					

		continu	ed from pre	vious page				
Study Citation:	Xiaoyan, T., Suyu wetlands. Chemic	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.						
OECD Harmonized	Miscellaneous	0 0						
Template:								
HERO ID:	3072185							
		E	VALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 4: Test Organis	ms							
-	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.				
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.				
Domain 6: Confounding	z/Variable Control							
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements were considered and ac- counted for in data evaluation.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.				
Domain 7: Data Present	ation and Analysis							
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Results	High	Reported values were within expected range.				
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.				
<b>Overall Qualit</b>	ty Determina	ation	High					

Study Citation:	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed							
	wetlands. Chemica	wetlands. Chemical Engineering Journal 275:198-205.						
OECD Harmonized	Miscellaneous							
Template:	2072195							
HERO ID:	30/2185							
		EXTRACTION						
Parameter		Data						
CASRN and Test Material		83-73-2; Di-n-butyl phthalate						
Confidentiality, Type, Guide	eline	None; Experimental; Experimental						
Solvent, Reactivity, Storage	, Stability	Analytical grade methanol; NR; NR; 4°C						
Radiolabel, Source, State, Purity		No; Dr. Ehrenstorfer (Germany); NR; 99.4% Notes: DBP						
Test Method Details, Test Condition Details, and Test Consistency		Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration $9.2\pm1.5 \text{ ug/L}$ ; pH 7.0 $\pm0.2$ ; dissolved oxygen $1.5\pm0.2 \text{ mg/L}$ ; chemical oxygen demand $207.2\pm18.5 \text{ mg/L}$ ; suspended solids $39.9\pm13.9$						
Details		mg/L; ammonium nitrogen $21.4\pm2.2$ mg/L; total phosphate $2.9\pm0.1$ ; parameters were measured and recorded.						
System Type Design		upward subsurface-now; zeone (20-40 mm, porosity of 56%); uppaned, 0.5 m/day nydraune roading rate						
Sampling Frequency and Sampling Details		influent and effluent; For a 6-day period (n = 6), composite water samples were collected over each 24-hour day, from the Constructed Wetlands influent and effluent points, for a total of 12 samples.; collected in 1-L glass amber sampling bottle; sample pH values were adjusted to 3; samples were stored at 4°C before analysis (within 48 h).						
Test Temperature		29.2±3.3°C						
Results Details		23% DBP removal; effluent parameters (% removal): temp 28.1 $\pm$ 2.8°C; pH 6.8 $\pm$ 0.4; dissolved oxygen 1.2 $\pm$ 0.2 mg/L; chemical oxygen demand 82.1 $\pm$ 12.9 (60%) mg/L; suspended solids 11.1 $\pm$ 1.4 (72%) mg/L; ammonium nitrogen 7.1 $\pm$ 0.4 (67%) mg/L; total phosphate 1.7 $\pm$ 0.2 (45%)						
Analytical Method and Analytical Details Solid phase extraction; GC-FID; limit of quantification 0.08-0.23 ug/L; compound recover internal standards and QC samples were included in the extraction and analysis.		Solid phase extraction; GC-FID; limit of quantification 0.08-0.23 ug/L; compound recovery 74-108%; Procedural blanks, solvent blanks, spikes, internal standards and QC samples were included in the extraction and analysis.						
Transformation Products, St	tatistics, and Kinetics	not reported; ±9%; Sum of squares of deviations 7623.69, 31.27, 144.16, 1578.80; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 2514.22, 15.63, 72.08, 789.40 all based on flow type, substrate, plant, haudralic load rates, respectively.						
Reference Substance and Re Substance Results	eference	not applicable; Not Reported						

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.		
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.		
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.		
	Metric 7:	Testing Consistency	High	The conditions of the exposure were documented.		
	Metric 8:	System Type and Design	High	Equilibrium was established. The system type and design were capable of appropriately maintaining substance concentrations.		
Continued on next page						

		continu	ied from pre	vious page				
Study Citation:	Xiaoyan, T., Suyu wetlands. Chemic	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.						
<b>OECD Harmonized</b>	Miscellaneous	0 0						
Template:	2072105							
HERO ID:	30/2185							
		F	EVALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 4: Test Organis	sms							
2 oniuni il 1000 organio	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.				
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.				
Domain 5: Outcome As	sessment	Test Substance Identity	Hak					
	Metric 11:	Test Substance Identity	High	interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest,				
				lyzed.				
Domain 6: Confounding	Wariable Control							
	Metric 13.	Confounding Variables	High	Sources of variability and uncertainty in the measurements were considered and ac-				
	mourie 15.	comounding variables	mgn	counted for in data evaluation.				
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to this type of study.				
		Exposure						
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass				
				balance were reported.				
	Metric 16:	Statistical Methods and	High	Statistical methods or kinetic calculations were clearly described and address the				
		Kinetic Calculations						
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.				
	Metric 18:	Results QSAR Models	N/A	This metric is not applicable to this type of study.				
Overall Qualit	ty Determin	ation	High					
	y Dettermina		Ingli					

Study Citation:	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed							
	wetlands. Chemica	wetlands. Chemical Engineering Journal 275:198-205.						
OECD Harmonized	Miscellaneous							
Template:	5							
HERO ID;	3072183							
_		EXTRACTION						
Parameter		Data						
CASRN and Test Material		83-73-2; Di-n-butyl phthalate						
Confidentiality, Type, Guide	eline	None; Experimental; Experimental						
Solvent, Reactivity, Storage	, Stability	Analytical grade methanol; NR; NR; 4°C						
Radiolabel, Source, State, P	urity	No; Dr. Ehrenstorfer (Germany); NR; 99.4% Notes: DBP						
Test Method Details, Test Condition Details, and Test Consistency		Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration $9.2\pm1.5 \text{ ug/L}$ ; pH 7.0 $\pm0.2$ ; dissolved oxygen $1.5\pm0.2 \text{ mg/L}$ ; chemical oxygen demand $207.2\pm18.5 \text{ mg/L}$ ; suspended solids $39.9\pm13.9$						
Details		mg/L; ammonium nitrogen 21.4 $\pm$ 2.2 mg/L; total phosphate 2.9 $\pm$ 0.1; parameters were measured and recorded.						
System Type Design		surface-now; gravel substrate (10-20 mm, porosity of 50%); Arundo donax var. versicolor plants; 0.25 m/day hydraulic loading rate						
Sampling Frequency and Sampling Details		influent and effluent; For a 6-day period (n = 6), composite water samples were collected over each 24-hour day, from the Constructed Wetlands influent and effluent points, for a total of 12 samples.; collected in 1-L glass amber sampling bottle; sample pH values were adjusted to 3; samples were stored at $4^{\circ}$ C before analysis (within 48 h).						
Test Temperature		29.2±3.3°C						
Results Details		42% DBP removal; effluent parameters (% removal): temp 27.7 $\pm$ 2.6°C; pH 7.1 $\pm$ 0.2; dissolved oxygen 0.7 $\pm$ 0.1 mg/L; chemical oxygen demand 69.2 $\pm$ 23.6 (67%) mg/L; suspended solids 8.3 $\pm$ 0.3 (79%) mg/L; ammonium nitrogen 18.9 $\pm$ 2.7 (11%) mg/L; total phosphate 2.3 $\pm$ 0.2 (23%)						
Analytical Method and Analytical Details Solid phase extraction; GC-FID; limit of quantification 0.08-0.23 ug/L; compound recovery 74-108%; Procedura internal standards and QC samples were included in the extraction and analysis.		Solid phase extraction; GC-FID; limit of quantification 0.08-0.23 ug/L; compound recovery 74-108%; Procedural blanks, solvent blanks, spikes, internal standards and QC samples were included in the extraction and analysis.						
Transformation Products, St	tatistics, and Kinetics	not reported; $\pm 4\%$ ; Sum of squares of deviations 7623.69, 31.27, 144.16, 1578.80; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 2514.22, 15.63, 72.08, 789.40 all based on flow type, substrate, plant, haudralic load rates, respectively.						
Reference Substance and Re Substance Results	eference	not applicable; Not Reported						

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.		
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.		
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.		
	Metric 7:	Testing Consistency	High	The conditions of the exposure were documented.		
	Metric 8:	System Type and Design	High	Equilibrium was established. The system type and design were capable of appropriately maintaining substance concentrations.		
Continued on next page						

		continu	ed from pre	vious page				
Study Citation:	Xiaoyan, T., Suyu wetlands. Chemic	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.						
OECD Harmonized	Miscellaneous	0 0						
Template:								
HERO ID:	3072185							
		E	VALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 4: Test Organis	ms							
-	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.				
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.				
Domain 6: Confounding	z/Variable Control							
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements were considered and ac- counted for in data evaluation.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.				
Domain 7: Data Present	ation and Analysis							
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Results	High	Reported values were within expected range.				
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.				
<b>Overall Qualit</b>	ty Determina	ation	High					

Study Citation:	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.					
OECD Harmonized	Miscellaneous					
Template:						
HERO ID:	3072185					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		83-73-2; Di-n-butyl phthalate				
Confidentiality, Type, Guide	eline	None; Experimental; Experimental				
Solvent, Reactivity, Storage	, Stability	Analytical grade methanol; NR; NR; 4°C				
Radiolabel, Source, State, Purity		No; Dr. Ehrenstorfer (Germany); NR; 99.4% Notes: DBP				
Test Method Details, Test Condition Details, and Test Consistency		Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration $9.2\pm1.5 \text{ ug/L}$ ; pH $7.0\pm0.2$ ; dissolved oxygen $1.5\pm0.2 \text{ mg/L}$ ; chemical oxygen demand $207.2\pm18.5 \text{ mg/L}$ ; suspended solids $39.9\pm13.9 \text{ mg/L}$ ; ammonium nitrogen $21.4\pm2.2 \text{ mg/L}$ ; total phosphate $2.9\pm0.1$ ; parameters were measured and recorded				
System Type Design		surface-flow; zeolite (20–40 mm, porosity of 58%); Thalia dealbata plants; 0.125 m/day hydraulic loading rate				
Sampling Frequency and Sampling Details		influent and effluent; For a 6-day period ( $n = 6$ ), composite water samples were collected over each 24-hour day, from the Constructed Wetlands influent and effluent points, for a total of 12 samples.; collected in 1-L glass amber sampling bottle; sample pH values were adjusted to 3; samples were stored at 4°C before analysis (within 48 h).				
Test Temperature		29.2±3.3°C				
Results Details		47% DBP removal; effluent parameters (% removal): temp 27.4 $\pm$ 2.3°C; pH 7.0 $\pm$ 0.3; dissolved oxygen 0.9 $\pm$ 0.2 mg/L; chemical oxygen demand 67.6 $\pm$ 11.2 (67%) mg/L; suspended solids 8.7 $\pm$ 1.2 (78%) mg/L; ammonium nitrogen 13.5 $\pm$ 0.9 (37%) mg/L; total phosphate 1.7 $\pm$ 0.2 (44%)				
Analytical Method and Ana	lytical Details	Solid phase extraction; GC-FID; limit of quantification 0.08-0.23 ug/L; compound recovery 74-108%; Procedural blanks, solvent blanks, spikes, internal standards and QC samples were included in the extraction and analysis.				
Transformation Products, St	tatistics, and Kinetics	not reported; $\pm 4\%$ ; Sum of squares of deviations 7623.69, 31.27, 144.16, 1578.80; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 2514.22, 15.63, 72.08, 789.40 all based on flow type, substrate, plant, haudralic load rates, respectively.				
Reference Substance and Re Substance Results	eference	not applicable; Not Reported				

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.	
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.	
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported.	
Domain 3: Test Condition	ons				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.	
	Metric 7:	Testing Consistency	High	The conditions of the exposure were documented.	
	Metric 8:	System Type and Design	High	Equilibrium was established. The system type and design were capable of appropriately maintaining substance concentrations.	
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		continu	ied from pre	vious page				
Study Citation:	Xiaoyan, T., Suyu wetlands. Chemic	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.						
<b>OECD Harmonized</b>	Miscellaneous	0 0						
Template:	2072105							
HERO ID:	30/2185							
		F	EVALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 4: Test Organis	sms							
2 oniuni il 1000 organio	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.				
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.				
Domain 5: Outcome As	sessment	Test Substance Identity	Hak					
	Metric 11:	Test Substance Identity	High	interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest,				
				lyzed.				
Domain 6: Confounding	Wariable Control							
	Metric 13.	Confounding Variables	High	Sources of variability and uncertainty in the measurements were considered and ac-				
	mourie 15.	comounding variables	mgn	counted for in data evaluation.				
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to this type of study.				
		Exposure						
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass				
				balance were reported.				
	Metric 16:	Statistical Methods and	High	Statistical methods or kinetic calculations were clearly described and address the				
		Kinetic Calculations						
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.				
	Metric 18:	Results QSAR Models	N/A	This metric is not applicable to this type of study.				
Overall Qualit	ty Determin	ation	High					
	y Dettermina		Ingli					

Study Citation:	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yuny, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed							
·	wetlands. Chemica	wetlands. Chemical Engineering Journal 275:198-205.						
OECD Harmonized	<b>ed</b> Miscellaneous							
Template:								
HERO ID:	3072185							
		EXTRACTION						
Parameter		Data						
CASRN and Test Material		83-73-2; Di-n-butyl phthalate						
Confidentiality, Type, Guide	eline	None; Experimental; Experimental						
Solvent, Reactivity, Storage	, Stability	Analytical grade methanol; NR; NR; 4°C						
Radiolabel, Source, State, Purity		No; Dr. Ehrenstorfer (Germany); NR; 99.4% Notes: DBP						
Test Method Details, Test Condition Details, and Test Consistency		Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration $9.2\pm1.5$ ug/L; pH $7.0\pm0.2$ ; dissolved oxygen $1.5\pm0.2$ mg/L; chemical oxygen demand $207.2\pm18.5$ mg/L; suspended solids $39.9\pm13.9$						
Details System Type Design		surface-flow; vesuvianite $(25-45 \text{ mm, porosity of 75\%})$ ; unplanted; 0.5 m/day hydraulic loading rate						
Sampling Frequency and Sampling Details		influent and effluent; For a 6-day period (n = 6), composite water samples were collected over each 24-hour day, from the Constructed Wetlands influent and effluent points, for a total of 12 samples.; collected in 1-L glass amber sampling bottle; sample pH values were adjusted to 3; samples were stored at 4°C before analysis (within 48 h).						
Test Temperature		29.2±3.3°C						
Results Details		38% DBP removal; effluent parameters (% removal): temp 28.8 $\pm$ 2.9°C; pH 7.1 $\pm$ 0.3; dissolved oxygen 0.8 $\pm$ 0.2 mg/L; chemical oxygen demand 81.9 $\pm$ 13.0 (60%) mg/L; suspended solids 9.2 $\pm$ 0.8 (77%) mg/L; ammonium nitrogen 9.6 $\pm$ 2.3 (55%) mg/L; total phosphate 2.4 $\pm$ 0.2 (19%)						
Analytical Method and Analytical Details Solid phase extraction; GC-FID; limit of quantification 0.08-0.23 ug/L; compound recovery 74-108%; Procedural blanks, solvent linternal standards and OC samples were included in the extraction and analysis.		Solid phase extraction; GC-FID; limit of quantification 0.08-0.23 ug/L; compound recovery 74-108%; Procedural blanks, solvent blanks, spikes, internal standards and QC samples were included in the extraction and analysis.						
Transformation Products, Statistics, and Kinetics not reported; ±4%; Sum of squares of deviations 7623.69, 31.27, 144.16, 1578.80; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 25 15.63, 72.08, 789.40 all based on flow type, substrate, plant, haudralic load rates, respectively.								
Reference Substance and Re Substance Results	eference	not applicable; Not Reported						

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.	
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.	
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported.	
Domain 3: Test Condition	ons				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.	
	Metric 7:	Testing Consistency	High	The conditions of the exposure were documented.	
	Metric 8:	System Type and Design	High	Equilibrium was established. The system type and design were capable of appropriately maintaining substance concentrations.	
Continued on next page					

		continu	ied from pre	vious page				
Study Citation:	Xiaoyan, T., Suyu wetlands. Chemic	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.						
<b>OECD Harmonized</b>	Miscellaneous	0 0						
Template:	2072105							
HERO ID:	30/2185							
		F	EVALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 4: Test Organis	sms							
2 oniuni il 1000 organio	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.				
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.				
Domain 5: Outcome As	sessment	Test Substance Identity	Hak					
	Metric 11:	Test Substance Identity	High	interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest,				
				lyzed.				
Domain 6: Confounding	Wariable Control							
	Metric 13.	Confounding Variables	High	Sources of variability and uncertainty in the measurements were considered and ac-				
	mourie 15.	comounding variables	mgn	counted for in data evaluation.				
	Metric 14:	Health Outcomes Unrelated to	N/A	This metric is not applicable to this type of study.				
		Exposure						
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass				
				balance were reported.				
	Metric 16:	Statistical Methods and	High	Statistical methods or kinetic calculations were clearly described and address the				
		Kinetic Calculations						
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.				
	Metric 18:	Results QSAR Models	N/A	This metric is not applicable to this type of study.				
Overall Qualit	ty Determin	ation	High					
	y Dettermina		Ingli					

Study Citation: Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constr wetlands. Chemical Engineering Journal 275:198-205.						
OECD Harmonized	Miscellaneous					
Template:						
HERO ID:	3072185					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		83-73-2; Di-n-butyl phthalate				
Confidentiality, Type, Guide	line	None: Experimental: Experimental				
Solvent, Reactivity, Storage,	Stability	Analytical grade methanol; NR; NR; 4°C				
Radiolabel, Source, State, Pu	urity	No; Dr. Ehrenstorfer (Germany); NR; 99.4% Notes: DBP				
Test Method Details, Test Condition Details, and Test Consistency Details		Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration $9.2\pm1.5 \text{ ug/L}$ ; pH $7.0\pm0.2$ ; dissolved oxygen $1.5\pm0.2 \text{ mg/L}$ ; chemical oxygen demand $207.2\pm18.5 \text{ mg/L}$ ; suspended solids $39.9\pm13.9 \text{ mg/L}$ ; ammonium nitrogen $21.4\pm2.2 \text{ mg/L}$ ; total phosphate $2.9\pm0.1$ ; parameters were measured and recorded				
System Type Design		horizontal subsurface-flow: gravel substrate (10-20 mm, porosity of 50%); unplanted: 0.125 m/day hydraulic loading rate				
Sampling Frequency and Sampling Details		influent and effluent; For a 6-day period (n = 6), composite water samples were collected over each 24-hour day, from the Constructed Wetlands influent and effluent points, for a total of 12 samples.; collected in 1-L glass amber sampling bottle; sample pH values were adjusted to 3; samples were stored at 4°C before analysis (within 48 h).				
Test Temperature		29.2±3.3°C				
Results Details		55% DBP removal; effluent parameters (% removal): temp 29.1 $\pm$ 3.8°C; pH 7.2 $\pm$ 0.2; dissolved oxygen 0.3 $\pm$ 0.2 mg/L; chemical oxygen demand 68.2 $\pm$ 13.1 (67%) mg/L; suspended solids 8.6 $\pm$ 0.5 (78%) mg/L; ammonium nitrogen 15.8 $\pm$ 1.8 (26%) mg/L; total phosphate 1.7 $\pm$ 0.2 (45%)				
Analytical Method and Anal	lytical Details	Solid phase extraction; GC-FID; limit of quantification 0.08-0.23 ug/L; compound recovery 74-108%; Procedural blanks, solvent blanks, spikes, internal standards and QC samples were included in the extraction and analysis.				
Transformation Products, Sta	atistics, and Kinetics	not reported; ±5%; Sum of squares of deviations 7623.69, 31.27, 144.16, 1578.80; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 2514.22, 15.63, 72.08, 789.40 all based on flow type, substrate, plant, haudralic load rates, respectively.				
Reference Substance and Re Substance Results	eference	not applicable; Not Reported				

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substand	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.	
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.	
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported.	
Domain 3: Test Condition	ons				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.	
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.	
	Metric 7:	Testing Consistency	High	The conditions of the exposure were documented.	
	Metric 8:	System Type and Design	High	Equilibrium was established. The system type and design were capable of appropriately maintaining substance concentrations.	
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Study Citation:	Xiaoyan, T., Suyu wetlands. Chemic	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.						
<b>OECD Harmonized</b>	Miscellaneous							
Template:								
HERO ID:	3072185							
		E	VALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 4: Test Organis	ms							
	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.				
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.				
Domain 6: Confounding	z/Variable Control							
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements were considered and ac- counted for in data evaluation.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.				
Domain 7: Data Present	ation and Analysis							
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Results	High	Reported values were within expected range.				
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.				
Overall Qualit	ty Determina	ation	High					

Study Citation:	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed							
OECD Harmonized	Miscellaneous							
Template:								
HERO ID:	30/2185							
		EXTRACTION						
Parameter		Data						
CASRN and Test Material		83-73-2; Di-n-butyl phthalate						
Confidentiality, Type, Guide	eline	None; Experimental; Experimental						
Solvent, Reactivity, Storage	e, Stability	Analytical grade methanol; NR; NR; 4°C						
Radiolabel, Source, State, F	Purity	No; Dr. Ehrenstorfer (Germany); NR; 99.4% Notes: DBP						
Test Method Details, Test Condition Details, and Test Consistency		Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration $9.2\pm1.5 \text{ ug/L}$ ; pH 7.0 $\pm$ 0.2; dissolved oxygen $1.5\pm0.2 \text{ mg/L}$ ; chemical oxygen demand $207.2\pm18.5 \text{ mg/L}$ ; suspended solids $39.9\pm13.9 \text{ mg/L}$ ; and $1.5\pm0.2 \text{ mg/L}$ ; chemical oxygen demand $207.2\pm18.5 \text{ mg/L}$ ; suspended solids $39.9\pm13.9 \text{ mg/L}$ ; and $1.5\pm0.2 \text{ mg/L}$ ; chemical oxygen demand $207.2\pm18.5 \text{ mg/L}$ ; suspended solids $39.9\pm13.9 \text{ mg/L}$ ; suspended solids $39.9\pm13.9 \text{ mg/L}$ ; and $1.5\pm0.2 \text{ mg/L}$ ; be a solid sol						
Details System Type Design		horizontal subsurface-flow: zeolite (20-40 mm, porosity of 58%); Thalia dealbata plants: 0.25 m/day hydraulic loading rate						
Sampling Frequency and Sa	ampling Details	influent and effluent: For a 6-day period ( $n = 6$ ), composite water samples were collected over each 24-hour day, from the Constructed Wetlands						
Sampling Frequency and Sampling Details		influent and effluent points, for a total of 12 samples.; collected in 1-L glass amber sampling bottle; sample pH values were adjusted to 3; samples were stored at 4°C before analysis (within 48 h).						
Test Temperature		29.2±3.3°C						
Results Details		43% DBP removal; effluent parameters (% removal): temp 28.7 $\pm$ 2.7°C; pH 6.9 $\pm$ 0.2; dissolved oxygen 0.5 $\pm$ 0.1 mg/L; chemical oxygen demand 50.2 $\pm$ 16.4 (76%) mg/L; suspended solids 7.9 $\pm$ 1.0 (80%) mg/L; ammonium nitrogen 13.2 $\pm$ 3.3 (38%) mg/L; total phosphate 2.5 $\pm$ 0.4 (15%)						
Analytical Method and Ana	alytical Details	Solid phase extraction; GC-FID; limit of quantification 0.08-0.23 ug/L; compound recovery 74-108%; Procedural blanks, solvent blanks, spikes, internal standards and QC samples were included in the extraction and analysis.						
Transformation Products, S	tatistics, and Kinetics	not reported; $\pm 6\%$ ; Sum of squares of deviations 7623.69, 31.27, 144.16, 1578.80; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 2514.22, 15.63, 72.08, 789.40 all based on flow type, substrate, plant, haudralic load rates, respectively.						
Reference Substance and R Substance Results	eference	not applicable; Not Reported						

EVALUATION						
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.		
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.		
Domain 2: Test Design	Domain 2: Test Design					
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.		
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.		
	Metric 7:	Testing Consistency	High	The conditions of the exposure were documented.		
	Metric 8:	System Type and Design	High	Equilibrium was established. The system type and design were capable of appropriately maintaining substance concentrations.		
Continued on next page						

		continu	ed from pre	vious page				
Study Citation:	Xiaoyan, T., Suyu, wetlands. Chemic	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.						
<b>OECD Harmonized</b>	Miscellaneous	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6						
Template:	2052105							
HERO ID:	30/2185							
		E	VALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 4: Test Organis	ms							
0	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.				
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.				
Domain 5: Outcome As	sassmant							
Domain 5. Outcome As	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.				
Domain 6: Confounding	Wariable Control							
Domain of Comounding	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements were considered and ac- counted for in data evaluation.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.				
Domain 7. Data Present	ation and Analysis							
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.				
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.				
<b>Overall Qualit</b>	ty Determina	ation	High					

Study Citation: Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by const watlands. Chemical Engineering Journal 275:108-205						
<b>OECD Harmonized</b>	ii Engineering Journal 275.198-205.					
Template:						
HERO ID:	3072185					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		83-73-2; Di-n-butyl phthalate				
Confidentiality, Type, Guid	eline	None; Experimental; Experimental				
Solvent, Reactivity, Storage	e, Stability	Analytical grade methanol; NR; NR; 4°C				
Radiolabel, Source, State, F	Purity	No; Dr. Ehrenstorfer (Germany); NR; 99.4% Notes: DBP				
Test Method Details, Test Condition Details, and Test Consistency		Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration $9.2\pm1.5 \text{ ug/L}$ ; pH $7.0\pm0.2$ ; dissolved oxygen $1.5\pm0.2 \text{ mg/L}$ ; chemical oxygen demand $207.2\pm18.5 \text{ mg/L}$ ; suspended solids $39.9\pm13.9 \text{ mg/L}$ ; ampropriate the properties of the propertie				
System Type Design		horizontal subsurface-flow; vesuvianite (25–45 mm, porosity of 75%); Arundo donax var, versicolor plants; 0.5 m/day hydraulic loading rate				
Sampling Frequency and Sampling Details		influent and effluent; For a 6-day period ( $n = 6$ ), composite water samples were collected over each 24-hour day, from the Constructed Wetlands influent and effluent points, for a total of 12 samples.; collected in 1-L glass amber sampling bottle; sample pH values were adjusted to 3; samples were stored at 4°C before analysis (within 48 h).				
Test Temperature		29.2±3.3°C				
Results Details		47% DBP removal; effluent parameters (% removal): temp 29.0 $\pm$ 2.6°C; pH 6.8 $\pm$ 0.2; dissolved oxygen 0.4 $\pm$ 0.2 mg/L; chemical oxygen demand 62.1 $\pm$ 14.3 (70%) mg/L; suspended solids 9.1 $\pm$ 0.1 (77%) mg/L; ammonium nitrogen 17.8 $\pm$ 1.7 (17%) mg/L; total phosphate 1.4 $\pm$ 0.1 (54%)				
Analytical Method and Analytical Details		Solid phase extraction; GC-FID; limit of quantification 0.08-0.23 ug/L; compound recovery 74-108%; Procedural blanks, solvent blanks, spikes, internal standards and QC samples were included in the extraction and analysis.				
Transformation Products, Statistics, and Kinetics		not reported; $\pm 5\%$ ; Sum of squares of deviations 7623.69, 31.27, 144.16, 1578.80; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 2514.22, 15.63, 72.08, 789.40 all based on flow type, substrate, plant, haudralic load rates, respectively.				
Reference Substance and R Substance Results	eference	not applicable; Not Reported				

	EVALUATION					
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and CASRN.		
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.		
Domain 2: Test Design						
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.		
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.		
	Metric 7:	Testing Consistency	High	The conditions of the exposure were documented.		
	Metric 8:	System Type and Design	High	Equilibrium was established. The system type and design were capable of appropriately maintaining substance concentrations.		
Continued on next page						

## Page 701 of 720

		continu	ued from pre	vious page				
Study Citation:	Xiaoyan, T., Suyu wetlands. Chemic	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.						
<b>OECD Harmonized</b>	Miscellaneous	8 8 8						
Template:								
HERO ID:	3072185							
		H	EVALUATIO	Ň				
Domain		Metric	Rating	Comments				
Domain 4: Test Organis	ms							
c	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.				
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	Hıgh	The outcome assessment methodology addressed or reported the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed.				
Domain 6: Confounding	g/Variable Control							
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements were considered and ac- counted for in data evaluation.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.				
Domain 7: Data Present	ation and Analysis							
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Results	High	Reported values were within expected range.				
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.				
Overall Qualit	ty Determin	ation	High					

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Study Citation:	Xie, Z., Ebinghaus	, R., Temme, C., Caba, A., Ruck, W. (2005). Atmospheric concentrations and air-sea exchanges of phthalates in the North Sea (German				
OECD Harmonized	Bight). Atmospher	ric Environment 39(18):3209-3219.				
Tompleter	Miscentaneous					
HERO ID.	102787					
	102707					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material	1	84-74-2; Dibutyl phthalate				
Confidentiality, Type, Gui	deline	None; Calculation; Calculation				
Solvent, Reactivity, Storag	ge, Stability	NR; NR; NR				
Radiolabel, Source, State,	Purity	NR; Augsburg, Germany; NR; NR				
Test Method Details, Test	Condition Details, and	Two-film resistance model based upon relative air-sea concentrations; Detection limit = 3.4 ng/m3; Matrix spikes, breakthrough check, field blanks,				
Test Consistency		method detection limits applied				
Details		We de a server la face de face de selection en				
System Type Design		water samples from 4.5 m depth; ar samples at 9 m above sea surface				
Sampling Frequency and S	Sampling Details	Monthly; Air sampling stopped at wind speed $<3$ m/sec. Sample storage described elsewhere				
Test Temperature		Not applicable				
Results Details		Air-sea vapor exchange flux. Mass transfer coefficient : 7.4X10-3 m-day. Flux: -13 ng/cu m-day (avg)				
Analytical Method and Analytical Details		Overall flux calculation based on phase concentration, mass transfer and Henry's Law corrected for water temp and salinity; PUF-XAD2 columns and GC-MS for grab samples;				
Transformation Products, Statistics, and Kinetics		Not applicable; Concentration in water: 0.45 to 6.6 ng/L with 0.16 to 5.8 ng/L total suspended matter; concentration in air: 0.17 to 0.34 ng/m3 (vapor) with 0.05 to 0.06 ng/m3 particulate; salinity: 27.8-34.9%; 3.8-6.3°C; Particle-associated fraction: 46%				
Reference Substance and I	Reference	Not reported; Not applicable				
Substance Results						

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substan	ce				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2:	Test Substance Purity	Medium	The test substance source was reported.	
Domain 2: Test Design					
	Metric 3:	Study Controls	High	A concurrent negative control, or blank group, toxicity control, and positive control were included.	
	Metric 4:	Test Substance Stability	High	The test substance stability, homogeneity, preparation, and storage conditions were reported.	
Domain 3: Test Condition	ons				
	Metric 5:	Test Method Suitability	High	The test substance stability, homogeneity, preparation, and storage conditions were reported.	
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.	
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.	
Continued on next page					

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		continu	ued from pre	vious page				
Study Citation:	Xie, Z., Ebinghau Bight). Atmosphe	Xie, Z., Ebinghaus, R., Temme, C., Caba, A., Ruck, W. (2005). Atmospheric concentrations and air-sea exchanges of phthalates in the North Sea (German Bight). Atmospheric Environment 39(18):3209-3219.						
OECD Harmonized	Miscellaneous							
Template:	100797							
HERO ID:	102787							
		ŀ	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 8:	System Type and Design	High	The system type and design were not capable of appropriately maintaining substance concentrations.				
Domain 4: Test Organis	sms							
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being ana- lyzed and no notable uncertainties or limitations were expected to influence results.				
Domain 6: Confounding	v/Variable Control							
Domain of Company	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques were considered and accounted for in data evaluation and all reported variability or uncertainty was not likely to influence the outcome assessment.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	High	The target chemical concentration, extraction efficiency, percent recovery, or mass bal- ance were reported and analytical methods used were suitable for detection and quantifi- cation of the target chemical.				
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.				
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	Reported values were consistent with related physical chemical properties.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
<b>Overall Quali</b>	ty Determin	ation	High					

Study Citation:	Yang, C., Wang, G	C. C., Chen, C. H. (2013). Di-n-butyl phthalate removal using mixed cultures in batch reactors. International Biodeterioration &				
Study Chattoni	Biodegradation 85:587-591.					
<b>OECD Harmonized</b>	Miscellaneous					
Template:						
HERO ID:	2219896					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; Dibutyl phthalate				
Confidentiality, Type, Guide	eline	None; Experimental; Experimental				
Solvent, Reactivity, Storage	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	urity	NR; NR; NR				
Test Method Details, Test C	ondition Details, and	Actual wastewater from the influent of an industrial WWTP in Taiwan; artificial wastewater: phosphate buffered medium; 200-1000 mg/L DBP				
Test Consistency		shaken in serum bottles with an acclimated mixed culture originating from activated sludge (20 ml) and agricultural soils (5g); Final volume of				
Details System Type Design		50 ml serum bottles				
System Type Design Sampling Frequency and Sa	mnling Details	pH. OD600, ammonia, and DBP concentrations were measured periodically.: Not reported				
Test Temperature	impling Details	30°C: initial pH of both wastewaters were about 7. final pH values of the actual and synthetic wastewaters: 3.23 and 6.20, respectively				
Results Details		Half-life = in actual wastewater at 200 mg/L = 14.44 hr 400 mg/L = 22.28 hr 600 mg/L = 25.11 hr 800 mg/L = 45.89 hr 1000 mg/L = 57.75				
Results Details		hr; Removal in actual wastewater, at 200 mg/L = 14.44 m, 400 mg/L = 22.28 m, 600 mg/L = 20.11 m, 800 mg/L = 40.69 m, 1000 mg/L = $57.75$ hr; Removal in actual wastewater, at 200 mg/L = 100% after 76h, 400 mg/L = 100% after ca. 90h, 600 mg/L = 100% after ca. 120h, 800 mg/L = $100\%$ after ca. 120h				
Analytical Method and Analytical Details		HPLC with UV detector set at 234 nm; LOD: 0.96 mg/L; Recovery: 95.8-102.4%				
Transformation Products, St	tatistics, and Kinetics	Not reported; DBP removal in the actual wastewater ranged from 92%-100%; in the artificial wastewater ranged from 91.1%-99.6%; Wastewater removal rate (biodegradation rate constant) in actual wastewater, at 200 mg/L = $2.7 \text{ mg/L*h} (0.0480/\text{h})$ , 400 mg/L = $4.4 \text{ mg/L*h} (0.0311/\text{h})$ , 600 mg/L = $5.4 \text{ mg/L*h} (0.0276/\text{h})$ , 800 mg/L = $5.2 \text{ mg/L*h} (0.0151/\text{h})$ , 1000 mg/L = $6.6 \text{ mg/L*h} (0.0120/\text{h})$				
Reference Substance and Reference Substance Results		Half-life = in artificial wastewater, at 200 mg/L = 5.85 hr, 400 mg/L = 10.09 hr, 600 mg/L = 11.53 hr, 800 mg/L = 23.73 hr, 1000 mg/L = 20.56;; Wastewater removal rate (biodegradation rate constant) artificial wastewater, at 200 mg/L = 8.5 mg/L*h (0.1185/h), 400 mg/L = 12.3 mg/L*h (0.0687/h), 600 mg/L = 21.5 mg/L*h (0.0610/h), 800 mg/L = 21.0 mg/L*h (0.0292/h), 1000 mg/L = 22.3 mg/L*h (0.0337/h)				

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Substan	nce			
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity was reported.
Domain 2: Test Design	Metric 3: Metric 4:	Study Controls Test Substance Stability	N/A Medium	The metric is not applicable to this study type. The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were
Domain 3: Test Conditi	ons Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
			Continued on next p	page

		contin	ued from pre	vious page				
Study Citation:	Yang, C., Wang,	Yang, C., Wang, C. C., Chen, C. H. (2013). Di-n-butyl phthalate removal using mixed cultures in batch reactors. International Biodeterioration &						
	Biodegradation 85	5:587-591.						
OECD Harmonized	Miscellaneous							
Template:	2210807							
HERO ID:	2219896							
		]	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.				
	Metric 7:	Testing Consistency	High	Test conditions were consistent.				
	Metric 8:	System Type and Design	High	The system type and design were appropriate.				
Domain 1. Test Organia	me							
Domain 4. Test Organis	Metric 9:	Outcome Assessment Methodology	High	Inoculum source and acclimation were reported				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this type of study.				
		1 8						
Domain 5: Outcome As	sessment							
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcomes of				
				interest.				
	Metric 12:	Test Substance Purity	Medium	Details regarding sampling methods of the outcome(s) were not fully reported; however,				
				the limitations were not likely to have a substantial impact on results.				
Domain 6: Confounding	v/Variable Control							
Domain of Companying	Metric 13:	Confounding Variables	N/A	No confounding variables noted.				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this type of study.				
		Exposure						
Domain 7: Data Present	tation and Analysis							
	Metric 15:	Data Reporting	High	Data reporting was appropriate for this type of study.				
	Metric 16:	Statistical Methods and	High	Statistical methods and kinetic calculations were appropriate for this type of study.				
		Kinetic Calculations						
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	Medium	The results are reasonable.				
		Results						
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this type of study.				
	ter Determe	a <b>4</b> ° a -	II!~ŀ					
Overall Quality	iy Determin	auon	нıgn					

Study Citation:	ly Citation: Yuan, S. Y., Lin, Y. Y., Chang, B. V. (2011). Biodegradation of phthalate esters in polluted soil by using organic amendment. Journal of Environmental							
OECD Harmonized	Miscellaneous	Miscellaneous						
Template:	12405(0							
HERO ID:	1249569							
		EXTRACTION						
Parameter		Data						
CASRN and Test Material		84-74-2; Dibutyl phthalate						
Confidentiality, Type, Guidel	line	None; experimental; experimental						
Solvent, Reactivity, Storage,	Stability	NR; NR; NR						
Radiolabel, Source, State, Pu	urity	NR; Chem Service (West Chester, PA, USA); NR; 99.0% Notes: DBP						
Test Method Details, Test Co	ondition Details, and	Biodegradation using sewage sludge from Neihu municipal sewage treatment plant in Taipei in a bioreactor (sludge concentrations of DBP and						
Test Consistency		DEHP = 0.11 and 0.29 mg/kg, respectively; bacterial count = $4.5 \times 107$ CFU/g); autoclaved sterile control included.; Aerobic conditions in the						
Details System Type Design		dark at pH 6.9 (adjusted with potassium hydroxide) using a microbial culture medium.; concentration of test material 20-250 mg/kg						
System Type Design	mpling Details	approx, every 2 days. Air dried sludge complex were dispersed in deuble deienized water and filtered						
Test Temperature	inpling Details	approx. every 2 days, All dried sludge samples were dispersed in double defonized water and intered.						
Pesulta Detaila		JUC						
Analytical Mathad and Analy	utical Dataila	CC ECD extraction recourt of the detection limit = 1.0 upf						
Analytical Method and Analy	ytical Details	GC-ECD; extraction recovery 96%; detection $\text{nmit} = 1.0 \text{ µg/L}$						
Transformation Products, Sta	atistics, and Kinetics	not reported; $r=0.94-0.98$ ; $k1=0.43-2.3$ days-1 (first-order kinetics); $t1/2=0.3-1.6$ days in sludge						
Reference Substance and Ref Substance Results	ference	sterile sludge; 92.1-97.5% remaining test substance after 10 days, DBP concentrations of 50, 100, and 250 mg/kg						

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Test Substan	ce			
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
	Metric 2:	Test Substance Purity	High	The test substance source or purity were reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Sterile controls were used.
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage was reported.
Domain 3: Test Condition	ons			
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate for the study type.
	Metric 7:	Testing Consistency	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 4: Test Organis	ms			

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		contin	ued from pre	vious page				
Study Citation:	Yuan, S. Y., Lin, Science and Heal	Yuan, S. Y., Lin, Y. Y., Chang, B. V. (2011). Biodegradation of phthalate esters in polluted soil by using organic amendment. Journal of Environmental Science and Health. Part B: Pesticides. Food Contaminants, and Agricultural Wastes 46(5):419-425.						
<b>OECD Harmonized</b>	Miscellaneous	Miscellaneous						
Template:								
HERO ID:	1249569							
		]	EVALUATIO	N				
Domain		Metric	Rating	Comments				
	Metric 9:	Outcome Assessment Methodology	Medium	The test inoculum source was reported and the test inoculum is routinely used for simi- lar study types; target chemical was detected in sludge prior to experiment.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome A	Assessment Motria 11:	Test Substance Identity	High	This matrix mat the aritaria for high confidence as expected for this type of study				
	Metric 12:	Test Substance Jurity	High	This metric met the criteria for high confidence as expected for this type of study.				
	Wetter 12.	Test Substance I unity	Ingn	This metre met me criteria for high connuclee as expected for this type of study.				
Domain 6: Confoundi	ng/Variable Control							
	Metric 13:	Confounding Variables	High	Sources of uncertainty were not reported but their omission likely did not impact the study results.				
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.				
Domain 7. Data Prese	ntation and Analysis							
Domain 7. Data Prese	Metric 15:	Data Reporting	Medium	Some details were not reported; however, these omissions were not likely to have a substantial impact on interpretation of the study results.				
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Some statistical details were not reported; however, these omissions were not likely to have a substantial impact on interpretation of the study results.				
Domain & Othan								
Domain 8: Other	Matric 17	Varification or Dissociation of	High	This matrix mat the aritaria for high confidence as avagated for this type of study				
	Meuric 17:	Pasults	rigii	This metric met the criteria for high confidence as expected for this type of study.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Oual	ity Determin	ation	High					
Vitian Qua	ity Determin		111611					

Study Citation: OECD Harmonized Template: HERO ID:	Zhang, Z. M., Zhang, H. H., Zou, Y. W., Yang, G. P. (2018). Distribution and ecotoxicological state of phthalate esters in the sea-surface microlayer, seawater and sediment of the Bohai Sea and the Yellow Sea. Environmental Pollution 240:235-247. Miscellaneous					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		Not Reported; di-n-butyl phthalate				
Confidentiality, Type, Guide	eline	None; monitoring study; monitoring study				
Solvent, Reactivity, Storage,	, Stability	NR; NR; NR				
Radiolabel, Source, State, P	urity	NR; environmental; NR; NR Notes: DnBP/DBP				
Test Method Details, Test C	ondition Details, and	d seawater and sediment samples were collected from the Bohai Sea (BS) and the Yellow Sea (YS); Not Reported; Not Reported				
Test Consistency						
Details						
System Type Design		not applicable				
Sampling Frequency and Sa	mpling Details	Nov 9-23, 2014; 46 surface water samples, 29 samples at different water depths and 35 sea-surface microlayer (SML) samples as well as 38 sediment samples were collected.				
Test Temperature		not applicable				
Results Details		detected in 100% of samples: 266-1584 ng/L (from table) in seawater; sediment not reported, but may be in supplemental information				
Analytical Method and Analytical Details		GC/MS; recoveries: 68.0-114.0% and 76.4-105.0% in seawater and sediment samples, respectively; blank concentrations subtracted from sample results: detection limits: 0.04-0.32 ng/L for seawater and 0.12-1.6 ug/kg dry weight for sediment				
Transformation Products, St	atistics, and Kinetics	not applicable; 33.2% and 48.8% of total PAE in seawater and sediment, respectively; risk quotient values for DBP in water were 0.01-1 indicating medium risk to organisms; risk quotient values for DBP in sediment were >1, indicating that DBP is a high risk to algae, crustaceans, and fish.				
Reference Substance and Re Substance Results	eference	not applicable; not applicable				

	EVALUATION							
Domain		Metric	Rating	Comments				
Domain 1: Test Substar	nce							
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.				
	Metric 2:	Test Substance Purity	N/A	The metric is not applicable to this study type.				
Domain 2: Test Design	L							
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.				
	Metric 4:	Test Substance Stability	High	The test substance sampling and storage conditions were reported, and were appropriate for the study.				
Domain 3: Test Condit	ions							
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.				
	Metric 6:	Testing Conditions	Medium	There were omissions in testing conditions; however, information may be available in supplemental documentation.				
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to this study type.				
Continued on next page								

		C	ontinued from previous page					
Study Citation:	Zhang, Z. M., Z	Zhang, H. H., Zou, Y. W., Yang, G. P. (20)	18). Distribution and ecotoxic	ological state of phthalate esters in the sea-surface microlayer,				
OFCD Harmonized	seawater and sediment of the Bohai Sea and the Yellow Sea. Environmental Pollution 240:235-247.							
Template:	Wilseenancous							
HERO ID:	5433212							
			EVALUATION					
Domain		Metric	Rating	Comments				
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.				
Domain 4: Test Organi	sms							
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.				
Domain 5: Outcome A	Ssessment Metric 11:	Test Substance Identity	Uninformative	Not anough data was presented to calculate partitioning				
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest				
				and used widely accepted methods/approaches for the chemical and media being ana- lyzed.				
Domain 6: Confoundin	www.wariable.Control							
Domain 0. Comoundan	Metric 13:	Confounding Variables	Medium	the differences in the measurements and statistical techniques were considered or ac-				
				counted for in data evaluation with omissions and the omissions were not likely to have a substantial impact on study results.				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.				
		Exposure						
Domain 7. Data Presen	ntation and Analysis							
Domain 7. Dua 11050	Metric 15:	Data Reporting	Medium	The target chemical extraction efficiency, percent recovery, or mass balance were not				
				reported; however, these omissions were not likely to have a substantial impact on study results.				
	Metric 16:	Statistical Methods and	Medium	kinetic calculations were not clearly described.				
		Kinetic Calculations						
Domain 8: Other								
	Metric 17:	Verification or Plausibility of	High	Reported values were within expected range.				
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Ouali	itv Determi	nation	NEED TO FIX					
Cretan Yuan	ity Detter min							

Study Citation:	Zhang, Z., Lei, Z., Sugiura, N., Xu, X., Yin, D. (2007). Organics removal of combined wastewater through shallow soil infiltration treatment: A field and					
<b>OECD Harmonized</b>	laboratory study. J Miscellaneous	ournal of Hazardous Materials 149(3):657-665.				
Template:	(0 <b>0</b> 1 0 0 1					
HERO ID:	6821981					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		84-74-2; DBP				
Confidentiality, Type, Guidel	line	None; Experimental; Experimental				
Solvent, Reactivity, Storage,	Stability	Wastewater; NR; NR; NA				
Radiolabel, Source, State, Pu	ırity	NA; Combined domestic wastewater from toilets, restaurants, and wastewater from a gas station; Liquid; NA				
Test Method Details, Test Co	ondition Details, and	Combined wastewater collected from domestic sources and a gas station was treated by shallow soil infiltration system to determine removal				
Test Consistency		efficiency of selected substances. Eight runs were conducted between February to August 2006.; Trench characteristics: % soil; % coal slag; %				
Details		dewatered sludge; $\%$ packing material; hydraulic conductivity (cm/s)[1]: 70%; 20%; 10%; NA; 0.059; 12, 3, 4: 60%; 20%; 10%; 10% wood chips,				
		antifractic, or zeofile; $1.025$ , $0.445$ , or $0.099$ ; wastewater characteristicsCOD: 55 - 180 mg/LpH 7.06 - 7.185uspended sonds: 54 - 65 mg/L10tal nitrogen: 8.5 - 21.4 mg/L Ammonia nitrogen: 4.9 - 14.0 mg/L Total phosphorus: 0 - 7.7 mg/L BOD5/COD (5-d average): 0.6				
System Type Design		Influent, pre-aeration tank, sedimentation tank, 4 parallel infiltration trenches (15 m <sup>2</sup> in area, 0.5 m total depth and 0.3 m effective depth) with				
bystem type besign		different solids, effluent				
Sampling Frequency and San	mpling Details	Feb 5 - 20; Feb 17 - Mar 6; Mar 18 - Apr 10; Apr 18 - May 6; May 18 - June 5; June 12 - 27; July 5- 19; July 27 - Aug 10; Influent, effluent from				
		pretreatment, and effluent from trenches collected once every 2-3 days in the field				
Test Temperature		0.0-37.0°C				
Results Details		Average removal efficiency: 46.8% (Mar 8), 59.6% (Aug 5)Average influent: 9.370 µg/L (Mar 8), 9.158 µg/L (Aug 5)Average pretreatment				
		effluent: 6.412 µg/L (Mar 8), 7.347 µg/L (Aug 5)Average trench effluent: 4.982 µg/L (Mar 8), 3.701 µg/L (Aug 5)				
Analytical Method and Analy	ytical Details	GC/MS, VF-Sms capillary column (30 m x 0.25 mm, 0.25 um); Samples extracted 3x with methylene dichloride				
Transformation Products, Sta	atistics, and Kinetics	Not reported; Not reported				
Reference Substance and Ref	ference	Not reported; Not reported				
Substance Results						

			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substan	ce					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	High	The wastewater source was reported generally.		
Domain 2: Test Design						
	Metric 3:	Study Controls	Medium	Controls or analytical blanks were not explicitly included.		
	Metric 4:	Test Substance Stability	High	Wastewater sample preparation and storage was reported and appropriate.		
Domain 3: Test Condition	ons					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	High	Appropriate testing conditions and wastewater characteristics were reported.		
	Metric 7:	Testing Consistency	High	Test conditions were consistent across runs.		
Continued on next page						

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		contin	ued from pre	vious page				
Study Citation:	Zhang, Z., Lei, Z., laboratory study. J	Zhang, Z., Lei, Z., Sugiura, N., Xu, X., Yin, D. (2007). Organics removal of combined wastewater through shallow soil infiltration treatment: A field and laboratory study. Journal of Hazardous Materials 149(3):657-665.						
OECD Harmonized	Miscellaneous							
Template:	(001001							
HERO ID:	6821981							
		]	EVALUATIO	N				
Domain	Madaila Q.	Metric	Rating	Comments				
	Metric 8:	System Type and Design	IN/A	Not applicable.				
Domain 4: Test Organis	ms							
6	Metric 9:	Outcome Assessment Methodology	N/A	Not applicable.				
	Metric 10:	Sampling Methods	N/A	Not applicable.				
Domain 5: Outcome As	sessment		TT: 1					
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining removal em-				
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and were samples were collected at an appropriate				
				frequency.				
Domain & Confounding	Maniahla Control							
Domain of Confounding	Metric 13.	Confounding Variables	Medium	The results from all runs were not reported. The two reported runs may not be represen-				
	meure 15.	Companying variables	meurum	tative.				
	Metric 14:	Health Outcomes Unrelated to	N/A	Not applicable.				
		Exposure						
Domain 7: Data Present	ation and Analysis							
Domain 7. Duai Present	Metric 15:	Data Reporting	Medium	The analytical method was appropriate; limits of detection and recovery were not re- ported. Raw data was reported.				
	Metric 16:	Statistical Methods and	N/A	Statistical and kinetic calculations were not conducted.				
		Kinetic Calculations						
Domain 8: Other								
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable based on the method although the results from all the runs were not reported. The results were more efficient than a previous study reportedly due				
				to different soil characteristics and operating conditions.				
	Metric 18:	QSAR Models	N/A	Not applicable.				
<b>Overall Quali</b>	ty Determina	ation	High					
	-		<u> </u>					

Study Citation:	Zhou, Y. Q., Liu, Y. X. (2013). [Occurrence and fate of phthalates in wastewater treatment plants in Beijing, China]. Huanjing Kexue / Chinese Journal of					
OECD Harmonized	Miscellaneous	ence 54(4):1557-1562.				
Template: HERO ID:	1936015					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		Not Reported; di-butyl phthalate				
Confidentiality, Type, Guideline		None; experimental; experimental				
Solvent, Reactivity, Storage,	Stability	NR; NR; NR				
Radiolabel, Source, State, Pu	rity	None; NR; NR Notes: DBP				
Test Method Details, Test Condition Details, and Test Consistency		waste water removal; 3 treatment plants in Beijing: A: HRT 8-10 hours, SRT 8-12 days; B: HRT 6-8 hours, SRT 6-8 days; C: HRT 8-10 hours, SRT 8-12 days; not decipherable				
System Type Design		not decipherable				
Sampling Frequency and San	npling Details	not decipherable; not decipherable				
Test Temperature		not decipherable				
Results Details		74.7-95.0% removal				
Analytical Method and Analy	ytical Details	GC/MS; not decipherable				
Transformation Products, Sta	tistics, and Kinetics	not applicable; not decipherable; removal mechanism should be biodegradation and volatilization.				
Reference Substance and Ref	ference	not applicable; Not Reported				
Substance Results						

			EVALUATION	N		
Domain		Metric	Rating	Comments		
Domain 1: Test Substa	ince					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.		
	Metric 2:	Test Substance Purity	Medium	The source and purity of the test substance were not reported; however, the omissions or identified impurities were not likely to have a substantial impact on the study results.		
Domain 2: Test Design	1					
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.		
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not accessible due to limited English translation; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.		
Domain 3: Test Condi	tions					
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.		
	Metric 6:	Testing Conditions	Low	Testing conditions were not decipherable due to limited English translation.		
	Metric 7:	Testing Consistency	Low	Testing consistency was not decipherable due to limited English translation.		
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.		
Continued on next page						

		continu	ued from pre	vious page
Study Citation:	Zhou, Y. Q., Liu, Environmental Sc	Y. X. (2013). [Occurrence and fate of phtl ience 34(4):1357-1362.	halates in was	tewater treatment plants in Beijing, China]. Huanjing Kexue / Chinese Journal of
<b>OECD Harmonized</b>	Miscellaneous			
Template:				
HERO ID:	1936015			
		I	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 4: Test Organis	sms			
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	sessment			
	Metric 11:	Test Substance Identity	Medium	Complete outcome assessment was not decipherable due to limited English translation.
	Metric 12:	Test Substance Purity	Low	Details regarding sampling methods of the outcome(s) were not accessible due to lim- ited English translation., and could have a substantial impact on study results
Domain 6: Confounding	g/Variable Control			
	Metric 13:	Confounding Variables	Low	Can not decipher if confounding variables were addressed due to limited English trans- lation.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Present	tation and Analysis			
	Metric 15:	Data Reporting	Low	Extraction efficiency, percent recovery, or mass balance were not accessible (if reported) due to limited English translation, preventing meaningful interpretation of study results
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Kinetic calculations were not decipherable due to limited English translation.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of	Medium	The study results were reasonable.
	Metric 18:	Results QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quali</b>	ty Determin	ation	Low	

Study Citation: OECD Harmonized	Zhu, T. K., Du, P. P., Zeng, L. J., Lu, H., Zhao, H. M., Li, Y. W., Mo, C. H., Cai, Q. Y. (2019). Variation in metabolism and degradation of di-n-butyl phthalate (DBP) by high- and low-DBP accumulating cultivars of rice (Oryza sativa L.) and crude enzyme extracts. Science of the Total Environment 668:1117-1127. Miscellaneous					
Template:	51(())(5					
HERO ID:	5166465					
		EXTRACTION				
Parameter		Data				
CASRN and Test Material		Not Reported; di-n-butyl phthalate				
Confidentiality, Type, Guid	eline	No; experimental; experimental				
Solvent, Reactivity, Storage	e, Stability	Not Reported; Not Reported; Not Reported; Not Reported				
Radiolabel, Source, State, I	Purity	Not Reported; Solution: Aladdin Chemistry Co. (Shanghai, China); analytical standard from Dr. Ehrenstorfer GmbH (Augsburg, Germany); solution: 98.7%				
Test Method Details, Test Condition Details, and Test Consistency Details		Rice seeds were grown hydroponically in a Hoagland solution with addition of 10 mg/L DBP after 21 days; water in nutrient solution sterilized to control microbial degradation; controls included.; Experiments run in continuous dark.; Two rice seeds were used: classified as a high-DBP accumulating cultivar (Peizataifeng) and low-DBP accumulating cultivar (Fengyousimiao) Hydroponic experiments run in a greenbouse located at linea University in Guangzhou. South China				
Sampling Frequency and Sampling Frequency	ampling Details	Samples (roots, stems, leaves) collected at 12, 24, 48, 96 and 192 hrs after DBP exposure.; Plant samples washed with running water and ultrapure water, roots were rinsedwith methanol to remove DBP adsorption on root surface; samples freeze dried and ground. 25-35°C (day) and 20-25°C (night)				
Results Details		DBP uptake by plants was evident; metabolism and translocation was observed. Mass balance at 192 hours indicated that 39.4-41.7% was metabolized to MBP and 24.4-27.8% was metabolized to PA. Metabolism was higher in rice roots compared to that of stems and leaves. Concentrations of MPB and PA were higher in stems and leaves, concentration of MBP (23.1 mg/kg) in roots and stems was higher than that of PA (5.44 mg/kg); limited acropetal translocation of metabolites observed. Variations between the 2 rice cultivars were insignificant for concentrations of metabolites in stems and leaves; however, MBP concentration in roots of Peizataifeng was higher than roots of Fengyousimo.				
Analytical Method and Ana	alytical Details	ultrasonic extraction and purification using column chromatography with GC/MS; metabolites MBP and PA measured via LC/MS; Recoveries ranged from 85.4-95.4%; MDLs in supplemental material				
Transformation Products, S	Statistics, and Kinetics	Metabolites: mono-phthalic acid (MBP), phthalic acid (PA); detected simultaneously in all tissues (not detected in controls); concentrations increased rapidly within 24 to 96 hrs and slowed thereafter.; Statistical analyses: standard deviation, correlation coefficient, and analysis of variance performed via SPSS 22.0 for Windows; significance $P<0.05$ .; DBP concentrations increased in all tissues in first 48hrs, then stabilized and remained constant from 96-192 hrs. Constant levels were presumed to be attributed to simultaneous uptake and in vivo metabolism to MBP and PA. Degradation rates (using crude enzyme extracts) in roots stems and leaves ca. 47%, 40%, and 41% in Peizataifeng, respectively and 70%, 35% and 29% in Fengyousimiao, respectively.				
Reference Substance and R Substance Results	leference	not reported; not reported				

			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Test Substa	nce						
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.			
	Metric 2:	Test Substance Purity	High	The source and purity of the test substance were reported.			
Domain 2: Test Design	Metric 3:	Study Controls	High	Appropriate controls were reported.			
Continued on next page							

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		continu	ued from pre	vious page				
Study Citation:	Zhu, T. K., Du, P phthalate (DBP) b	Zhu, T. K., Du, P. P., Zeng, L. J., Lu, H., Zhao, H. M., Li, Y. W., Mo, C. H., Cai, Q. Y. (2019). Variation in metabolism and degradation of di-n-butyl phthalate (DBP) by high- and low-DBP accumulating cultivars of rice (Oryza sativa L.) and crude enzyme extracts. Science of the Total Environment						
OFCD Harmonized	668:1117-1127. Miscellaneous	668:1117-1127.						
Template:	wiscentaneous							
HERO ID:	5166465							
		I	EVALUATIO	Ň				
Domain		Metric	Rating	Comments				
	Metric 4:	Test Substance Stability	Medium	The test substance preparation was reported; further details were omitted.				
Domain 3: Test Condition	ons Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance				
	Metric 6:	Testing Conditions	High	Testing conditions were reported, and appropriate for the method				
	Metric 7:	Testing Consistency	High	Test conditions were consistent across study groups				
	Metric 8:	System Type and Design	High	The system type and design were described.				
		, , , , , , , , , , , , , , , , , , ,	8					
Domain 4: Test Organis	sms							
	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this study type.				
	Metric 10:	Sampling Methods	High	Test species was reported.				
Demain 5. Outerman								
Domain 5: Outcome As	Metric 11	Test Substance Identity	High	the outcome assessment methodology addressed or reported the intended outcomes of				
	Meule II.	Test Substance Rentity	mgn	interest.				
	Metric 12:	Test Substance Purity	High	Sampling methods addressed the outcome of interest.				
Domain 6: Confounding	g/Variable Control		TT: 1					
	Metric 13:	Confounding variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques were considered and accounted for in data evaluation				
	Metric 14:	Health Outcomes Unrelated to	N/A	The metric is not applicable to this study type.				
		Exposure						
Domain /: Data Present	ation and Analysis		Madissus					
	Metric 15:	Statistical Matheda and	Medium	Some details were reported in supplemental data, not readily available.				
	Metric 10.	Kinetic Calculations	riigii	Statistical methods were appropriate.				
Domain 8: Other	Matria 17.	Varifaction on Dlausikility of	Hick					
	Metric 1/:	venification or Plausibility of Results	High	i ne study results were reasonable.				
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.				
Overall Oneli	ty Dotomain	ation	Uigh					
Overall Quali	ly Determin	auvii	nıgii					

Study Citation:	Zhu, Y., Tian, J., Wu, G., Wei, F. (2012). [Estimation of the air-soil exchange of phthalates]. Huanjing Huaxue / Environmental Chemistry 31(10):1535-			
OECD Harmonized	1541. Miscellaneous			
Template:				
HERO ID:	1599853			
	EXTRACTION			
Parameter		Data		
CASRN and Test Material		Not Reported; dibutyl phthalate		
Confidentiality, Type, Guide	eline	None; monitoring; monitoring		
Solvent, Reactivity, Storage	e, Stability	NR; NR; NR		
Radiolabel, Source, State, P	Purity	NR; NR; NR		
Test Method Details, Test Condition Details, and Test Consistency		Field air samples were collected. Foreign language so other details are not extractable.; Foreign language so details are not extractable.; not applicable		
System Type Design		not applicable		
Sampling Frequency and Sampling Details		Foreign language so details are not extractable.; Air samples from an iron and steel plant and its surrounding residential areas and background		
Test Temperature		areas in northeastern China. not applicable (field samples)		
Results Details		estimated deposition rate: 323.8-2408.8 g/m/square km		
Analytical Method and Analytical Details		GC-MS; Foreign language so details are not extractable.		
Transformation Products, Statistics, and Kinetics		not applicable; Foreign language so details are not extractable.; Foreign language so details are not extractable.		
Reference Substance and Reference Substance Results		not applicable; Not Reported		

EVALUATION					
Domain		Metric	Rating	Comments	
Domain 1: Test Substance					
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.	
	Metric 2:	Test Substance Purity	N/A	The metric is not applicable to this study type.	
Domain 2: Test Design	l				
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.	
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.	
Domain 3: Test Condit	ions				
	Metric 5:	Test Method Suitability	Uninformative	Foreign language so details are not extractable.	
	Metric 6:	Testing Conditions	Uninformative	Foreign language so details are not extractable.	
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to this study type.	
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.	
Domain 4: Test Organisms					
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.	
Continued on next page					

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PUBLIC RELEASE DRAFT May 2025 Miscellaneous

continued from previous page				
Study Citation:	Zhu, Y., Tian, J	Zhu, Y., Tian, J., Wu, G., Wei, F. (2012). [Estimation of the air-soil exchange of phthalates]. Huanjing Huaxue / Environmental Chemistry 31(10):1535-		
OECD Harmonized	1541. Miscellaneous			
HERO ID:	1599853			
			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome As	ssessment			
	Metric 11:	Test Substance Identity	Uninformative	Foreign language so details are not extractable.
	Metric 12:	Test Substance Purity	Uninformative	Foreign language so details are not extractable.
Domain 6: Confoundin	g/Variable Control	l		
	Metric 13:	Confounding Variables	N/A	The metric is not applicable to this study type.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presen	tation and Analysi	S		
	Metric 15:	Data Reporting	Uninformative	Foreign language so details are not extractable.
	Metric 16:	Statistical Methods and Kinetic Calculations	Uninformative	Foreign language so details are not extractable.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quali	ty Determi	nation	Uninformative	

List of Abbreviations and Acronyms for Data Quality Evaluation and Extraction Tables

Term	Definition
BAF	Biaccumulation Factor
BCF	Bioconcentration Factor
BMF	Biomagnification Factor
BSAF	Biota-sediment Accumulation Factor
С	Concentration
CASRN	Chemical Abstract Service registry number
DOC	Dissolved Organic Carbon
dw	Dry weight
DW	Drinking Water
DWTP	Drinking Water Treatment Plant
EPA	Environmental Protection Agency
ESI	Electrospray Ionisation
FID	Flame Ionisation Detector
FPD	Flame Photometric Detector
GC	Gas Chromatography
g/L	Grams per Liter
HLC	Henry's Law Constant
HPLC	High-performance liquid chromatography
ISO	International Organization for Standardization
K <sub>oa</sub>	Octanol-Air partition coefficient
K <sub>oc</sub>	Organic carbon-water partition coefficient
K <sub>ow</sub>	Octanol-Water partition coefficient
L/d	Liters per day
LOD	Limit of Detection
LOQ	Limit of Quantification
lw	Lipid weight
М	Molarity (mol/L = moles per Liter)
mL/min	Milliliters per minute
mM	Millimolar
MDL	Method Detection Limit
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
mg/m <sup>3</sup>	Milligrams per cubic meter
MRL	Method Reporting Limit
MS	Mass Spectrometry
n	Sample Size
N/A	Not applicable
ND	Non-Detection
ng/L	Nanograms per Liter

List of Abbreviations and Acronyms for Data Quality Evaluation and Extraction Tables

## PUBLIC RELEASE DRAFT May 2025

List of Abbreviations and Acronyms for Data Quality Evaluation and Extraction Tables

Term	Definition
nm	Nanometers
NR	Not Reported
OECD	Organisation for Economic Co-operation and Development
· OH	Hydroxyl radical
OPE	Organophosphate Ester
pg/L	Picograms per Liter
ppm	parts per million
QSAR	Quantatative Structure Activity Relationship
RSD	Relative Standard Deviation
SI	Supplemental Information
SIM	Selected Ion Monitoring
SPE	Solid Phase Extraction
STP	Sewage Treatment Plant
TMF	Trophic Magnification Factor
TOC	Total Organic Carbon
TOF	Time of Flight
$\mu$ g/L or $\mu$ g/mL	micrograms per liter or per milliliter
UPLC	Ultra-performance liquid chromatography
US or USA	United States of America
UV (UV-Vis)	Ultra Violet (Visible)
ww	Wet Weight
WWTP	Wastewater Treatment Plant

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