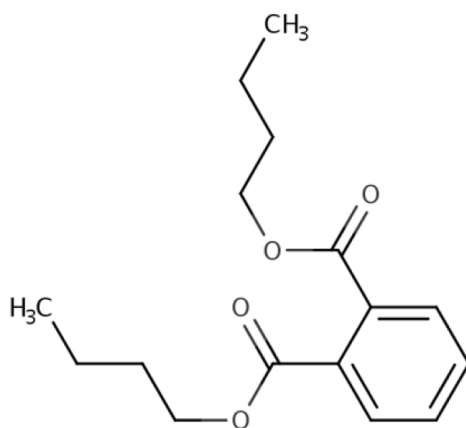

**Data Quality Evaluation and Data Extraction Information for
Environmental Fate and Transport for
Dibutyl Phthalate (DBP)
(1,2-Benzenedicarboxylic acid, 1,2-dibutyl ester)**

Systematic Review Support Document for the 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 *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 *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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2219896	Yang, C., Wang, C. C., Chen, C. H. (2013). Di-n-butyl phthalate removal using mixed cultures in batch reactors. <i>International Biodeterioration & Biodegradation</i> 85:587-591.	705
1249569	Yuan, S. Y., Lin, Y. Y., Chang, B. V. (2011). Biodegradation of phthalate esters in polluted soil by using organic amendment. <i>Journal of Environmental Science and Health, Part B: Pesticides, Food Contaminants, and Agricultural Wastes</i> 46(5):419-425.	707
5433212	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. <i>Environmental Pollution</i> 240:235-247.	709
6821981	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. <i>Journal of Hazardous Materials</i> 149(3):657-665.	711
1936015	Zhou, Y. Q., Liu, Y. X. (2013). [Occurrence and fate of phthalates in wastewater treatment plants in Beijing, China]. <i>Huanjing Kexue / Chinese Journal of Environmental Science</i> 34(4):1357-1362.	713
5166465	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 (<i>Oryza sativa</i> L.) and crude enzyme extracts. <i>Science of the Total Environment</i> 668:1117-1127.	715
5164627	Zhu, T. K., Du, P. P., Zeng, L. J., Zhao, H. M., Li, Y. W., Mo, C. H., Cai, Q. Y., Lü, H. (2019). Variation in metabolism and degradation of di-n-butyl phthalate (DBP) by high- and low-DBP accumulating cultivars of rice (<i>Oryza sativa</i> L.) and crude enzyme extracts. <i>Science of the Total Environment</i> 668:1117-1127.	717
1599853	Zhu, Y., Tian, J., Wu, G., Wei, F. (2012). [Estimation of the air-soil exchange of phthalates]. <i>Huanjing Huaxue / Environmental Chemistry</i> 31(10):1535-1541.	719
Other Properties		
List of Abbreviations and Acronyms for Data Quality Evaluation and Extraction Tables		721

Study Citation:	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.
OECD Harmonized Template:	Photolysis in Air
HERO ID:	4829240

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, Type, Guideline	None; Experimental; other: Indirect photolysis with hydroxyl radicals
Solvent, Reactivity, Storage, 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 Temperature	Not specified; 25±2°C
Light Source, Intensity, and additional light details	UV lamp; 1.5 mW/cm; 15W
Source Wavelength Lower and Upper	350 nm; 400 nm (peak 365 nm)
Test Details and Control	cylindrical photoreactor; steady state; pH adjusted by HClO ₄ ; potential for hydrolysis tested; hydrolysis of DBP is not expected to be an important sink pathway in atmospheric droplets
Initial Concentration, Reference Compound	Not reported Not reported; Not reported
Substance Wavelength Lower and Upper	Not reported; 290 nm
Direct Quantum Yield Results, Direct Half Life by Loss Lower and Upper	Not reported; Not reported; Not reported
Indirect Type Results, Indirect Rate Constant Lower and Upper	absolute rate constant with hydroxyl radicals = 5.7±0.1E9/M-s; 2nd order rate constant (for specific addition to aromatic ring) = 3.7±0.2E9/M-s; 3.7±0.2E9/M-s; 5.7±0.1E9/M-s
Method Details Results and Products Details Results	HPLC-UV-VIS (detection wavelength 224 nm); transformation products identified via GC-MS; major transient intermediates: DBP-OH adducts, MBP, PA, m-OH-DBP, m-NO ₂ -DBP
Parameter Value and Parameter Results	Not reported; Not reported
Reference Substance Results, Percent Degradation Results and Standard Deviation Results	Not reported; Not reported; Not reported
Results Remarks, Sample time Results, Results Details	Not reported; Not reported; Not reported

EVALUATION				
Domain	Metric		Rating	Comments
Domain 1: Test Substance	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	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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Study Citation:	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.			
OECD Harmonized Template:	Photolysis in Air			
HERO ID:	4829240			
Domain	Metric	EVALUATION		Comments
		Rating		
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 inconsistencies reported in the testing conditions.
	Metric 8:	System Type and Design	High	The system was appropriate.
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	Details for the outcome assessment methodology were limited.
	Metric 12:	Test Substance Purity	Medium	Sampling method details were limited.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Sources of uncertainty; including potential effect of acetonitrile were discussed.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Analytical detail was limited; mass balance and recoveries not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis and kinetic calculations were clearly described and appropriate.
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 Quality Determination		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 3Q:85-124.
OECD Harmonized Template:	Photolysis in Air
HERO ID:	5348332

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, Guideline	no; calculation; None
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Duration and Test Temperature	NR; NR
Light Source, Intensity, and additional light details	NR; Not Reported; Not Reported
Source Wavelength Lower and Upper	Not Reported; Not Reported
Test Details and Control	Not Reported; NR
Initial Concentration, Reference Compound	NR Not Reported; NR
Substance Wavelength Lower and Upper	Not Reported; Not Reported
Direct Quantum Yield Results, Direct Half Life by Loss Lower and Upper	Not Reported; Not Reported; Not Reported
Indirect Type Results, Indirect Rate Constant Lower and Upper	reaction with OH radicals; 9.277X10 ⁻¹² cm ³ /molecule/s; Not Reported
Method Details Results and Products	NR; NR
Details Results	
Parameter Value and Parameter Results	21.4 hours (0.89 days); half-life
Reference Substance Results, Percent Degradation Results and Standard Deviation Results	NR; NR; NR
Results Remarks, Sample time Results, Results Details	Not Reported; 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	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., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC 3Q:85-124.			
OECD Harmonized Template:	Photolysis in Air			
HERO ID:	5348332			
		EVALUATION		
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: 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	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: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Details regarding this metric were not reported in the secondary source.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	There was insufficient information reported, preventing meaningful interpretation of study results.
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis or kinetic calculations were not described clearly and the lack of information was likely to have a substantial impact on study results.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.

Overall Quality Determination

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:	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.			
OECD Harmonized Template:	Hydrolysis			
HERO ID:	5676112			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Not Reported			
Confidentiality, Type, Guideline	Not Reported; not specified; other: not specified; abiotic hydrolysis			
Solvent, Reactivity, Storage, Stability	Not Reported; Not Reported; Not Reported; Not Reported			
Radiolabel, Source, State, Purity	Not Reported; Not Reported; Not Reported; Not Reported			
Buffer, Test Temperature, Number of Replicates	Not Reported; Not Reported; Not Reported			
Positive Controls and Negative Controls	Positive: Not Reported; Negative: Not Reported			
pH and Duration	Not Reported; Not Reported			
Sampling Frequency and Test 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 Reference Substance Results	Not Reported; Not Reported			
Percent Recovery, Hydrolysis Rate Constant, and Half-life	Not Reported; Not Reported; ca. 22 years			
Results Remarks	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	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	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:	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.			
OECD Harmonized Template:	Hydrolysis			
HERO ID:	5676112			
Domain	Metric	EVALUATION 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 Organisms				
	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 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 Exposure	N/A	The metric is not applicable to the study.
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 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 Quality Determination		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.
OECD Harmonized Template:	Hydrolysis
HERO ID:	3661424

EXTRACTION	
Parameter	Data
CASRN and Test Material	Not Reported; Dibutylphthalate
Confidentiality, Type, Guideline	None; experimental; other: Not specified
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR
Buffer, Test Temperature, Number of Replicates	NR; 50°C; NR
Positive Controls and Negative Controls	Positive: NR; Negative: NR
pH and Duration	9; NR
Sampling Frequency and Test Setup	NR; NR
Concentration	Not Reported
Analytical Method, Analytical Details, and Statistics	NR; NR; NR
Transformation Products	NR
Reference Substance and Reference Substance Results	NR; NR
Percent Recovery, Hydrolysis Rate Constant, and Half-life	NR; NR; 65.8 hours
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 Substance	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 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.
	Metric 7:	Testing Consistency	Low	Testing consistency details were not reported.

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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 Template:	Hydrolysis			
HERO ID:	3661424			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 8:	System Type and Design	Low	System type and design details were not reported.
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	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 Exposure	N/A	The metric is not applicable to this study type.
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 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	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	A QSAR model was not reported.
Overall Quality Determination		Low		

* Related References: Primary source not reported.

Study Citation:	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			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	not reported; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	no; experimental; None: Alkaline hydrolysis by NaOH in 80% ethanol			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; BDH; NR; NR Notes: NR			
Buffer, Test Temperature, Number of Replicates	not reported; 50°C; not reported			
Positive Controls and Negative Controls	Positive: not reported; Negative: not reported			
pH and Duration	not reported; 282.0 minutes			
Sampling Frequency and 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, Analytical Details, and Statistics	not reported; Kinetic calculations, (second order rate constants of two consecutive reactions), performed using a Fortran program based on Newton-Raphson methods and Simpson's 1/3 Rule with Richardson's extrapolations.; not reported			
Transformation Products	not reported			
Reference Substance and Reference Substance Results	not reported; not reported			
Percent Recovery, Hydrolysis Rate Constant, and Half-life	not reported; k1 = 23.5x10^2 liter/mole-min (average based on rate constants observed at 10-80% reaction); k2 = 21.4±0.9x10^2 liter/mole-min (calculated from n = k2/k1); not reported			
Results Remarks	at 50°C in 80% ethanol-water			
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	Purity was not reported but source was.
Domain 2: Test Design				
	Metric 3:	Study Controls	Low	No controls were included, including solvent only controls.
	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	Uninformative	The test method was not applicable to environmental conditions; no controls relative to environmental conditions were reported.
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Study Citation:	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			
Domain	Metric	EVALUATION		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 Organisms				
	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 Assessment				
	Metric 11:	Test Substance Identity	Uninformative	The intended outcome of interest, aqueous hydrolysis, was not addressed.
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate.
Domain 6: Confounding/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 Presentation and Analysis				
	Metric 15:	Data Reporting	Low	Analytical details were not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	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 Quality Determination		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 Template:	Hydrolysis
HERO ID:	680048

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Not Reported
Confidentiality, Type, Guideline	No; Experimental, pH dependent, half-life reported, reaction rate reported; None
Solvent, Reactivity, Storage, Stability	Artificial river water; NR; NR; NR
Radiolabel, Source, State, Purity	NA; Kishida Chemical, Osaka, Japan; Liquid; Analytical grade
Buffer, Test Temperature, Number of Replicates	HCl or NaOH; 0.4 - 27.4 deg C; Average = 10.8 deg C; 1
Positive Controls and Negative 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. Tests conducted in the dark.
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 Reference Substance Results	NR; Not Reported
Percent Recovery, Hydrolysis Rate Constant, and Half-life	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)
Results Remarks	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, 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 Conditions	Metric 5:	Test Method Suitability	Low	The test substance was tested above its water solubility, but was treated with an ultrasonicator to ensure homogenization.

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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 Template:	Hydrolysis			
HERO ID:	680048			
		EVALUATION		
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 Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	Not applicable.
	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 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				
	Metric 13:	Confounding Variables	Low	Variability was not addressed as only one replicate per test condition was used.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Not applicable.
Domain 7: Data Presentation and Analysis				
	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 Kinetic Calculations	High	Kinetic calculations were described and applied appropriately.
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.
Overall Quality Determination			Low	

Study Citation:	Wolfe, N. L., Steen, W. C., Burns, L. A. (1980). Phthalate ester hydrolysis: Linear free energy relationships. Chemosphere 9(7):403-408.			
OECD Harmonized Template:	Hydrolysis			
HERO ID:	5335927			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutyl phthalate			
Confidentiality, Type, Guideline	None; Experimental; other: Alkaline hydrolysis rate determination			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, 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 Test Setup	Not reported; Not reported			
Concentration	less than 10E-5 M			
Analytical Method, Analytical Details, and Statistics	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 benzene before GLC analysis; ±0.05 x 10^-2 M^-1 sec ^-1			
Transformation Products	Monoacid and diacid			
Reference Substance and Reference Substance Results	Not reported; Not reported			
Percent Recovery, Hydrolysis Rate Constant, and Half-life	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 Substance				
	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 Conditions				
	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				
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Study Citation:	Wolfe, N. L., Steen, W. C., Burns, L. A. (1980). Phthalate ester hydrolysis: Linear free energy relationships. Chemosphere 9(7):403-408.			
OECD Harmonized Template:	Hydrolysis			
HERO ID:	5335927			
		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 Assessment				
	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/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 Presentation 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.
Overall Quality Determination		High		

Study Citation:	Zhang, D., Wu, L., Yao, J., Vogt, C., Richnow, H. H. (2019). Carbon and hydrogen isotopic fractionation during abiotic hydrolysis and aerobic biodegradation of phthalate esters. Science of the Total Environment 660:559-566.
OECD Harmonized Template:	Hydrolysis
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; 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: Na ₂ CO ₃ + NaHCO ₃); 30°C; Not reported
Positive Controls and Negative Controls	Positive: Not reported; Negative: Buffer control
pH and Duration	10; Not reported
Sampling Frequency and Test Setup	Not reported; dual stable isotope fraction ¹³ C & ² H in glass bottles sealed with PTFE-coated rubber stoppers and aluminum crimp seals.
Concentration	37 - µmol/L
Analytical Method, Analytical Details, and Statistics	Concentrations of residues were measured using a GC-FID. The carbon and hydrogen isotopic compositions were measured using a GC coupled 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 Substance Results	Not reported; Not reported
Percent Recovery, Hydrolysis Rate Constant, and Half-life	Not reported; 130.3x10 ⁻⁴ /hours; 45.4 hours
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"

EVALUATION				
Domain	Metric		Rating	Comments
Domain 1: Test Substance	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 Conditions	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.

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Study Citation:	Zhang, D., Wu, L., Yao, J., Vogt, C., Richnow, H. H. (2019). Carbon and hydrogen isotopic fractionation during abiotic hydrolysis and aerobic biodegradation of phthalate esters. Science of the Total Environment 660:559-566.			
OECD Harmonized Template:	Hydrolysis			
HERO ID:	5433324			
Domain		Metric	EVALUATION 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 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	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/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 Presentation 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.
Overall Quality Determination			High	

Study Citation:	Lau, T. K., Chu, W., Graham, N. (2005). The degradation of endocrine disruptor di-n-butyl phthalate by UV irradiation: a photolysis and product study. Chemosphere 60(8):1045-1053.
OECD Harmonized Template:	Photolysis in Water
HERO ID:	807120

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, Guideline	None; Experimental; EPA OTS 796.3700 (Direct Photolysis Rate in Water by Sunlight): Photolysis UV irradiation
Solvent, Reactivity, Storage, Stability	18 M omega deionized distilled water; NR; NR; NR
Radiolabel, Source, State, 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 Temperature	60 minutes; 23±2°C
Light Source, Intensity, and additional light details	Eight phosphor-coated low-pressure mercury lamps; 1.5E-6 / Einstein s; Each lamp 35 W
Source Wavelength Lower and Upper	Not reported; 254 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 Reference Compound	2 - 10 (kinetics); 4 (photolysis product identification) µM; Not reported
Substance Wavelength Lower and Upper	Not reported; Not reported
Direct Quantum Yield Results, Direct Half Life by Loss Lower and Upper	Not reported; Not reported; Not reported
Indirect Rate Constant Lower and Upper	0.07; 0.09
Method Details Results and Products	Thermo Quest Finnigan LCQ Duo Mass Spectrometer system with Restek Pinnacle II column.; Phthalic acid (dominant product), monobutyl phthalate (intermediate product), benzoic acid
Details Results	not applicable; /min, pseudo-first order rate for first phase
Parameter Value and Parameter Results	Not reported; Not reported; 73-91%; Not reported
Reference Compound, Reference	Not reported; Not reported; 73-91%; Not reported
Substance Results, Percent Degradation Results and Standard Deviation Results	Not reported; Not reported; 73-91%; Not reported
Results Remarks, Sample time Results, Results Details	Stage 1 photolysis followed pseudo-first-order kinetics, Stage 2 (after 20-30 minutes) showed rate reduction. Direct photolysis by UV is considered the major pathway. Rate increased with increasing pH likely due to indirect photolysis via acid base catalyzed photo-hydrolysis. 100% removal of 4 µM test substance after 90 min observed.; 60 minutes; $C_t = C_0(e^{-kt})$

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	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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Study Citation:	Lau, T. K., Chu, W., Graham, N. (2005). The degradation of endocrine disruptor di-n-butyl phthalate by UV irradiation: a photolysis and product study. Chemosphere 60(8):1045-1053.			
OECD Harmonized Template:	Photolysis in Water			
HERO ID:	807120			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	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 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	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/Variable Control				
	Metric 13:	Confounding Variables	High	Variability 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 Presentation 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 Results	High	The results were reasonable.
	Metric 18:	QSAR 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. (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 Template:	Photolysis in Water
HERO ID:	680048

Parameter	Data
CASRN and Test Material	84-74-2; Not Reported
Confidentiality, Type, Guideline	No; Experimental, pH dependent, half-life reported, reaction rate reported; Not Reported
Solvent, Reactivity, Storage, Stability	Artificial river water; NR; NR; NR
Radiolabel, Source, State, Purity	NA; Kishida Chemical, Osaka, Japan; Liquid; Analytical grade
Duration and Test Temperature	140 days; 0.4 - 27.4 deg C; average = 10.8 deg C
Light Source, Intensity, and additional light details	Natural sunlight; 17.1 - 242.8 W/m ² (reflecting moderate autumn and winter Japan temperate zone); Not Reported
Source Wavelength Lower 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 foil.
Initial Concentration and Reference Compound	0.52 mmol/L; NR
Substance Wavelength Lower and Upper	NR; NR
Direct Quantum Yield Results, Direct Half Life by Loss Lower and Upper	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, Reference	NR; NR; NR; NR
Substance Results, Percent Degradation Results and Standard Deviation Results	
Results Remarks, Sample time Results, Results Details	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 5), 620 d (pH 6), 1300 d (pH 7), 530 d (pH 8), 430 d (pH 9)

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	Medium	The test substance source was reported, the purity was reported qualitatively as analytical 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.

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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 Template:	Photolysis in Water			
HERO ID:	680048			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Low	The test substance was tested above its water solubility, but was treated with an ultrasonicator to ensure homogenization.
	Metric 6:	Testing Conditions	High	Appropriate test conditions (pH, light intensity, temperature) were reported. Temperature 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 Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	Not applicable.
	Metric 10:	Sampling Methods	N/A	Not applicable.
Domain 5: Outcome Assessment				
	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/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 Presentation 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 estimated 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.
Overall Quality Determination			Low	

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.
OECD Harmonized Template:	Photolysis in Water
HERO ID:	5348332

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, Guideline	no; experimental; EPA OTS 796.3700 (Direct Photolysis Rate in Water by Sunlight): not reported
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Duration and Test Temperature	not reported; not reported
Light Source, Intensity, and additional light details	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 TiO ₂ and H ₂ O ₂ ; not reported
Initial Concentration and Reference Compound	not reported; Not Reported
Substance Wavelength Lower and Upper	Not Reported; Not Reported
Direct Quantum Yield Results, Direct Half Life by Loss Lower and Upper	Not Reported; Not Reported; Not Reported
Indirect Rate Constant Lower and Upper	Not Reported; 0.23/h
Method Details Results and Products	Not Reported; Not Reported
Details Results	
Parameter Value and Parameter Results	Not Reported; not reported
Reference Compound, Reference	Not Reported; Not Reported; Not Reported; Not Reported
Substance Results, Percent Degradation Results and Standard Deviation Results	
Results Remarks, Sample time Results, Results Details	half-life = 3 hours; not reported; photodegradation rates were higher in natural water than in simulated systems.

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 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 Conditions	Metric 5:	Test Method Suitability	Medium	The test method was not reported but may be available in the cited reference.

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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.			
OECD Harmonized Template:	Photolysis in Water			
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 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, 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 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 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 Kinetic Calculations	Low	Kinetic calculations were not clearly described but may be available in the cited reference.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			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). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5676112			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, Type, Guideline	none; biodegradability; experimental; other: river die-away test			
Solvent, Reactivity, Storage, Stability	Not Reported; Not Reported; Not Reported; Not Reported			
Radiolabel, Source, State, Purity	Not Reported; Not Reported; Not Reported; Not Reported			
Blank and Control	10% removal in sterile controls; Not Reported			
Oxygen and Inoculum	Not Reported; Not Reported: water from three rivers in Netherlands			
Duration, Parameter, System, and Sampling Frequency	Not Reported; Not Reported: Not Reported; Not Reported			
pH Adjusted and pH	Not Reported; Not Reported			
Concentration	= 50 µg/L			
Composition and Test Temperature	Not Reported; Not Reported			
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not Reported; Not Reported; Not Reported; Not Reported			
Results Details Method, Results per Degradation Parameter, and	Not Reported; % removal; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	90%; Not Reported; 3 days; Not Reported			
Results Remarks and Results Details	Not Reported; Not Reported			
Results Mean Total Recovery and Results per Recovery	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	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.
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Study Citation:		ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.		
OECD Harmonized Template:		Biodegradation in Water		
HERO ID:		5676112		
Domain	Metric	EVALUATION		Comments
		Rating		
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 Exposure	N/A	The metric is not applicable to the study.
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 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 Quality Determination**Medium**

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

Study Citation:	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5676112			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, Type, Guideline	none; screening test; experimental; other: screening test			
Solvent, Reactivity, Storage, Stability	Not Reported; Not Reported; Not Reported; Not Reported			
Radiolabel, Source, State, Purity	Not Reported; Not Reported; Not Reported; Not Reported			
Blank and Control	Not Reported; Not Reported			
Oxygen and Inoculum	Not Reported; Not Reported			
Duration, Parameter, System, and Sampling Frequency	3 days; Not Reported: Not Reported; Not Reported			
pH Adjusted and pH	Not Reported; Not Reported			
Concentration	0.1 - = 1.0 mg/L			
Composition and Test Temperature	Not Reported; Not Reported			
CEC, Water Aeration Dilution, Continuous Dark-ness, and Other Design	Not Reported; Not Reported; Not Reported; Not Reported			
Results Details Method, Results per Degradation Parameter, and	Not Reported; % degradation; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Re-sults Sample Time, and Results Reference Sub-stance Compartments	97-99.5%; Not Reported; 3 days; Not Reported			
Results Remarks and Results Details	Not Reported; Not Reported			
Results Mean Total Recovery and Results per Re-covery	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	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				
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Study Citation:	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5676112			
Domain	Metric	EVALUATION		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 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 Exposure	N/A	The metric is not applicable to the study.
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 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 Quality Determination**Medium**

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

Study Citation:	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5676112			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, Type, Guideline	none; biodegradability; experimental; other: not specified			
Solvent, Reactivity, Storage, Stability	Not Reported; Not Reported; Not Reported; Not Reported			
Radiolabel, Source, State, Purity	Not Reported; Not Reported; Not Reported; Not Reported			
Blank and Control	Not Reported; Not Reported			
Oxygen and Inoculum	anaerobic; activated sludge (adaptation not specified)			
Duration, Parameter, System, and Sampling Frequency	Not Reported; Not Reported: Not Reported; Not Reported			
pH Adjusted and pH	Not Reported; Not Reported			
Concentration	Not Reported			
Composition and Test Temperature	Not Reported; Not Reported			
CEC, Water Aeration Dilution, Continuous Dark-ness, and Other Design	Not Reported; Not Reported; Not Reported; Not Reported			
Results Details Method, Results per Degradation Parameter, and	Not Reported; % degradation; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Re-sults Sample Time, and Results Reference Sub-stance Compartments	complete degradation to carbon dioxide and methane (100%); Not Reported; 20 days; Not Reported			
Results Remarks and Results Details	Not Reported; Not Reported			
Results Mean Total Recovery and Results per Re-covery	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	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				
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Study Citation:	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5676112			
Domain	Metric	EVALUATION		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 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 Exposure	N/A	The metric is not applicable to the study.
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 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 Quality Determination**Medium**

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

Study Citation:	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5676112			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, Type, Guideline	none; biodegradability; experimental; other: not specified			
Solvent, Reactivity, Storage, Stability	Not Reported; Not Reported; Not Reported; Not Reported			
Radiolabel, Source, State, Purity	Not Reported; Not Reported; Not Reported; Not Reported			
Blank and Control	no degradation in sterile control; Not Reported			
Oxygen and Inoculum	Not Reported; Not Reported: fresh and estuarine waters from US sources			
Duration, Parameter, System, and Sampling Frequency	Not Reported; Not Reported: Not Reported; Not Reported			
pH Adjusted and pH	Not Reported; Not Reported			
Concentration	= 500 µg/L			
Composition and Test Temperature	Not Reported; Not Reported			
CEC, Water Aeration Dilution, Continuous Dark-ness, and Other Design	Not Reported; Not Reported; Not Reported; Not Reported			
Results Details Method, Results per Degradation Parameter, and	Not Reported; Not Reported; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Re-sults Sample Time, and Results Reference Sub-stance Compartments	Not Reported; Not Reported; Not Reported; Not Reported			
Results Remarks and Results Details	50% removal in 1.7-13 days; lag phase 0-7 days; Not Reported			
Results Mean Total Recovery and Results per Re-covery	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	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				
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Study Citation:	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5676112			
Domain	Metric	EVALUATION		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 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 Exposure	N/A	The metric is not applicable to the study.
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 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 Quality 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:	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 Template:	Biodegradation in Water
HERO ID:	1598869

Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	none; screening test; experimental; other
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Aldrich Chemical Co., Gillingham or BDH Ltd., Poole, UK. Chemicals.; NR; Highest purity available Notes: NR
Blank and Control	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, electronics) wastewaters.
Duration, Parameter, System, and Sampling Frequency	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 NR
Composition and Test Temperature	NR; 35°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	NR; NR; NR; NR
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	gas chromatograph with thermal conductivity detector; % theoretical gas production; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	24; ±9.6; Not Reported; ethanol: results not reported; 4-cresol: 96% theoretical gas production after a lag period of 7 days
Results Remarks and Results Details	Completely degraded after 4 weeks of incubation.; lag period of 23 days
Results Mean Total Recovery and Results per Recovery	NR; NR

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
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.

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Study Citation:	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 Template:	Biodegradation in Water			
HERO ID:	1598869			
Domain		Metric	EVALUATION	
			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 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 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 concentrations.
Domain 4: Test Organisms				
	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.
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				
	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 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.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetic calculations were not clearly described; however these differences were not likely to have a substantial impact on study results.
Domain 8: Other				

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Study Citation:	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 Template:	Biodegradation in Water
HERO ID:	1598869

		EVALUATION	
Domain	Metric	Rating	Comments
	Metric 17: Verification or Plausibility of Results	High	Reported values were within expected range as defined by reference substance.
	Metric 18: QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination	High
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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 phthalate esters to freshwater benthos. 1. Aqueous exposures. Environmental Toxicology and Chemistry 20(8):1798-1804.		
OECD Harmonized Template:	Biodegradation in Water		
HERO ID:	679312		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	84-72-2; dibutyl phthalate		
Confidentiality, EndPoint, Type, Guideline	No; screening test; experimental; other: Detection of test substance in ten-day toxicity tests		
Solvent, Reactivity, Storage, Stability	water; NR; NR; NR		
Radiolabel, Source, State, Purity	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, and Sampling Frequency	10 days; test mat.: glass aquiria; 0, 4, 7 and 10 days		
pH Adjusted and pH	Not Reported; 7.62–7.94		
Concentration	0.17±0.10 - 5.38±0.36 mg/L		
Composition and Test Temperature	Dechlorinated municipal water from the city of Superior (Superior, WI, USA) water was passed through a bed of charcoal, and sodium sulfite, and cation exchange resin removed trace metals. Total organic carbon = 2.2 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 Dilution, Continuous Darkness, and Other Design	NR; Dissolved oxygen = 6.1–7.8 mg/L; NR; Not Reported		
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	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		
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	NR; NR; 10 days; NR		
Results Remarks and Results Details	Supporting information about the 10-day LC50 of test substance to freshwater benthos. Reported log Kow and water solubility values cited from Staples et al. 1997.; Not Reported		
Results Mean Total Recovery and Results per Recovery	expressed concentrations were not corrected for recoveries; Mean recovery ranged between 94.3 and 126.3%		
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	High	The source or purity of the test substance was reported.
Domain 2: Test Design			
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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 phthalate esters to freshwater benthos. 1. Aqueous exposures. Environmental Toxicology and Chemistry 20(8):1798-1804.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	679312			
Domain	Metric	EVALUATION 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 Conditions				
	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 concentrations.
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:	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 methodology addressed or reported the intended outcome(s) of interest; however, toxicity (LD50) information is not a relevant environmental fate or transport endpoint.
	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	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 Presentation 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).

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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 phthalate esters to freshwater benthos. 1. Aqueous exposures. Environmental Toxicology and Chemistry 20(8):1798-1804.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	679312

Domain		Metric	EVALUATION Rating		Comments
Domain 8: Other		Metric 17:	Verification or Plausibility of Results	High	Reported values were within expected range as defined by reference substance.
		Metric 18:	QSAR Models	N/A	A QSAR model was not reported.

Overall Quality Determination	Uninformative
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Study Citation:	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.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	357771

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Closed bottle batch anaerobic biodegradation
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	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, and Sampling Frequency	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 Temperature	NH4Cl, MgCl2(aq), CaCl2(aq), FeCl2(aq), K2HPO4, KH2PO4, resazurin; 20, 30, 40, 50°C; assessed separately for each inoculum
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; Not reported
Results Details Method, Results per Degradation Parameter, and	LOD=100 µg/L; % disappearance of test material; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	100%; ± 1.2 (petrochemical sludge)±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 and Results per Recovery	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	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 Conditions				

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Study Citation:	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.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	357771			
		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.
	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	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 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.
Overall Quality Determination		High		

Study Citation:	Chi, J., Liu, H., Li, B., Huang, G. L. (2006). Accumulation and biodegradation of dibutyl phthalate in <i>Chlorella vulgaris</i> . Bulletin of Environmental Contamination and Toxicology 77(1):21-29.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1323214			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Algae biodegradation study			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; Sigma Company; NR; 99%			
Blank and Control	Blank without algae; Yes; inhibition noted at 4.85 mg/L DBP			
Oxygen and Inoculum	aerobic; natural water: 0.45 μm filtered lake water, sterilized in culture medium			
Duration, Parameter, System, and Sampling Frequency	150 hour; test mat.: Algae in culture media; 6 days			
pH Adjusted and pH	Not Reported; Not reported			
Concentration	0.273 mg/L			
Composition and Test Temperature	culture medium reported; 13 and 25°C			
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; no; Not applicable			
Results Details Method, Results per Degradation Parameter, and	GC-FID; test substance concentration; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	4.01-4.34% biodegradation in 6 days (approximate); SD and average reported; 6 days; Not reported			
Results Remarks and Results Details	Not applicable; k=0.6E-3 to 6.8E-3 h-1			
Results Mean Total Recovery and Results per Recovery	spiked water 90.9±3.7% and algal samples and 84.1±7.2%; Not applicable			
EVALUATION				
Domain	Metric	Rating		Comments
Domain 1: Test Substance				
	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	Controls were performed without algae.
	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				
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Study Citation:	Chi, J., Liu, H., Li, B., Huang, G. L. (2006). Accumulation and biodegradation of dibutyl phthalate in <i>Chlorella vulgaris</i> . Bulletin of Environmental Contamination and Toxicology 77(1):21-29.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1323214			
Domain	Metric	EVALUATION		Comments
		Rating		
	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 Organisms				
	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 Assessment				
	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/Variable Control				
	Metric 13:	Confounding Variables	Uninformative	Photolysis, hydrolysis, and volatilization could not be ruled out.
	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	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 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.
Overall Quality Determination		Uninformative		

Study Citation:	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. <i>Ecotoxicology and Environmental Safety</i> 14(3):239-251.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	790146

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Chemical abatement test based on the river die-away test
Solvent, Reactivity, Storage, Stability	Hexane; NR; NR; NR
Radiolabel, Source, State, Purity	NA; NR; 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 Sampling Frequency	6 days; test mat.: shake-flask system: 2L Erlenmeyer flask plugged with polyurethane foam plugs, shaken at 140 rpm; NR; at least 6 samples collected
pH Adjusted and pH	Not Reported; field pH (NR)±0.2
Concentration	200 µg/L
Composition and Test Temperature	500 mg/L sediment-water slurry; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; Not reported
Results Details Method, Results per Degradation Parameter, and	electron capture gas-liquid chromatography; analyzed in duplicate; samples extracted via mechanical rotator (60 rpm); limits of detection not reported; Test substance measurement; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	100%; Not reported; 2 days; 100% approx. 4 days;
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 Recovery and Results per Recovery	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 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.

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Study Citation:	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 Template:	Biodegradation in Water			
HERO ID:	790146			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	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 7:	Testing Consistency	High	Test conditions were 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 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 Assessment				
	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 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty were accounted for in data evaluation and were 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 Presentation and Analysis				
	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 Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

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.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	2816600

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; inherent biodegradability; Experimental; other: Biodegradation experiments using an electrolytic respirometer
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, 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)
Duration, Parameter, System, and Sampling Frequency	20-40 days; ThOD: Flasks; Not reported
pH Adjusted and pH	Not Reported; Not reported
Concentration	100 mg/L
Composition and Test Temperature	OECD nutrient solution; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; Not Reported; Not reported
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	Not reported; Mineralization to carbon dioxide and water; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	>80% after 40 days; Not reported; Not reported; Valid; at least 60% within 28 days
Results Remarks and Results Details	Not reported; Kinetic parameters include maximum specific growth rate $\mu_m=6.95/\text{day}$, half saturation constant $K_s=51.38 \text{ mg/L}$ 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 Recovery	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 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.

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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.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	2816600			
Domain	Metric	EVALUATION		Comments
		Rating		
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	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 reported 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: Test Organisms				
	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 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: Confounding/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 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 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				
	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.

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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.		
OECD Harmonized Template:	Biodegradation in Water		
HERO ID:	2816600		
Domain	Metric	EVALUATION Rating	Comments
Overall Quality Determination		High	

Study Citation:	Fujita, M., Ike, M., Ishigaki, T., Sei, K., Jeong, J. S., Makihiro, N., Lertsirison, R. (2005). Biodegradation of Three Phthalic Acid Esters by Microorganisms from Aquatic Environment. Nihon Mizushori Seibutsu Gakkaishi 41(4):193-201.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	5490395

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Primary biodegradation in sludge, river water, and pond water
Solvent, Reactivity, Storage, Stability	Ethanol; NR; NR; NR
Radiolabel, Source, State, 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 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 Sampling Frequency	14 days (2 weeks); test mat.: Plugged flasks; Days 0, 1, 4, 7, 10, and 14
pH Adjusted and pH	Not Reported; 7.2
Concentration	$\geq 10 - \leq 40$ mg/L
Composition and Test Temperature	artificial river water: K ₂ HPO ₄ : 21.8mg; KH ₂ PO ₄ : 8.5mg; Na ₂ HPO ₄ -12H ₂ O: 44.6mg; NH ₄ Cl: 17mg; MgSO ₄ -7H ₂ O: 22.5 mg; CaCl ₂ : 27.5mg; FeCl ₃ -6H ₂ O: 0.25mg; MnSO ₄ -5H ₂ O: 0.71mg; ZnSO ₄ -7H ₂ O: 0.01mg; CuSO ₄ -5H ₂ O: 5mg; CoCl ₂ 6H ₂ O: 5mg; 1L water.; 28°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	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; Mixed liquor suspended solids for activated sludge: 100 mg/L; 25 mg/L for river and water samples.
Results Details Method, Results per Degradation Parameter, and	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).; Primary biodegradation as % removed to the initial concentration: Activated Sludge, River Water Microbes, Pond Water Microbes; Not Reported
Direct Quantum Yield Results	100%, 100%, 100%; Not reported; 2 weeks; No significant change was observed
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	
Results Remarks and Results Details	All samples underwent primary biodegradation. Blank tests showed no significant dibutyl phthalate contamination and controls without inoculum showed no significant degradation.; Half-lives for primary degradation were less than 5 days (results shown in scatter plots). Activated sludge samples degraded to below detection limits within 10 d. Similar capacity of PAE biodegradation rates were observed in river and pond water samples.
Results Mean Total Recovery and Results per Recovery	Not reported; Not reported

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

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Study Citation:	Fujita, M., Ike, M., Ishigaki, T., Sei, K., Jeong, J. S., Makihira, N., Lertsirisopon, R. (2005). Biodegradation of Three Phthalic Acid Esters by Microorganisms from Aquatic Environment. Nihon Mizushori Seibutsu Gakkaishi 41(4):193-201.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5490395			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions 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 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 Organisms				
	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 Assessment				
	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.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	No confounding variables were noted. Uncertainty was not reported in the 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 Presentation and Analysis				
	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 Results	High	The study results are reasonable as compared to other reported values.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		High		

Study Citation:	Fujita, M., Ike, M., Ishigaki, T., Sei, K., Jeong, J. S., Makihira, N., Lertsirisopon, R. (2005). Biodegradation of Three Phthalic Acid Esters by Microorganisms from Aquatic Environment. Nihon Mizushori Seibutsu Gakkaishi 41(4):193-201.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	5490395

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; inherent biodegradability; Experimental; other: Ultimate biodegradation in sludge, river water, and pond water
Solvent, Reactivity, Storage, Stability	Ethanol; NR; NR; NR
Radiolabel, Source, State, 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 Sampling Frequency	14 days (2 weeks); ThOD: Plugged flasks; Days 0, 1, 4, 7, 10, and 14
pH Adjusted and pH	Not Reported; 7.2
Concentration	$\geq 10 - \leq 40$ mg/L
Composition and Test Temperature	artificial river water: K ₂ HPO ₄ : 21.8mg; KH ₂ PO ₄ : 8.5mg; Na ₂ HPO ₄ 12H ₂ O: 44.6mg; NH ₄ Cl: 17mg; MgSO ₄ 7H ₂ O: 22.5 mg; CaCl ₂ : 27.5mg; FeCl 6H ₂ O: 0.25mg; 1L water.; 28°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	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 water test.
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	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 O ₂ consumption relative to ThBOD: Activated Sludge, River Water Microbes, Pond Water Microbes; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance 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 Results 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 microbes: 10-15; river water microbes: 10-20; and pond water microbes: 15-35 (all estimated from figure).
Results Mean Total Recovery and Results per Recovery	Not reported; Not reported

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 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 Conditions				

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Study Citation:	Fujita, M., Ike, M., Ishigaki, T., Sei, K., Jeong, J. S., Makihira, N., Lertsirisopon, R. (2005). Biodegradation of Three Phthalic Acid Esters by Microorganisms from Aquatic Environment. Nihon Mizushori Seibutsu Gakkaishi 41(4):193-201.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5490395			
		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 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 Organisms				
	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 Assessment				
	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: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	No confounding variables were noted. Uncertainty was not reported in the 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 Presentation 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.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable as compared to other reported values.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		High		

Study Citation:	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 Template:	Biodegradation in Water			
HERO ID:	679647			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; dibutyl phthalate			
Confidentiality, EndPoint, Type, Guideline	no; other; experimental; other: biodegradation in river water			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	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, and Sampling Frequency	7 days; not specified: tested as previously reported with a minor modification of the Handai Method.; not reported			
pH Adjusted and pH	not reported; not reported			
Concentration	20 ug/mL			
Composition and Test Temperature	nutrient broth medium.; 25°C			
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	not reported; not reported; Not Reported; details may be outlined in cited method.			
Results Details Method, Results per Degradation Parameter, and	GC/FID; HPLC; % degradation; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	98.8%; not reported; 7 days; not reported			
Results Remarks and Results Details	Water samples from 2 sites (Otokiki and Chidori Bridge) gave the same results. Metabolites were detected in test from Otokiki Bridge water.; Not Reported			
Results Mean Total Recovery and Results per Recovery	97%; Not Reported			
EVALUATION				
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	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.
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Study Citation:	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 Template:	Biodegradation in Water			
HERO ID:	679647			
Domain	Metric	EVALUATION		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 Conditions				
	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 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	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 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 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 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 Kinetic Calculations	Medium	Kinetic calculations were not clearly described.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.

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Study Citation:	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 Template:	Biodegradation in Water
HERO ID:	679647

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

Overall Quality Determination	Medium
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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 Template:	Biodegradation in Water
HERO ID:	1333416

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	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, Purity	NR; 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 inoculum. Number of colony forming units per mL=10 ⁴ -10 ⁶ .
Duration, Parameter, System, and Sampling Frequency	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 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 Temperature	Not Reported; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	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 DBP and 10min US. EM-US: DBP added in form of stored emulsion + US
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	Biochemical oxygen demand using Biochemical analyzer BIAL BOD 10 (DAK Slusovice, Czech Republic); BOD/ThOD; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	W: 40.7; 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 benzoate BOD/ThOD was <0.60.
Results Remarks and Results 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 Recovery and Results per Recovery	Not reported; Not reported

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

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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 Template:	Biodegradation in Water			
HERO ID:	1333416			
Domain		Metric	EVALUATION	
			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 Conditions				
	Metric 5:	Test 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.
Domain 4: Test Organisms				
	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 included and may impact the study results.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.
Domain 5: Outcome Assessment				
	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 have a substantial impact on the study results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Uncertainty in the data was reported and the variability is not likely 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 Presentation 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 impact on the study results.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The statistical methods were appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The test results are plausible based on the reference substance results.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
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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 Template:	Biodegradation in Water
HERO ID:	1333416

Domain	Metric	EVALUATION Rating	Comments
Overall Quality Determination		High	

Study Citation:	Jianlong, W. (2004). Effect of di-n-butyl phthalate (DBP) on activated sludge. Process Biochemistry 39(12):1831-1836.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	5631489

EXTRACTION	
Parameter	Data
CASRN and Test Material	Not Reported; Di-n-butyl phthalate
Confidentiality, EndPoint, Type, Guideline	none; other; experimental; other: non-guideline: effect of DBP on activated sludge
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	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.
Duration, Parameter, System, and Sampling Frequency	100 hours; O ₂ consumption; COD removal: 2.0L reactor; periodically
pH Adjusted and pH	Phosphate salts were added as a buffer; not reported
Concentration	NA NA - = 100 mg/L
Composition and Test Temperature	Basic mineral medium with 0.025-0.5 g/L DBP; synthetic wastewater; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	not reported; not reported; not reported; not reported
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	GC-FID; loss of test material (DBP concentration); not applicable
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	<1% (unacclimated; concentration remained almost unchanged); 78-80% (acclimated); not reported; 100 hours; not reported
Results Remarks and Results 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 O ₂ /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 O ₂ /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, and 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 Recovery and Results per Recovery	not reported; not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	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			

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Study Citation:	Jianlong, W. (2004). Effect of di-n-butyl phthalate (DBP) on activated sludge. Process Biochemistry 39(12):1831-1836.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5631489			
Domain	Metric	EVALUATION		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 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, 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 Organisms				
	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 Assessment				
	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/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 Exposure	N/A	The metric is not applicable to this study type.
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 Kinetic Calculations	High	Kinetic calculations were described.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.

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Study Citation:	Jianlong, W. (2004). Effect of di-n-butyl phthalate (DBP) on activated sludge. Process Biochemistry 39(12):1831-1836.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	5631489

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

Overall Quality Determination**High**

Study Citation:	Jianlong, W., Ping, L., Yi, Q. (1995). Microbial degradation of di-n butyl phthalate. Chemosphere 31(9):4051-4056.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	1332880

EXTRACTION	
Parameter	Data
CASRN and Test Material	Not Reported; dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	no; other; experimental; other: pure culture biodegradation
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	No; NR; 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, and Sampling Frequency	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 Temperature	KH2PO4; KNO3; MgSO4.7H2O; CaCl2; FeCl3; NaCl; 25°C
CEC, Water Aeration Dilution, Continuous Dark-ness, and Other Design	not reported; not reported; Not Reported; cell density of inoculum for strain A-D was controlled to be equal.
Results Details Method, Results per Degradation Parameter, and	GC/FID; % degradation; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Re-sults Sample Time, and Results Reference Sub-stance Compartments	100%; not reported; <240 hours; not reported
Results Remarks and Results Details	100% degradation at hour: A 40; B 120; C 118; D 160; E 220.; Not Reported
Results Mean Total Recovery and Results per Re-covery	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.
	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.

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Study Citation:	Jianlong, W., Ping, L., Yi, Q. (1995). Microbial degradation of di-n butyl phthalate. Chemosphere 31(9):4051-4056.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1332880			
Domain	Metric	EVALUATION		Comments
		Rating		
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.
	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	N/A	The metric is not applicable to the study type.
Domain 4: Test Organisms				
	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 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	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 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 Kinetic Calculations	Medium	Kinetic calculations were not clearly described.
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 the study type.
Overall Quality Determination			Low	

Study Citation:	Jianlong, W., Ping, L., Yi, Q. (1995). Microbial degradation of di-n butyl phthalate. Chemosphere 31(9):4051-4056.		
OECD Harmonized Template:	Biodegradation in Water		
HERO ID:	1332880		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	Not Reported; dibutyl phthalate		
Confidentiality, EndPoint, Type, Guideline	no; other; experimental; other: pure culture biodegradation		
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR		
Radiolabel, Source, State, Purity	No; NR; NR; NR Notes: DBP		
Blank and Control	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 Sampling Frequency	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 - 400 mg/L		
Composition and Test Temperature	KH2PO4; KNO3; MgSO4.7H2O; CaCl2; FeCl3; NaCl; 25°C		
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	not reported; not reported; Not Reported; Not Reported		
Results Details Method, Results per Degradation Parameter, and	GC/FID; % degradation; Not Reported		
Direct Quantum Yield Results			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	100%; not reported; <140 hours (from figure); not reported		
Results Remarks and Results 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 ~40 hours was found at a DBP concentration of 400 mg/L.; Not Reported		
Results Mean Total Recovery and Results per Recovery	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.
Metric 2:	Test Substance Purity	Medium	The test substance source and purity 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			
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 Conditions			
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Study Citation:	Jianlong, W., Ping, L., Yi, Q. (1995). Microbial degradation of di-n butyl phthalate. Chemosphere 31(9):4051-4056.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1332880			
		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	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.
	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	N/A	The metric is not applicable to the study type.
Domain 4: Test Organisms				
	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 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	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 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 Kinetic Calculations	Medium	Kinetic calculations were not clearly described.
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 the study type.
Overall Quality Determination		Low		

Study Citation:	Jianlong, W., Ping, L., Yi, Q. (1997). Biodegradation of phthalic acid esters by immobilized microbial cells. Environment International 23(6):775-782.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	791101			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; DBP			
Confidentiality, EndPoint, Type, Guideline	none; other: enrichment culture; experimental; other: non-guideline			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, 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, and Sampling Frequency	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 Temperature	50 mL basic medium (sterilized); 20, 25 (free cells), and 30°C (effects of temp evaluated for immobilized cells)			
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	not reported; not reported; not reported; not reported			
Results Details Method, Results per Degradation Parameter, and	GM-MS with FID; biomass and liquid phase separated via centrifugation; supernatant extracted with dichloromethane for test material analysis; % degradation; not reported			
Direct Quantum Yield Results	100%; not reported; 40 hours; not reported			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments				
Results Remarks and Results 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 Recovery and Results per Recovery	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				
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Study Citation:	Jianlong, W., Ping, L., Yi, Q. (1997). Biodegradation of phthalic acid esters by immobilized microbial cells. Environment International 23(6):775-782.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	791101			
Domain		Metric	EVALUATION 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 Conditions				
	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 Organisms				
	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 Assessment				
	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/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 Presentation and Analysis				
	Metric 15:	Data Reporting	Low	Analytical detail was omitted.
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	The metric is not applicable to the study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	No controls were reported.
	Metric 18:	QSAR Models	N/A	A QSAR model was not reported.
Overall Quality Determination			Low	

Study Citation:	Jonsson, S., Ejlerthsson, J., Svensson, B. H. (2003). Transformation of phthalates in young landfill cells. Waste Management 23(7):641-651.		
OECD Harmonized Template:	Biodegradation in Water		
HERO ID:	789568		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	not reported; Dibutyl phthalate		
Confidentiality, EndPoint, Type, Guideline	none; other; experimental: field study; other: Non-guideline: degradation in a landfill simulation		
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR		
Radiolabel, Source, State, Purity	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 1997: acidogenic; other:: Solid waste from 10 municipalities in Sweden.		
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 three from cell 1995; well samples 95/96 collected from where leachate discharged		
pH Adjusted and pH Concentration	no; cell 1995 - acidic to neutral; cell 1996 nearly neutral; cell 1997 acidic pH; well 95/96 pH >7		
Composition and Test Temperature	Not Reported		
CEC, Water Aeration Dilution, Continuous Dark-ness, and Other Design	Cell 1995 was saturated with water; to cell 1996 ca. 4000 m3 water added; water was not added to cell 1997.; ambient		
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	not reported; not reported; darkness assumed; Solid waste in cells covered with 1 meter of clay		
Results Value, Results Standard Deviation, Re-sults Sample Time, and Results Reference Sub-stance Compartments	Solid-phase extraction followed by GC-MS; LOQ ca. 1 µg/L; not reported; not reported		
Results Remarks and Results Details	not reported; std dev 20%; not reported; not reported		
Results Mean Total Recovery and Results per Re-covery	Cell 1995: DBP concentration decreased from 5 µg/L to ≤ LOQ; monoester monobutyl phthalate decreased from 29 µg/L to ≤ LOQ; phthalic acid concentration decreased from 18 µg/L to 1 µg/L. Cell 1996: DBP concentration fluctuated from 2 µg/L to 29 µg/L; monoester monobutyl phthalate increased from 40 to 180 µg/L; phthalic acid concentration fluctuated from 5 mg/L to 50 µg/L. Cell 1997: DBP concentration was consistently detected around 2 µg/L; monoesters and phthalic acid concentrations were below the LOQ during the initial sampling campaign; however, all were present after 5 months.; not reported		
	not reported; not reported		
EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance			
	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	Low
			The test substance was identified.
			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			
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Study Citation:	Jonsson, S., Ejlerthsson, J., Svensson, B. H. (2003). Transformation of phthalates in young landfill cells. Waste Management 23(7):641-651.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	789568			
Domain	Metric	EVALUATION		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 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	Initial target chemical concentrations were reported.
	Metric 6:	Testing Conditions	Low	Limited detail regarding conditions.
	Metric 7:	Testing Consistency	Medium	Test conditions across study groups were not reported.
	Metric 8:	System Type and Design	High	The system type and design were acceptable for this study.
Domain 4: Test Organisms				
	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 Assessment				
	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/Variable Control				
	Metric 13:	Confounding Variables	Medium	Sources of variability and uncertainty in the measurements were considered.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Not applicable to this study.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	Data reporting was acceptable.
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	Not applicable to this study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information on test material source, evaluation of the reasonableness of the study results was not possible. In addition, other phthalates were present.
	Metric 18:	QSAR Models	N/A	Not applicable to this study.
Overall Quality Determination			Medium	

Study Citation:	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.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1333626			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	not reported; Not Reported			
Confidentiality, EndPoint, Type, Guideline	No; screening test; experimental; other: cultivation method in river and seawater			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; 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, System, and Sampling Frequency	3 days; Not Reported: Not Reported; Not Reported			
pH Adjusted and pH	Not Reported; Not Reported			
Concentration	2 - ppm			
Composition and Test Temperature	Not Reported; Not Reported			
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not Reported; Not Reported; Not Reported; Not Reported			
Results Details Method, Results per Degradation Parameter, and	Not Reported; not specified; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	75% (river water) 80% (sea water); not reported; 3 days; not specified; however, 170 chemicals evaluated including aniline			
Results Remarks and Results Details	judgement of degradability: easy; Not Reported			
Results Mean Total Recovery and Results per Recovery	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	Unclear due to foreign language.
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 Conditions				
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Study Citation:	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.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1333626			
Domain	Metric	EVALUATION		Comments
		Rating		
	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 Organisms				
	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 Assessment				
	Metric 11:	Test Substance Identity	Medium	Unclear due to foreign language.
	Metric 12:	Test Substance Purity	Medium	Unclear due to foreign language.
Domain 6: Confounding/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 Presentation 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 Quality Determination		Medium		

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 Template:	Biodegradation in Water
HERO ID:	5508730

Parameter		EXTRACTION		
CASRN and Test Material	84-69-5; dibutyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; other; experimental; other: removal via cultivation of plants			
Solvent, Reactivity, Storage, Stability	methanol; NR; −20°C for not longer than two weeks; NR			
Radiolabel, Source, State, 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, System, and Sampling Frequency	14 days; test mat: Not Reported; 7 and 14 days			
pH Adjusted and pH	Not Reported; 7.0			
Concentration	49.02 - 53.18 ug/L			
Composition and Test Temperature	Wastewater: collected from the local WWTP in Lomza, Poland; 25±0.5°C			
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	not reported; not reported; no; day/night cycle 16/8 hours			
Results Details Method, Results per Degradation Parameter, and	GC/MS; linearity range 0.1–100 ug/L; R2 0.999; limit of detection 0.02 ug/L; RSD 8.1%; % removal; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	87.2%; not reported; 7 days; not reported			
Results Remarks and Results Details	conventional WWTP reduction was 75.4%; removal of nutrients (75–78%) and reduction of oxygen demand (93–97%)			
Results Mean Total Recovery and Results per Recovery	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	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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Study Citation:	Kotowska, U., Karpinska, J., Kapelewska, J., Kowajsza, 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 Template:	Biodegradation in Water			
HERO ID:	5508730			
Domain	Metric	EVALUATION		Comments
		Rating		
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.
	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	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:	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) 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.
	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	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	Statistical methods or kinetic calculations were clearly described and address the dataset(s).
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

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Study Citation:	Kotowska, U., Karpinska, J., Kapelewska, J., Kowajsza, 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 Template:	Biodegradation in Water
HERO ID:	5508730

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		High	

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.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	698291

EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Biodegradation in natural water			
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%			
Blank and Control	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 Sampling Frequency	4 days; test mat.: Flask; Samples taken at 0, 8, 24, 36, 48, and 96 hours			
pH Adjusted and pH	Not Reported; Exp. I, II, III, IV: 8.7, 8.5, 8.2, 8.1, respectively.			
Concentration	≥ 208 - ≤ 230 $\mu\text{g/L}$			
Composition and Test Temperature	Half of the flasks (Experiments I and II) had additional nitrogen and phosphorus added.; 25°C			
CEC, Water Aeration Dilution, Continuous Dark-ness, and Other Design	Not reported; Not 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:P=230; SPM=76 mg/L; Exp IV: Same as Exp III, no light.			
Results Details Method, Results per Degradation Parameter, and	Gas chromatograph with flame ionization detector (GC-FID); DBP concentration; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Re-sults Sample Time, and Results Reference Sub-stance Compartments	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; 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			
EVALUATION				
Domain	Metric	Rating	Comments	
Domain 1: Test Substance	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:	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				
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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.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	698291			
Domain		Metric	EVALUATION 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 Organisms				
	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 Assessment				
	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/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 study type.
Domain 7: Data Presentation 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 Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			High	

Study Citation:	Michigan State University, (1981). Development of test for determining anaerobic biodegradation potential.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	6320824

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butylphthalate
Confidentiality, EndPoint, Type, Guideline	None; Not Reported; Experimental; other: Biodegradation survey with proposed ASTM method described as a starting point
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; 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, and Sampling Frequency	4 weeks; Not reported: glass bottles; methane production monitored weekly
pH Adjusted and pH	Not Reported; Not reported
Concentration	20 ppm
Composition and Test Temperature	mineral salts medium: 272 mg KH ₂ PO ₄ , 348 mg K ₂ HPO ₄ , 535 mg NH ₄ Cl, 73.5 mg CaCl ₂ ·2H ₂ O, 101.5 mg MgCl ₂ ·6H ₂ O, 20 mg FeCl ₂ ·4H ₂ O, trace metals solution, 1.2 mg NaHCO ₃ , 120 mg Na ₂ S·9H ₂ O (autoclaved); 35°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; Not Reported; Not reported
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	GC-FID; limit of detection ca. 0.5 ppm; results; Theoretical methane production; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	85%; Not reported; Not reported; CH ₄ production in Jackson-90 sludge 87% and 90% after 2 weeks; 198% after 4 weeks (glucose); CH ₄ production in Jackson-25 sludge 80% and 99% after 2 weeks; 203% after 4 weeks (glucose)
Results Remarks and Results 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 total.
Results Mean Total Recovery and Results per Recovery	97% extraction efficiency in whole sludge; 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	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.

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Study Citation:	Michigan State University, (1981). Development of test for determining anaerobic biodegradation potential.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	6320824			
Domain	Metric	EVALUATION		Comments
		Rating		
	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				
	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 Organisms				
	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 Assessment				
	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/Variable Control				
	Metric 13:	Confounding Variables	High	Uncertainties in analytical methods were generally noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	Analytical detail minimal, percent recovery, or mass balance 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 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.
Overall Quality Determination			Low	

Study Citation:	Michigan State University, (1981). Development of test for determining anaerobic biodegradation potential.		
OECD Harmonized Template:	Biodegradation in Water		
HERO ID:	6320824		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	84-74-2; Di-n-butylphthalate		
Confidentiality, EndPoint, Type, Guideline	None; Not Reported; Experimental; other: Biodegradation survey with proposed ASTM method described as a starting point		
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR		
Radiolabel, Source, State, Purity	NR; 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 Sampling Frequency	4 weeks; Not reported: glass bottles; methane production monitored weekly		
pH Adjusted and pH	Not Reported; Not reported		
Concentration	20 ppm		
Composition and Test Temperature	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, Continuous Darkness, and Other Design	Not reported; Not reported; Not Reported; Not reported		
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	GC-FID; limit of detection ca. 0.5 ppm; results; Theoretical methane production; Not Reported		
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	32%; Not reported; Not reported; CH4 production in sludge 92% and 96% after 2 weeks; 81% and 84% after 4 weeks		
Results Remarks and Results 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 total.		
Results Mean Total Recovery and Results per Recovery	102% extraction efficiency in whole sludge; 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	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.
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.
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Study Citation:	Michigan State University, (1981). Development of test for determining anaerobic biodegradation potential.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	6320824			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	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 Organisms				
	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 Assessment				
	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/Variable Control				
	Metric 13:	Confounding Variables	High	Uncertainties in analytical methods were generally noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	Analytical detail minimal, percent recovery, or mass balance 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 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.
Overall Quality Determination			Low	

Study Citation:	Monsanto, (1983). Biodegradability of plasticizers and related chemicals.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	1316178

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; inherent biodegradability; Experimental; other: Semi-continuous activated sludge (SCAS) procedure
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; 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, and Sampling Frequency	Not Reported; test mat.: Cyclic addition of test material, media and/or sewage under aeration; 1 time per week
pH Adjusted and pH	Not Reported; Not reported
Concentration	3 ppm
Composition and Test Temperature	300 mg glucose, 200 mg nutrient broth and 130 mg K ₂ HPO ₄ ; Not reported
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; limited details reported; Not reported; Not reported
Results Details Method, Results per Degradation Parameter, and	Analytical Chemistry Method 71-32 with GC; % Primary Biodegradation; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	98%; +95% CL; Not Reported; Not reported
Results Remarks and Results Details	Inherently biodegradable; Not reported
Results Mean Total Recovery and Results per Recovery	92.8±66 at 1, 5 and 10 ppm (66 is likely a typo and should be 6.6); Not applicable

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	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 guideline method was referenced. The lack of control data may impact interpretation of the study results.

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Study Citation:	Monsanto, (1983). Biodegradability of plasticizers and related chemicals.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1316178			
Domain	Metric	EVALUATION 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 Conditions				
	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 reported 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 reported to determine that the omissions were not likely to have a substantial impact on study results.
Domain 4: Test Organisms				
	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 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	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/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 Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	There were omissions in the data reporting; however, sufficient data were reported to determine 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.

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Study Citation:	Monsanto, (1983). Biodegradability of plasticizers and related chemicals.
OECD Harmonized Template:	Biodegradation in Water
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:	Monsanto, (1983). Biodegradability of plasticizers and related chemicals.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1316178			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; Not Reported; Experimental; other: Shake Flask method			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR			
Blank and Control	Not reported; Not reported			
Oxygen and Inoculum	aerobic; not specified: acclimate bacterial seed			
Duration, Parameter, System, and Sampling Frequency	35 days; test mat.: Similar to procedure described in Gledhill [Appl. Microbiol. 30, 922 (1975)]; 3, 7, 14, 21, 28 and 35 days			
pH Adjusted and pH	Not Reported; Not reported			
Concentration	25.6 - 27.9 ppm			
Composition and Test Temperature	minimal salts media; Not reported			
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; limited details reported; Not reported; Not reported			
Results Details Method, Results per Degradation Parameter, and	Analytical Chemistry Method 71-32 with GC; % Theoretical CO2 evolution; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	73% average; 67-79%; Not Reported; 35 days; Not reported			
Results Remarks and Results Details	Ultimate biodegradable; Not reported			
Results Mean Total Recovery and Results per Recovery	Not Reported; Not applicable			
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	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 guideline 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.
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Study Citation:	Monsanto, (1983). Biodegradability of plasticizers and related chemicals.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1316178			
Domain	Metric	EVALUATION		Comments
		Rating		
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 reported 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.
	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 reported to determine that the omissions were not likely to have a substantial impact on study results.
Domain 4: Test Organisms				
	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 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	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/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 Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	There were omissions in the data reporting; however, sufficient data were reported to determine 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.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
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Study Citation:	Monsanto, (1983). Biodegradability of plasticizers and related chemicals.		
OECD Harmonized Template:	Biodegradation in Water		
HERO ID:	1316178		
Domain	Metric	EVALUATION Rating	Comments
Overall Quality Determination		Medium	

Study Citation:	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	5492430

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Anaerobic biotransformation in digester sludge
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Chem Services (West Chester, PA); NR; 98-99%
Blank and Control	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, and Sampling Frequency	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 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 Temperature	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, Continuous Darkness, and Other Design	Not reported; Not reported; Not Reported; No shaking. Glassware was cleaned with hexane to reduce contamination. Nitrate, carboxy methylcellulose, adsorption, and reamendment studies were also run to explore influences on biotransformation rates
Results Details Method, Results per Degradation Parameter, and	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.; % remaining test material
Direct Quantum Yield Results	(DBP) after /n days (n total 365); Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	19% (81% bioconversion); Not reported; 63 days; 89% remaining after 63d. Sterile control
Results Remarks and Results Details	DBP degraded more slowly than in freshwater and salt 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.; 80% of DBP disappeared after 29 days and 100% after 34 days
Results Mean Total Recovery and Results per Recovery	Extraction efficiency for DEHP was not determined; Not Reported

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 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 Conditions				

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Study Citation:	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5492430			
Domain	Metric	EVALUATION		Comments
	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	High	The metric is not applicable to the study type.
Domain 4: Test Organisms				
	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 Assessment				
	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/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 Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation 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 Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination			Medium	

* Related References: Cited in HSDB

Study Citation:	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	5492430

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Anaerobic biotransformation in leachate
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	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 did not significantly affect growth or activity at concentrations used in this study.
Oxygen and Inoculum	anaerobic; other:: Anaerobic leachate obtained from a lab-scale, simulated landfill digester filled with municipal refuse and amended with specific organic pollutants.
Duration, Parameter, System, and Sampling Frequency	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 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 Temperature	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, Continuous Darkness, and Other Design	Not reported; Not reported; Not Reported; No shaking. Glassware was cleaned with hexane to reduce contamination. Nitrate, carboxy methylcel-lulose, adsorption, and reamendment studies were also run to explore influences on biotransformation rates
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	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.; % remaining test material (DBP) after /n days (n total 63); Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Sub-stance Compartments	35% (65% bioconversion); Not reported; 365 days; 96% remaining after 365d. Sterile control
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 adsorption of PAE's to sediment was rapid: >50% in initial samples and 63% of DEHP was associated with the sediment phase.; 0% of DBP disappeared after 61 days; 65% after 365 d in amended leachate.
Results Mean Total Recovery and Results per Re-covery	Not reported; Not Reported

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 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 Conditions				

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Study Citation:	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5492430			
Domain	Metric	EVALUATION		Comments
	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	High	The metric is not applicable to the study type.
Domain 4: Test Organisms				
	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 Assessment				
	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/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 Presentation 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 Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination			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.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	5348332

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	no; primary biodegradation; experimental; other: river die-away
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	not reported; not reported
Oxygen and Inoculum	aerobic; natural water: freshwater: Rhine River water
Duration, Parameter, System, and Sampling Frequency	Not Reported; Not Reported: shake flasks; Not Reported
pH Adjusted and pH	Not Reported; Not Reported
Concentration	ca 1 ug/L
Composition and Test Temperature	Not Reported; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not Reported; Not Reported; Not Reported; Not Reported
Results Details Method, Results per Degradation Parameter, and	Not Reported; first-order rate constant; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	0.8/day; Not Reported; Not Reported; Not Reported
Results Remarks and Results Details	half-life 0.87 days; Not Reported
Results Mean Total Recovery and Results per Recovery	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 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 Conditions				

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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.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5348332			
		EVALUATION		
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 Organisms				
	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 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 Exposure	N/A	The metric is not applicable to the study type.
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 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 Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		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., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC 3Q:85-124.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5348332			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, EndPoint, Type, Guideline	no; primary biodegradation; experimental; other: similar to MITI			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR			
Blank and Control	not reported; not reported			
Oxygen and Inoculum	aerobic; other:: soil and sewage supernatant			
Duration, Parameter, System, and Sampling Frequency	Not Reported; Not Reported: Not Reported; Not Reported			
pH Adjusted and pH	Not Reported; Not Reported			
Concentration	Not Reported			
Composition and Test Temperature	Not Reported; Not Reported			
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not Reported; Not Reported; Not Reported; Not Reported			
Results Details Method, Results per Degradation Parameter, and	Not Reported; first-order rate constant; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	3.15/day; Not Reported; Not Reported; Not Reported			
Results Remarks and Results Details	half-life 0.22 days; Not Reported			
Results Mean Total Recovery and Results per Recovery	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 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 Conditions	Metric 5:	Test Method Suitability	Medium	The test method was not reported but may be available in the cited reference.
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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.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5348332			
Domain	Metric	EVALUATION		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.
	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 Exposure	N/A	The metric is not applicable to the study type.
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 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 Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	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 3Q:85-124.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	5348332

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	no; primary biodegradation; experimental; other: river die-away
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	not reported; not reported
Oxygen and Inoculum	aerobic; natural water / sediment: freshwater: Mississippi River water with and without sediment. Cell count in water alone 3.1×10^{10} – 11 L/cell/h; in water and high sediment 6.1×10^{10} – 13 L/cell/h
Duration, Parameter, System, and Sampling Frequency	Not Reported; Not Reported: Not Reported; Not Reported
pH Adjusted and pH	Not Reported; Not Reported
Concentration	1 - 2 mg/L
Composition and Test Temperature	Not Reported; Not Reported
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not Reported; Not Reported; Not Reported; Not Reported
Results Details Method, Results per Degradation Parameter, and	Not Reported; first-order rate constants; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	0.12/day (water); 0.14/day (water and low-sediment); 0.07/day (water and high sediment); Not Reported; Not Reported; Not Reported
Results Remarks and Results Details	half-life: 5.78 days (water); 4.95 days (water and low-sediment); 10.1 days (water and high sediment); calculated from second-order rates using graph.
Results Mean Total Recovery and Results per Recovery	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 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 Conditions				

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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.			
OECD Harmonized Template:	Biodegradation in Water			
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 Exposure	N/A	The metric is not applicable to the study type.
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 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 Results	Medium	The study results were reasonable.
	Metric 18:	QSAR 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 3Q:85-124.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5348332			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, EndPoint, Type, Guideline	no; biodegradation; experimental; other: anaerobic degradation in sewage sludge			
Solvent, Reactivity, Storage, 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: anaerobic sewage sludge			
Duration, Parameter, System, and Sampling Frequency	32 days; Not Reported: Not Reported; Not Reported			
pH Adjusted and pH	Not Reported; Not Reported			
Concentration	5 - 10 mg/L			
Composition and Test Temperature	Not Reported; Not Reported			
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not Reported; Not Reported; Not Reported; Not Reported			
Results Details Method, Results per Degradation Parameter, and	Not Reported; first-order rate constant; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	0.25/day; Not Reported; Not Reported; Not Reported			
Results Remarks and Results Details	half-life 2.7 days; Mean of determinations at three concentrations, 0.5, 1, and 10 mg/L.			
Results Mean Total Recovery and Results per Recovery	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 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	Medium	Controls were not reported but may be available in the cited reference.	
Metric 4:	Test Substance Stability	Medium	The substance stability was not reported but may be available in the cited reference.	
Domain 3: Test Conditions				
Metric 5:	Test Method Suitability	Medium	The test method was not reported but may be available in the cited reference.	
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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.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5348332			
Domain		Metric	EVALUATION 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	Medium	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.
	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	Medium	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	Medium	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 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 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 Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.

Overall Quality Determination**Low**

* 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.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1316257			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: non-guideline biodegradation study			
Solvent, Reactivity, Storage, Stability	NR; 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 Sampling Frequency	10 days; test mat.: flask; 0, 1, 3, 7 and 10 days			
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-ness, and Other Design	Not reported; river water; yes; Not applicable			
Results Details Method, Results per Degradation Parameter, and	GC-ECD; % degradation of test substance; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Re-sults Sample Time, and Results Reference Sub-stance Compartments	≥ 96% after 10 days at 20°C and minimal degradation at 4°C; Not reported; 10 days; Not reported			
Results Remarks and Results Details	Not applicable; Graph of data presented			
Results Mean Total Recovery and Results per Re-covery	Not applicable; 93% for suspended particulate matter and 97% from water			
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	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 Conditions				
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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.			
OECD Harmonized Template:	Biodegradation in Water			
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 reported 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 reported to determine were not likely to have had a substantial impact on the study results.
Domain 4: Test Organisms				
	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 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: Confounding/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 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 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.

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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.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	1316257

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

Overall Quality Determination**Medium**

* Related References: Cited in HSDB and ECHA

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.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	680132

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; ready biodegradability; Experimental; OECD Guideline 301 B (Ready Biodegradability: CO2 Evolution Test)
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; 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, and Sampling Frequency	28 days; CO2 evolution: Sturm test vessels; Regular intervals, starting after 30 minutes
pH Adjusted and pH	Not Reported; Not reported
Concentration	15 - mg organic carbon
Composition and Test Temperature	Not reported; Not reported
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; Not reported; Not Reported
Results Details Method, Results per Degradation Parameter, and	Carbon analyzer TOC 500; CO2 evolution; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	81%; 4; 28 days; 88%/28d, met 10-d window.
Results Remarks and Results 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±6%/4d, 56±3%/8d, 69±2%/13d, 73±3%/18d, 76±3%/22d, 81 ±4%/28d, 81 ±4%/29d
Results Mean Total Recovery and Results per Recovery	Not reported; Not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	Medium
			The test substance was identified definitively.
			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.

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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.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	680132			
Domain		Metric	EVALUATION 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 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 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 Organisms				
	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 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	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 Presentation and Analysis				
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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.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	680132			
		EVALUATION		
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 Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			High	

* Related References: Cited in HSDB

Study Citation:	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 Template:	Biodegradation in Water
HERO ID:	5490812

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Anaerobic biodegradation in diluted sludge
Solvent, Reactivity, Storage, Stability	Acetone; NR; NR; NR
Radiolabel, Source, State, Purity	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, and Sampling Frequency	70 days; test mat.: HPLC; Samples were taken on days 0, 7, 14, 21, 28, 42, and 70
pH Adjusted and pH	Not Reported; Not reported
Concentration	20 mg/L
Composition and Test Temperature	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, Continuous Darkness, and Other Design	Not reported; Oxygen purged with 10% CO2/90% N2 mixture; Not Reported; Not Reported
Results Details Method, Results per Degradation Parameter, and	Samples extracted with hexane; after phase separation samples were analyzed in GC-FID (Varian 3700) with a fused silica capillary column. Methane gas in the headspace was quantified in GC-FID (Perkin-Elmer 900). Net methane production was calculated based on controls. LOD for the PAE's was ca. 0.5 ppm.; DBP removal %; Not Reported
Direct Quantum Yield Results	>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 Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	
Results Remarks and Results Details	80% theoretical CH4 recovered.; Not Reported
Results Mean Total Recovery and Results per Recovery	Recoveries were consistently >100%, authors not this is likely due to excess initial additions.; 100%

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	Medium	The test substance purity was not reported but the omission is unlikely to have a substantial impact on the study results.
Domain 2: Test Design	Metric 3:	Study Controls	High	Sterilized controls were used.
	Metric 4:	Test Substance Stability	Medium	Some of the details regarding the test substance storage and preparation were not reported but the omissions are unlikely to have a substantial impact on the study results.

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Study Citation:	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 Template:	Biodegradation in Water			
HERO ID:	5490812			
Domain	Metric	EVALUATION		Comments
		Rating		
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 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 Organisms				
	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.
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	High	The sampling methods and frequency were described and were appropriate.
Domain 6: Confounding/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 Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	The data reporting was appropriate.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	No statistical analysis was presented but the omission is unlikely to have a substantial impact on the study results.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are plausible as compared to other reported values.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination			High	

* Related References: Cited in ECHA and HSDB

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
HERO ID:	2215626

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Anaerobic degradation in digester sludge
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Unamended bottles.; Not reported
Oxygen and Inoculum	anaerobic; anaerobic sludge: Jackson, MI; inflow of 6.8X10+7 L/day; 1.99% organic matter
Duration, Parameter, System, and Sampling Frequency	8 weeks; CH4 and CO2 evolution: digested sewage sludge diluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL of test chemical.; weekly
pH Adjusted and pH	Not Reported; 7
Concentration	Not Reported
Composition and Test Temperature	Revised anaerobic mineral medium (RAMM); ASTM medium; Supplemental medium; 35°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; 10% CO2/90% N2 headspace
Results Details Method, Results per Degradation Parameter, and	UniMeasure pressure transducer; % of theoretical gas production using RAMM; ASTM; Supplemental medium; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	101%; 128%; 89%; ±9.7%; ±3.9%; ±14.8%; Not reported; Not Reported
Results Remarks and Results Details	ASTM medium overpressures were a result of abiological fluxes of CO2 into the headspace from the buffer (30% CO2-HCO3- system).; Degradation is expressed as percentage of theoretical gas production based on the stoichiometry of mineralization to CH4 + CO2 and correcting for gas solubilities.
Results Mean Total Recovery and Results per Recovery	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 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	High A concurrent control was included.

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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			
HERO ID:	2215626			
		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 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				
	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 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.
	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.
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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
HERO ID:	2215626

Domain	Metric	EVALUATION Rating	Comments
Overall Quality Determination		High	

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

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
HERO ID:	2215626

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Anaerobic degradation in digester sludge
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Unamended bottles.; Not reported
Oxygen and Inoculum	anaerobic; anaerobic sludge: Holt, MI; 0.89% organic matter; average retention time 39 days
Duration, Parameter, System, and Sampling Frequency	8 weeks; CH ₄ and CO ₂ evolution: digested sewage sludge diluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL of test chemical.; weekly
pH Adjusted and pH	Not Reported; 7
Concentration	Not Reported
Composition and Test Temperature	Revised anaerobic mineral medium (RAMM); ASTM medium; Supplemental medium; 35°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; 10% CO ₂ /90% N ₂ headspace
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	UniMeasure pressure transducer; % of theoretical gas production using RAMM; ASTM; Supplemental medium; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	46%; 59%; 19%; ±3.2%; ±0%; ±5.4%; Not reported; Not Reported
Results Remarks and Results Details	ASTM medium overpressures were a result of abiological fluxes of CO ₂ into the headspace from the buffer (30% CO ₂ -HCO ₃ ⁻ system).; Degradation is expressed as percentage of theoretical gas production based on the stoichiometry of mineralization to CH ₄ + CO ₂ and correcting for gas solubilities.
Results Mean Total Recovery and Results per Recovery	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 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	High	A concurrent control was 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.

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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			
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				
	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 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.
	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 Quality Determination		High		

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

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
HERO ID:	2215626

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Anaerobic degradation in digester sludge
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Unamended bottles.; Not reported
Oxygen and Inoculum	anaerobic; anaerobic sludge: Ionia, MI; average retention time 17 days
Duration, Parameter, System, and Sampling Frequency	8 weeks; CH ₄ and CO ₂ evolution: digested sewage sludge diluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL of test chemical.; weekly
pH Adjusted and pH	Not Reported; 7
Concentration	Not Reported
Composition and Test Temperature	Revised anaerobic mineral medium (RAMM); ASTM medium; Supplemental medium; 35°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; 10% CO ₂ /90% N ₂ headspace
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	UniMeasure pressure transducer; % of theoretical gas production using RAMM; ASTM; Supplemental medium; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	72%; 117%; 77%; ±3.6%; ±4.7%; ±16.7%; Not reported; Not Reported
Results Remarks and Results Details	ASTM medium overpressures were a result of abiological fluxes of CO ₂ into the headspace from the buffer (30% CO ₂ -HCO ₃ ⁻ system).; Degradation is expressed as percentage of theoretical gas production based on the stoichiometry of mineralization to CH ₄ + CO ₂ and correcting for gas solubilities.
Results Mean Total Recovery and Results per Recovery	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 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	High	A concurrent control was 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.

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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			
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				
	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 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.
	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 Quality Determination			High	

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

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
HERO ID:	2215626

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Anaerobic degradation in digester sludge
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Unamended bottles.; Not reported
Oxygen and Inoculum	anaerobic; anaerobic sludge: Adrian, MI
Duration, Parameter, System, and Sampling Frequency	8 weeks; CH ₄ evolution: digested sewage sludge diluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL of test chemical.; Not reported
pH Adjusted and pH	Not Reported; 7
Concentration	50 µg C/mL
Composition and Test Temperature	phosphate buffer, KH ₂ PO ₄ and K ₂ HPO ₄ (adjusted to pH 7.0); mineral salts, NH ₄ Cl, CaCl ₂ ·2H ₂ O, MgCl ₂ ·6H ₂ O, and FeCl ₂ ·4H ₂ O; and trace metals, MnCl ₂ ·4H ₂ O, H ₃ BO ₃ , ZnCl ₂ , CuCl ₂ , NaMoO ₄ ·2H ₂ O, CoCl ₂ ·6H ₂ O, NiCl ₂ ·6H ₂ O, and Na ₂ SeO ₃ .; 35°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; 10% CO ₂ /90% N ₂ headspace
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	GC-FID; % of theoretical methane production; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	24%; Not reported; 8 weeks; Not Reported
Results Remarks and Results 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 Recovery	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 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	High	A concurrent control was 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.

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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			
HERO ID:	2215626			
Domain		EVALUATION		
	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				
	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 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.
	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 Quality Determination		High		

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

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
HERO ID:	2215626

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Anaerobic degradation in digester sludge
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Unamended bottles.; Not reported
Oxygen and Inoculum	anaerobic; anaerobic sludge: Jackson, MI; inflow of 6.8X10+7 L/day; 1.99% organic matter
Duration, Parameter, System, and Sampling Frequency	8 weeks; CH ₄ evolution: digested sewage sludge diluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL of test chemical.; Not reported
pH Adjusted and pH	Not Reported; 7
Concentration	50 µg C/mL
Composition and Test Temperature	phosphate buffer, KH ₂ PO ₄ and K ₂ HPO ₄ (adjusted to pH 7.0); mineral salts, NH ₄ Cl, CaCl ₂ .2H ₂ O, MgCl ₂ .6H ₂ O, and FeCl ₂ .4H ₂ O; and trace metals, MnCl ₂ .4H ₂ O, H ₃ BO ₃ , ZnCl ₂ , CuCl ₂ , NaMo ₄ .2H ₂ O, CoCl ₂ .6H ₂ O, NiCl ₂ .6H ₂ O, and Na ₂ SeO ₃ .; 35°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; 10% CO ₂ /90% N ₂ headspace
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	GC-FID; % of theoretical methane production; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	49%; Not reported; 8 weeks; Not Reported
Results Remarks and Results 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 Recovery	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 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	High	A concurrent control was 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.

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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			
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				
	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 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.
	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 Quality Determination			High	

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

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
HERO ID:	2215626

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Anaerobic degradation in digester sludge
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Unamended bottles.; Not reported
Oxygen and Inoculum	anaerobic; anaerobic sludge: Ann Arbor, MI
Duration, Parameter, System, and Sampling Frequency	8 weeks; CH ₄ evolution: digested sewage sludge diluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL of test chemical.; Not reported
pH Adjusted and pH	Not Reported; 7
Concentration	50 µg C/mL
Composition and Test Temperature	phosphate buffer, KH ₂ PO ₄ and K ₂ HPO ₄ (adjusted to pH 7.0); mineral salts, NH ₄ Cl, CaCl ₂ ·2H ₂ O, MgCl ₂ ·6H ₂ O, and FeCl ₂ ·4H ₂ O; and trace metals, MnCl ₂ ·4H ₂ O, H ₃ BO ₃ , ZnCl ₂ , CuCl ₂ , NaMoO ₄ ·2H ₂ O, CoCl ₂ ·6H ₂ O, NiCl ₂ ·6H ₂ O, and Na ₂ SeO ₃ .; 35°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; 10% CO ₂ /90% N ₂ headspace
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	GC-FID; % of theoretical methane production; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	91%; Not reported; 8 weeks; Not Reported
Results Remarks and Results 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 Recovery	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 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	High	A concurrent control was 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.

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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			
HERO ID:	2215626			
Domain		EVALUATION		
	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				
	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 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.
	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 Quality Determination		High		

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

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
HERO ID:	2215626

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Anaerobic degradation in digester sludge
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Unamended bottles.; Not reported
Oxygen and Inoculum	anaerobic; anaerobic sludge: St Johns, MI
Duration, Parameter, System, and Sampling Frequency	8 weeks; CH ₄ evolution: digested sewage sludge diluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL of test chemical.; Not reported
pH Adjusted and pH	Not Reported; 7
Concentration	50 µg C/mL
Composition and Test Temperature	phosphate buffer, KH ₂ PO ₄ and K ₂ HPO ₄ (adjusted to pH 7.0); mineral salts, NH ₄ Cl, CaCl ₂ ·2H ₂ O, MgCl ₂ ·6H ₂ O, and FeCl ₂ ·4H ₂ O; and trace metals, MnCl ₂ ·4H ₂ O, H ₃ BO ₃ , ZnCl ₂ , CuCl ₂ , NaMoO ₄ ·2H ₂ O, CoCl ₂ ·6H ₂ O, NiCl ₂ ·6H ₂ O, and Na ₂ SeO ₃ .; 35°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; 10% CO ₂ /90% N ₂ headspace
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	GC-FID; % of theoretical methane production; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	37%; Not reported; 8 weeks; Not Reported
Results Remarks and Results 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 Recovery	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 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	High	A concurrent control was 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.

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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			
HERO ID:	2215626			
Domain		EVALUATION		
	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				
	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 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.
	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 Quality Determination		High		

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

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
HERO ID:	2215626

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Anaerobic degradation in digester sludge
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Unamended bottles.; Not reported
Oxygen and Inoculum	anaerobic; anaerobic sludge: Ionia, MI; average retention time 17 days
Duration, Parameter, System, and Sampling Frequency	8 weeks; CH ₄ evolution: digested sewage sludge diluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL of test chemical.; Not reported
pH Adjusted and pH	Not Reported; 7
Concentration	50 µg C/mL
Composition and Test Temperature	phosphate buffer, KH ₂ PO ₄ and K ₂ HPO ₄ (adjusted to pH 7.0); mineral salts, NH ₄ Cl, CaCl ₂ ·2H ₂ O, MgCl ₂ ·6H ₂ O, and FeCl ₂ ·4H ₂ O; and trace metals, MnCl ₂ ·4H ₂ O, H ₃ BO ₃ , ZnCl ₂ , CuCl ₂ , NaMoO ₄ ·2H ₂ O, CoCl ₂ ·6H ₂ O, NiCl ₂ ·6H ₂ O, and Na ₂ SeO ₃ .; 35°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; 10% CO ₂ /90% N ₂ headspace
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	GC-FID; % of theoretical methane production; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	36%; Not reported; 8 weeks; Not Reported
Results Remarks and Results 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 Recovery	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 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	High	A concurrent control was 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.

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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			
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				
	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 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.
	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 Quality Determination			High	

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

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
HERO ID:	2215626

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Anaerobic degradation in digester sludge
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Unamended bottles.; Not reported
Oxygen and Inoculum	anaerobic; anaerobic sludge: Mason, MI
Duration, Parameter, System, and Sampling Frequency	8 weeks; CH ₄ evolution: digested sewage sludge diluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL of test chemical.; Not reported
pH Adjusted and pH	Not Reported; 7
Concentration	50 µg C/mL
Composition and Test Temperature	phosphate buffer, KH ₂ PO ₄ and K ₂ HPO ₄ (adjusted to pH 7.0); mineral salts, NH ₄ Cl, CaCl ₂ ·2H ₂ O, MgCl ₂ ·6H ₂ O, and FeCl ₂ ·4H ₂ O; and trace metals, MnCl ₂ ·4H ₂ O, H ₃ BO ₃ , ZnCl ₂ , CuCl ₂ , NaMoO ₄ ·2H ₂ O, CoCl ₂ ·6H ₂ O, NiCl ₂ ·6H ₂ O, and Na ₂ SeO ₃ .; 35°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; 10% CO ₂ /90% N ₂ headspace
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	GC-FID; % of theoretical methane production; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	0%; Not reported; 8 weeks; Not Reported
Results Remarks and Results 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 Recovery	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 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	High	A concurrent control was 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.

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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			
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				
	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 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.
	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 Quality Determination			High	

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

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
HERO ID:	2215626

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Anaerobic degradation in digester sludge
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Unamended bottles.; Not reported
Oxygen and Inoculum	anaerobic; anaerobic sludge: Chelsea, MI; Inflow 1.6X10+6 liters/day.
Duration, Parameter, System, and Sampling Frequency	8 weeks; CH ₄ evolution: digested sewage sludge diluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL of test chemical.; Not reported
pH Adjusted and pH	Not Reported; 7
Concentration	50 µg C/mL
Composition and Test Temperature	phosphate buffer, KH ₂ PO ₄ and K ₂ HPO ₄ (adjusted to pH 7.0); mineral salts, NH ₄ Cl, CaCl ₂ .2H ₂ O, MgCl ₂ .6H ₂ O, and FeCl ₂ .4H ₂ O; and trace metals, MnCl ₂ .4H ₂ O, H ₃ BO ₃ , ZnCl ₂ , CuCl ₂ , NaMo ₄ .2H ₂ O, CoCl ₂ .6H ₂ O, NiCl ₂ .6H ₂ O, and Na ₂ SeO ₃ .; 35°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; 10% CO ₂ /90% N ₂ headspace
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	GC-FID; % of theoretical methane production; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	0%; Not reported; 8 weeks; Not Reported
Results Remarks and Results 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 Recovery	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 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	High	A concurrent control was 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.

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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			
HERO ID:	2215626			
Domain		EVALUATION		
	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				
	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 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.
	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 Quality Determination		High		

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

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
HERO ID:	2215626

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Anaerobic degradation in digester sludge
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Unamended bottles.; Not reported
Oxygen and Inoculum	anaerobic; anaerobic sludge: Portland, MI
Duration, Parameter, System, and Sampling Frequency	8 weeks; CH ₄ evolution: digested sewage sludge diluted to 10% and incubated anaerobically in 160-ml serum bottles with 50 ug of C/mL of test chemical.; Not reported
pH Adjusted and pH	Not Reported; 7
Concentration	50 µg C/mL
Composition and Test Temperature	phosphate buffer, KH ₂ PO ₄ and K ₂ HPO ₄ (adjusted to pH 7.0); mineral salts, NH ₄ Cl, CaCl ₂ .2H ₂ O, MgCl ₂ .6H ₂ O, and FeCl ₂ .4H ₂ O; and trace metals, MnCl ₂ .4H ₂ O, H ₃ BO ₃ , ZnCl ₂ , CuCl ₂ , NaMoO ₄ .2H ₂ O, CoCl ₂ .6H ₂ O, NiCl ₂ .6H ₂ O, and Na ₂ SeO ₃ .; 35°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; 10% CO ₂ /90% N ₂ headspace
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	GC-FID; % of theoretical methane production; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	0%; Not reported; 8 weeks; Not Reported
Results Remarks and Results 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 Recovery	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 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	High	A concurrent control was 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.

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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			
HERO ID:	2215626			
Domain	Metric	EVALUATION		Comments
		Rating		
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				
	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 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.
	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 Quality Determination			High	

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

Study Citation:	SRC, (1983). Exhibit I shake flask biodegradation of 14 commercial phthalate esters.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	1316198

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; ready biodegradability; Experimental; other: Non-guideline shake flask carbon dioxide evolution biodegradation study
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; 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, and Sampling Frequency	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 Temperature	Mineral salts media; 22±2°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; aerated distilled water; yes; Test substance concentration was the equivalent to 4 mg carbon at the start of acclimation
Results Details Method, Results per Degradation Parameter, and	GC-FID; % primary biodegradation; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	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 Results Details	Primary biodegradation in 28 days; Degradation still occurring after 28 days for some study replicates (that were less than 99% on day 28)
Results Mean Total Recovery and Results per Recovery	91-104; Not applicable

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 source and purity of the test substance were not reported; however, the test substance 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 Conditions				

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Study Citation:	SRC, (1983). Exhibit I shake flask biodegradation of 14 commercial phthalate esters.			
OECD Harmonized Template:	Biodegradation in Water			
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 Organisms				
	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 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 approaches for the chemical and media being analyzed.
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 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 review article.
Domain 7: Data Presentation 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 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 Quality Determination		High		

Study Citation:	SRC, (1983). Exhibit I shake flask biodegradation of 14 commercial phthalate esters.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	1316198

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; Ultimate biodegradation; Experimental; other: Non-guideline shake flask carbon dioxide evolution biodegradation study
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; 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, and Sampling Frequency	28 days; CO2 evolution: flasks, darkened, shaken; Days 2, 6, 9, 14, 21, 28
pH Adjusted and pH	Not Reported; 7 ±0.2
Concentration	See other field
Composition and Test Temperature	Mineral salts media; 22±2°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; aerated distilled water; yes; Test substance concentration was the equivalent to 4 mg carbon at the start of acclimation
Results Details Method, Results per Degradation Parameter, and	GC-FID; % Theoretical CO2 evolution; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	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 Results Details	Primary biodegradation in 28 days; Degradation still occurring after 28 days for some study replicates (that were less than 99% on day 28)
Results Mean Total Recovery and Results per Recovery	91-104; Not applicable

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 source and purity of the test substance were not reported; however, the test substance 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 Conditions	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.

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Study Citation:	SRC, (1983). Exhibit I shake flask biodegradation of 14 commercial phthalate esters.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1316198			
Domain	Metric	EVALUATION		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 Organisms	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 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 approaches for the chemical and media being analyzed.
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 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 review article.
Domain 7: Data Presentation 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 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 Quality Determination			High	

Study Citation:	SRC, (1984). Activated sludge biodegradation of 12 commercial phthalate esters contract No. PE-17.0-ET-SRC.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	1316206

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; inherent biodegradability; Experimental; other: Non-guideline; 19 day die away test
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	blank and diethylene glycol control; Not reported
Oxygen and Inoculum	aerobic; activated sludge, adapted: mixed culture from a SCAS procedure
Duration, Parameter, System, and Sampling Frequency	19 days; test mat.: SCAS unit; 0, 1, 2, 3, 4, 5, 9, 12, 15 and 19 days
pH Adjusted and pH	Not Reported; Not reported
Concentration	1 - 3 mg/L
Composition and Test Temperature	Mineral nutrient solution; 23°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Aerated tap water; Not reported; Not applicable
Results Details Method, Results per Degradation Parameter, and	GC-ECD; half-life; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	<0.26 days; Not reported; 19 days; 69% DOC removal (average, range from 66 to 71%).
Results Remarks and Results Details	Not applicable; $k = > 2.7$ days ⁻¹
Results Mean Total Recovery and Results per Recovery	Not applicable; 99-103%

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 source and purity of the test substance were not reported; however, the test substance 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 Conditions				

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Study Citation:	SRC, (1984). Activated sludge biodegradation of 12 commercial phthalate esters contract No. PE-17.0-ET-SRC.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1316206			
		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 Organisms				
	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.
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 approaches for the chemical and media being analyzed.
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 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 review article.
Domain 7: Data Presentation 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 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 Quality Determination		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 Pollution Control Federation 53(10):1503-1518.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	9861

Parameter		EXTRACTION	
CASRN and Test Material	84-74-2; Dibutyl phthalate		
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Biodegradation in domestic wastewater, static-culture flask-screening		
Solvent, Reactivity, Storage, Stability	Absolute ethanol; NR; NR; NR		
Radiolabel, Source, State, Purity	NR; NR; NR; NR		
Blank and Control	Synthetic medium containing 5mg yeast extract; Not reported		
Oxygen and Inoculum	aerobic; sewage, domestic, non-adapted: Weekly "subcultures" involved adding fresh test samples to existing cultures to test for inoculum adaptation.		
Duration, Parameter, System, and Sampling Frequency	28 days; test mat.: Static-culture in Erlenmeyer flask.; Days 7, 14, 21, and 28		
pH Adjusted and pH	Not Reported; Not reported		
Concentration	5 - 10 mg/L		
Composition and Test Temperature	5mg/L yeast extract synthetic medium; 25°C		
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; Homogenous suspensions of the test substance in the chilled synthetic medium were prepared in a heavy duty blender for 2 minutes.		
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	GC and TOC determinations. GC LOD: 0.1 mg/L; Average loss of test substance after 7 days at 5 mg/L.; Not Reported		
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	100%; Not reported; 7 days; Not reported		
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 Recovery	62-149%; Not Reported		
		EVALUATION	
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	High	The test substance was identified using common nomenclature.
	Metric 2:	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:	High	Appropriate blanks were used without inoculum and without substrate.
	Metric 4:	High	The test substance preparation and storage conditions were reported and appropriate.

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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 Pollution Control Federation 53(10):1503-1518.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	9861			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Low	The test substance was tested above its aqueous solubility which may have had an impact 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 Organisms				
	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 Assessment				
	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/Variable Control				
	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 Presentation and Analysis				
	Metric 15:	Data Reporting	High	The data reporting was appropriate, percentage removal of the test substance was reported, 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 substantial impact on the study results.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination			High	

Study Citation:	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.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	789301			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; Not Reported			
Confidentiality, EndPoint, Type, Guideline	None; other; experimental; other			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, 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, System, and Sampling Frequency	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 Temperature	NaCl; MgSO4.7H2O; KCl; 30Â°C			
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; Not reported; Cultures were incubated with rotary shaking (200 rpm).			
Results Details Method, Results per Degradation Parameter, and	GC-ECD; Not Reported; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	Not Reported; Not reported; 1-2 hours after tipping the substrate; Not Reported			
Results Remarks and Results Details	O2 consumption (uL/h): 258 (DMP 1-1); 150 (DEP 4-1); 241 (DEHP 4-1).; Not Reported			
Results Mean Total Recovery and Results per Recovery	92% or better; 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	High	The source or purity of the test substance were reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	Uninformative	The study did not include control groups that consequently make the study unusable.
	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.
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Study Citation:	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.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	789301			
Domain		Metric	EVALUATION 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	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 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	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	
Domain 6: Confounding/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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	The target chemical 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 Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination**Uninformative**

Study Citation:	US Testing Co. Inc., (1991). Modified OECD test for ready biodegradability of CT-451-90 with cover letter dated 053091.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1332997			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; ready biodegradability; Experimental; OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)			
Solvent, Reactivity, Storage, Stability	Acetone; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; American Cyanamid Company; Mixture CT-451-90 containing dibutyl phthalate and dimethyl phthalate; NR			
Blank and Control	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 apparatus until testing.			
Duration, Parameter, System, and Sampling Frequency	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 Temperature	Not reported; 20±1°C			
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	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, Results per Degradation Parameter, and Direct Quantum Yield Results	Dissolved oxygen analysis.; % degradation: oxygen depletion (BOD, mg/L)/(conc. of test material (mg/L) x TOD); Not Reported			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	2mg of sample reached 100% biodegradation after 5 days. The calculation assumed 80% carbon content.; Not reported; Not reported; 98% biodegradation			
Results Remarks and Results 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 Recovery and Results per Recovery	Not reported; Not reported			
EVALUATION				
Domain	Metric	Rating	Comments	
Domain 1: Test Substance	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.

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Study Citation:	US Testing Co. Inc., (1991). Modified OECD test for ready biodegradability of CT-451-90 with cover letter dated 053091.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1332997			
Domain	Metric	EVALUATION		Comments
		Rating		
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				
	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 Assessment				
	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/Variable Control				
	Metric 13:	Confounding Variables	Medium	Replicate experiments were performed but standard deviations were not reported. However, 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 Presentation 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.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	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.
Overall Quality Determination			Low	

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 Template:	Biodegradation in Water
HERO ID:	5432807

Parameter		EXTRACTION	
CASRN and Test Material	84-74-2; DBP		
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: No guideline described		
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR		
Radiolabel, Source, State, Purity	NR; Sigma Company; NR; 99%		
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 Sampling Frequency	1 day; TOC: flasks, darkened, shaken; Not Reported		
pH Adjusted and pH	Not Reported; 7.8		
Concentration	500 µg/L		
Composition and Test Temperature	Not applicable; 25°C		
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; yes; yes; Range Point, Salinity: 18 g/L, TOC: 43.0(activated sediment) & 6.9(activated water) mg/L		
Results Details Method, Results per Degradation Parameter, and	GC-Ni63 ECD; Test substance; Not Reported		
Direct Quantum Yield Results			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	k ₁ =11.9E-4/H (sterile conditions); Not Reported; 16 days; Not Reported		
Results Remarks and Results Details	Over all first order rate constant: 11.9*10 ⁻⁴ 1/H First order rate constant: 9.9 * 10 ⁻⁴ 1/H; Not Reported		
Results Mean Total Recovery and Results per Recovery	discussed but not reported; Not reported		
EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	High	The test substance was identified by name.
	Metric 2:	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:	High	Appropriate blanks and controls were used.
	Metric 4:	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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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 Template:	Biodegradation in Water			
HERO ID:	5432807			
Domain	Metric	EVALUATION		Comments
		Rating		
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 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.
	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	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 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.
Overall Quality Determination			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 Template:	Biodegradation in Water		
HERO ID:	5432807		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	84-74-2; DBP		
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: No guideline described		
Solvent, Reactivity, Storage, Stability	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, adapted: water and sediment from LA, MS, and FL		
Duration, Parameter, System, and Sampling Frequency	2 days; TOC: flask, dark, shaken; Not Reported		
pH Adjusted and pH	Not Reported; 7.0		
Concentration	500 µg/L		
Composition and Test Temperature	Sand:6.4%, Silt:72.9%, Clay:20.7%; 25°C		
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; yes; yes; Tickfew(12/82), Salinity: 0g/L, TOC: 20.1(activated sediment) mg/L		
Results Details Method, Results per Degradation Parameter, and	GC-Ni63 ECD; Test substance; Not Reported		
Direct Quantum Yield Results			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	k1=22.7E-4 1/H (sterile conditions); Not Reported; 14 days; Not Reported		
Results Remarks and Results Details	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 and Results per Recovery	discussed but 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.
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			
Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
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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 Template:	Biodegradation in Water			
HERO ID:	5432807			
		EVALUATION		
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 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.
	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	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 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.
Overall Quality Determination		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 Template:	Biodegradation in Water		
HERO ID:	5432807		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	84-74-2; DBP		
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: No guideline described		
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR		
Radiolabel, Source, State, Purity	NR; Sigma Company; NR; 99%		
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 Sampling Frequency	Not Reported; TOC: flasks, darkened, shaken.; Not Reported		
pH Adjusted and pH	Not Reported; 8.0		
Concentration	500 µg/L		
Composition and Test Temperature	Sand: 45.0% ,Silt: 27.7% , Clay: 27.3%; 25°C		
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	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, Results per Degradation Parameter, and	GC-Ni63 ECD; Test substance; Not Reported		
Direct Quantum Yield Results			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	k1=4.9E-4 1/H (sterile conditions); Not Reported; 8 days; Not Reported		
Results Remarks and Results Details	Over all first order rate constant:4.9*10^-4 1/HFirst order rate constant: NA; Not Reported		
Results Mean Total Recovery and Results per Recovery	discussed but 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.
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			
Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
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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 Template:	Biodegradation in Water			
HERO ID:	5432807			
		EVALUATION		
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 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.
	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	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 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.
Overall Quality Determination		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 Template:	Biodegradation in Water
HERO ID:	5432807

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: No guideline reported
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Sigma Company; NR; 99%
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 Sampling Frequency	4 days; TOC: flasks, darkened, shaken; Not Reported
pH Adjusted and pH	Not Reported; 8.0
Concentration	500 µg/L
Composition and Test Temperature	Sand: 19.9% , Silt:floccuation , Clay: flocculation; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; yes; yes; Davis Bayou(10/82), Salinity: 21 g/L, TOC: 18.7(activated sediment) & 8.5(activated water) mg/L
Results Details Method, Results per Degradation Parameter, and	GC-Ni63 ECD; Test substance; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	k1=13.7E-4 1/H (sterile conditions); Not Reported; 10 days; Not Reported
Results Remarks and Results 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 Recovery and Results per Recovery	discussed but 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.
	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	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.

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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 Template:	Biodegradation in Water			
HERO ID:	5432807			
		EVALUATION		
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 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.
	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	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 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.
Overall Quality Determination		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 Template:	Biodegradation in Water
HERO ID:	5432807

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: No guideline described
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Sigma Company; NR; 99%
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 Sampling Frequency	Not Reported; TOC: flasks, darkened, shaken.; Not Reported
pH Adjusted and pH	Not Reported; 7.7
Concentration	500 µg/L
Composition and Test Temperature	Sand: NA, Silt: NA, Clay: NA; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; yes; yes; Horn Island(6/82), Salinity: 23 g/L, TOC: 15.4(activated sediment) & 21.7(activated water) mg/L
Results Details Method, Results per Degradation Parameter, and	GC-Ni63 ECD; Test substance; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	$k_1=6.6 \times 10^{-4} \text{ 1/H}$ (sterile conditions); Not Reported; 16 days; Not Reported
Results Remarks and Results Details	Over all first order rate constant: $6.6 \times 10^{-4} \text{ 1/H}$ First order rate constant: NA; Not Reported
Results Mean Total Recovery and Results per Recovery	discussed but 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.
	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	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.

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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 Template:	Biodegradation in Water			
HERO ID:	5432807			
		EVALUATION		
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 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.
	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	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 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.
Overall Quality Determination		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 Template:	Biodegradation in Water
HERO ID:	5432807

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: No guideline described
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Sigma Company; NR; 99%
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 Sampling Frequency	2.5 days; TOC: flasks, darkened, shaken;; Not Reported
pH Adjusted and pH	Not Reported; 8.0
Concentration	500 µg/L
Composition and Test Temperature	Sand: 11.5% , Silt:floccuation , Clay: flocculation; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	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, Results per Degradation Parameter, and	GC-Ni63 ECD; Test substance; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	k1=22.0*10 ⁻⁴ 1/H (sterile conditions); Not Reported; 16 days; Not Reported
Results Remarks and Results 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 Recovery and Results per Recovery	discussed but 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.
	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	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.

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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 Template:	Biodegradation in Water			
HERO ID:	5432807			
		EVALUATION		
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 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.
	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	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 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.
Overall Quality Determination		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 Template:	Biodegradation in Water
HERO ID:	5432807

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: No guideline described
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Sigma Company; NR; 99%
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 Sampling Frequency	1 day; TOC: flasks, darkened, shaken; Not Reported
pH Adjusted and pH	Not Reported; 7.1
Concentration	500 µg/L
Composition and Test Temperature	Sand: 18.8% , Silt: 70.1% , Clay: 11.1%; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; yes; yes; Tchoutacabouffa, Salinity: 1 g/L, TOC: 18.0(activated sediment) & 16.7(activated water) mg/L
Results Details Method, Results per Degradation Parameter, and	GC-Ni63 ECD; Test substance; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	k1=36.5*10 ⁻⁴ 1/H (sterile conditions); Not Reported; 16 days; Not Reported
Results Remarks and Results 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 Recovery and Results per Recovery	discussed but 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.
	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	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.

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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 Template:	Biodegradation in Water			
HERO ID:	5432807			
		EVALUATION		
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 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.
	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	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 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.
Overall Quality Determination		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 Template:	Biodegradation in Water
HERO ID:	5432807

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: No guideline reported
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Sigma Company; NR; 99%
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 Sampling Frequency	Not applicable; TOC: flasks, darkened, shaken; Not Reported
pH Adjusted and pH	Not Reported; 6.8
Concentration	500 µg/L
Composition and Test Temperature	Sand: 54.3% , Silt: 32.8% , Clay: 12.9%; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; yes; yes; Fort Bayou, Salinity: 0 g/L, TOC: 23.9(activated sediment) & 8.6(activated water) mg/L
Results Details Method, Results per Degradation Parameter, and	GC-Ni63 ECD; Test substance; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	k1=9.3E-4 /H (sterile conditions); Not Reported; 8 days; Not Reported
Results Remarks and Results Details	Over all first order rate constant: 9.3 *10 ⁻⁴ 1/HFirst order rate constant: NA; Not Reported
Results Mean Total Recovery and Results per Recovery	discussed but 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.
	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	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.

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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 Template:	Biodegradation in Water			
HERO ID:	5432807			
		EVALUATION		
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 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.
	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	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 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.
Overall Quality Determination		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 Template:	Biodegradation in Water
HERO ID:	5432807

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: no guideline indicated
Solvent, Reactivity, Storage, Stability	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 and sediment from LA, MS, and FL
Duration, Parameter, System, and Sampling Frequency	7 days; TOC: flasks, darkened, shaken; Not Reported
pH Adjusted and pH	Not Reported; 7.8
Concentration	500 µg/L
Composition and Test Temperature	Not applicable; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; yes; yes; Range Point, Salinity:18 g/L, TOC: 43.0(activated sediment) & 6.9(activated water) mg/L
Results Details Method, Results per Degradation Parameter, and	GC-Ni63 ECD; Test substance; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	ko=4.067 ug/LH; Not reported; 16 days; Not Reported
Results Remarks and Results Details	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: 21.3 *10 ⁻⁴ 1/HFirst order rate constant: 29.3 *10 ⁻⁴ 1/H; Not Reported
Results Mean Total Recovery and Results per Recovery	discussed but not reported; Not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	Medium
			The test substance was identified by name.
			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
	Metric 4:	Test Substance Stability	Medium
			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.
Domain 3: Test Conditions			

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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 Template:	Biodegradation in Water			
HERO ID:	5432807			
Domain		Metric	EVALUATION	
			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.
	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	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 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.
Overall Quality Determination			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 Template:	Biodegradation in Water
HERO ID:	5432807

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: no guideline indicated
Solvent, Reactivity, Storage, Stability	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 and sediment from LA, MS, and FL
Duration, Parameter, System, and Sampling Frequency	2 days; TOC: flasks, darkened, shaken; Not Reported
pH Adjusted and pH	Not Reported; 7.0
Concentration	500 µg/L
Composition and Test Temperature	Sand: 6.4% , Silt: 72.9% , Clay: 20.7%; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; yes; yes; Tickfew, Salinity: 0 g/L, TOC: 20.1(activated sediment) mg/L
Results Details Method, Results per Degradation Parameter, and	GC-Ni63 ECD; Test substance; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	ko=1.883 ug/LH; Not Reported; 14 days; Not Reported
Results Remarks and Results Details	SedimentOver all zero order rate constant: 1.883 ug/LHOver all first order rate constant:125.9 *10 ⁻⁴ 1/HWaterOver all first order rate constant 79.6*10 ⁻⁴ 1/HFirst order rate constant: 100.3 *10 ⁻⁴ 1/H; Not Reported
Results Mean Total Recovery and Results per Recovery	discussed but not reported; Not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	Medium
Domain 2: Test Design	Metric 3:	Study Controls	High
	Metric 4:	Test Substance Stability	Medium
Domain 3: Test Conditions			

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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 Template:	Biodegradation in Water			
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.
	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	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 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.
Overall Quality Determination		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 Template:	Biodegradation in Water
HERO ID:	5432807

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: no guideline indicated
Solvent, Reactivity, Storage, Stability	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 and sediment from LA, MS, and FL
Duration, Parameter, System, and Sampling Frequency	Not applicable; TOC: flasks, darkened, shaken; Not Reported
pH Adjusted and pH	Not Reported; 8.0
Concentration	500 µg/L
Composition and Test Temperature	Sand: 45.0% , Silt:27.7% , Clay:27.3%; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	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, Results per Degradation Parameter, and	GC-Ni63 ECD; Test substance; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	ko=1.997 ug/LH; Not Reported; 8 days; Not Reported
Results Remarks and Results 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 Recovery and Results per Recovery	discussed but not reported; Not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	Medium
Domain 2: Test Design	Metric 3:	Study Controls	High
	Metric 4:	Test Substance Stability	Medium
Domain 3: Test Conditions			

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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 Template:	Biodegradation in Water			
HERO ID:	5432807			
Domain		Metric	EVALUATION	
			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.
	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	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 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.
Overall Quality Determination			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 Template:	Biodegradation in Water
HERO ID:	5432807

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: no guideline indicated
Solvent, Reactivity, Storage, Stability	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 and sediment from LA, MS, and FL
Duration, Parameter, System, and Sampling Frequency	4 days; TOC: flasks, darkened, shaken; Not Reported
pH Adjusted and pH	Not Reported; 8.0
Concentration	500 µg/L
Composition and Test Temperature	Sand: 19.9%, Silt: Flocculation, Clay: Flocculation; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	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 per Degradation Parameter, and	GC-Ni63 ECD; Test substance; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	ko=3.913 ug/LH; Not Reported; 10 days; Not Reported
Results Remarks and Results Details	SedimentOver all zero order rate constant: 3.913 ug/LHOver all first order rate constant:184.1*10 ⁻⁴ 1/HWaterOver all first order rate constant: 72.7*10 ⁻⁴ 1/HFirst order rate constant: 159.9*10 ⁻⁴ 1/H; Not Reported
Results Mean Total Recovery and Results per Recovery	discussed but not reported; Not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	Medium
			The test substance was identified by name.
			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
	Metric 4:	Test Substance Stability	Medium
			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.
Domain 3: Test Conditions			

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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 Template:	Biodegradation in Water			
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.
	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	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 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.
Overall Quality Determination		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 Template:	Biodegradation in Water
HERO ID:	5432807

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: no guideline indicated
Solvent, Reactivity, Storage, Stability	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 and sediment from LA, MS, and FL
Duration, Parameter, System, and Sampling Frequency	1.5 days; TOC: flasks, darkened, shaken; Not Reported
pH Adjusted and pH	Not Reported; 7.7
Concentration	500 µg/L
Composition and Test Temperature	Not applicable; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	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, Results per Degradation Parameter, and	GC-Ni63 ECD; Test substance; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	ko=4.646ug/LH; Not Reported; 16 days; Not Reported
Results Remarks and Results 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/HFirst order rate constant: 213.3*10 ⁻⁴ 1/H; Not Reported
Results Mean Total Recovery and Results per Recovery	discussed but not reported; Not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	Medium
Domain 2: Test Design	Metric 3:	Study Controls	High
	Metric 4:	Test Substance Stability	Medium
Domain 3: Test Conditions			

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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 Template:	Biodegradation in Water			
HERO ID:	5432807			
Domain		Metric	EVALUATION	
			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.
	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	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 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.
Overall Quality Determination			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 Template:	Biodegradation in Water
HERO ID:	5432807

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: no guideline indicated
Solvent, Reactivity, Storage, Stability	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 and sediment from LA, MS, and FL
Duration, Parameter, System, and Sampling Frequency	2.5 days; TOC: flasks, darkened, shaken; Not Reported
pH Adjusted and pH	Not Reported; 8.0
Concentration	500 µg/L
Composition and Test Temperature	Sand: 11.5% Silt: Flocculation, Clay: Flocculation; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; yes; yes; Horn Island (9/82) , Salinity: 27 g/l, TOC:32.9(activated sludge) 9.4(activated water) mg/l
Results Details Method, Results per Degradation Parameter, and	GC-Ni63 ECD; Test substance; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	ko=1.822ug/LH; Not Reported; 14 days; Not Reported
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 Recovery and Results per Recovery	discussed but not reported; Not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	Medium
Domain 2: Test Design	Metric 3:	Study Controls	High
	Metric 4:	Test Substance Stability	Medium
Domain 3: Test Conditions			

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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 Template:	Biodegradation in Water			
HERO ID:	5432807			
Domain		Metric	EVALUATION	
			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.
	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	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 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.
Overall Quality Determination			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 Template:	Biodegradation in Water
HERO ID:	5432807

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: no guideline indicated
Solvent, Reactivity, Storage, Stability	NR; 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.
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 Sampling Frequency	5.3 days; TOC: flasks, darkened, shaken; Not Reported
pH Adjusted and pH	Not Reported; 7.1
Concentration	500 µg/L
Composition and Test Temperature	Sand: 18.8% , Silt: 70.1% , Clay: 11.1; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; yes; yes; Tchoutacabouffa , Salinity: 1 g/l, TOC: 18.0(activated sludge) 16.7(activated water) mg/l
Results Details Method, Results per Degradation Parameter, and	GC-Ni63 ECD; Test substance; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	ko=2.042ug/LH; Not Reported; 16 days; Not Reported
Results Remarks and Results 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/HFirst order rate constant: 236.2*10 ⁻⁴ 1/H; Not Reported
Results Mean Total Recovery and Results per Recovery	discussed but not reported; Not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	Medium
			The test substance was identified by name.
			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
	Metric 4:	Test Substance Stability	Medium
			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.
Domain 3: Test Conditions			

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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 Template:	Biodegradation in Water			
HERO ID:	5432807			
Domain		Metric	EVALUATION	
			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.
	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	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 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.
Overall Quality Determination			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 Template:	Biodegradation in Water
HERO ID:	5432807

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: no guideline reported
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Sigma Company; NR; 99%
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 Sampling Frequency	7 days; TOC: flasks, darkened, shaken; Not Reported
pH Adjusted and pH	Not Reported; 6.8
Concentration	500 µg/L
Composition and Test Temperature	Sand: 54.3% Silt: 27.7% , Clay: 27.3%; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; yes; yes; Fort Bayou, Salinity: 0 g/l, TOC: 23.9(activated sludge) 8.6 (activated water) mg/l
Results Details Method, Results per Degradation Parameter, and	GC-Ni63 ECD; Test substance; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	ko=2.584 ug/LH; Not Reported; 8 days; Not Reported
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 Recovery and Results per Recovery	discussed but not reported; Not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	Medium
Domain 2: Test Design	Metric 3:	Study Controls	High
	Metric 4:	Test Substance Stability	Medium
Domain 3: Test Conditions			

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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 Template:	Biodegradation in Water			
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.
	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	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 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.
Overall Quality Determination		High		

Study Citation:	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 Template:	Biodegradation in Water
HERO ID:	1332857

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Anaerobic biodegradation with WWTP mixed digested sludge
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	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; CH ₄ 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 Temperature	WWTP sludge; 37°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not applicable; Not reported; Not Reported
Results Details Method, Results per Degradation Parameter, and	GC-FID of test substance and methane production; half-life change in test chemical concentration. Percent theoretical methane production also reported.; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	>90% loss of test chemical; not reported; daily; Not reported
Results Remarks and Results 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 (r ² 0.971). Percent theoretical methane production 75%; rate constant=0.0216 h ⁻¹
Results Mean Total Recovery and Results per Recovery	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 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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Study Citation:	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 Template:	Biodegradation in Water			
HERO ID:	1332857			
		EVALUATION		
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 Organisms				
	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 Assessment				
	Metric 11:	Test Substance Identity	High	The method is suitable for biodegradation assessment.
	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 Presentation 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 Results	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.
Overall Quality Determination		High		

* Related References: Cited in HSDB

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.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	5495580

EXTRACTION	
Parameter	Data
CASRN and Test Material	Not Reported; di-n-butyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; experimental; other: Non-guideline: Degradation using acclimated activated sludge
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, 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.
Duration, Parameter, System, and Sampling Frequency	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 Temperature	Basic mineral medium with 0.01-0.5 g/L DBP; tap water; 25C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	not reported; not reported; not reported; DBP concentrations of 50, 100, 150, and 200 mg/L used,
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	GC with FID; MDL = 1 ng; Half-life; loss of test material (DBP concentration); not reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	ca. 50%; not reported; ca. 50 hours; DBP degradation in tap water alone was minimal.
Results Remarks and Results 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 Recovery and Results per Recovery	not reported; not reported

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

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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.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	5495580			
Domain	Metric	EVALUATION		Comments
		Rating		
	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	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 Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	The inoculum source was reported; only acclimated sludge was evaluated.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study.
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	Limited detail regarding sampling methods.
Domain 6: Confounding/Variable Control				
	Metric 13:	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 Exposure	N/A	The metric is not applicable to this study.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Extraction efficiency, percent recovery, or mass balance were not reported, but not likely to impact the results.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Calculations were clearly described.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study.
Overall Quality Determination		High		

Study Citation:	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 67(5):863-871.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1333093			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutylphthalate			
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Biodegradation in the presence and absence of a sorptive biomass incapable of biodegrading the test substance			
Solvent, Reactivity, Storage, Stability	toluene; NR; NR; NR			
Radiolabel, Source, State, 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 sludge with no other details			
Duration, Parameter, System, and Sampling Frequency	37 hours; CO2 evolution: batch reactors with or without biomass incapable of degrading test substance; 1-2 hour intervals			
pH Adjusted and pH	Not Reported; Not reported			
Concentration	not explicitly stated			
Composition and Test Temperature	Mineral salts solution; Not reported			
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; Not reported; Not Reported			
Results Details Method, Results per Degradation Parameter, and	Liquid scintillation counting of 14CO2; 14CO2 production and 14C-DBP removal; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	almost complete biodegradation by 22 hours in all trials; ± 2%; 37 hours; Not reported			
Results Remarks and Results Details	Biodegradation rate was influenced by test substance concentration and presence of carrier; Data shown in figure 2			
Results Mean Total Recovery and Results per Recovery	14C balance; >90% recovery			
EVALUATION				
Domain	Metric	Rating	Comments	
Domain 1: Test Substance	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	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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Study Citation:	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 67(5):863-871.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1333093			
Domain	Metric	EVALUATION		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 Organisms				
	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 Assessment				
	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 Presentation 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 Results	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.
Overall Quality Determination		Uninformative		

Study Citation:	Ye, C., Wang, H., Lei, Z. (1997). Interfacial effects of suspended particles on biodegradation of N-(2,4-dimethyl phenyl)-N'-methylformamidine hydrochloride and dibutyl phthalate in waters. Journal of Environmental Sciences 9(2):226-231.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	1333184

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Biodegradation in water
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; 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 Temperature	22.5g MgSO4.7H2O, 0.25g FeCl36H2O and 27.5g CaCl2 in 1L distilled water; 20±1°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Stirred water; yes; Not applicable
Results Details Method, Results per Degradation Parameter, and	HPLC and UV detector at 254 nm; biodegradation rates; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	k=0.053-0.178 at 0-500 mg/L CSS; Not reported; approximately 12 days; Not reported
Results Remarks and Results Details	Not applicable; k=0.053-0.178 at 0- 500 mg/L CSS
Results Mean Total Recovery and Results per Recovery	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	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.

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Study Citation:	Ye, C., Wang, H., Lei, Z. (1997). Interfacial effects of suspended particles on biodegradation of N-(2,4-dimethyl phenyl)-N'-methylformamidine hydrochloride and dibutyl phthalate in waters. Journal of Environmental Sciences 9(2):226-231.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1333184			
Domain	Metric	EVALUATION		Comments
		Rating		
	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	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 Organisms				
	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 Assessment				
	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: 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 Presentation 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 Results	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.
Overall Quality Determination		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 Template:	Biodegradation in Water
HERO ID:	1249569

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Non-guideline screening test
Solvent, Reactivity, Storage, Stability	NR; 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, and Sampling Frequency	10 days; test mat.: bioreactor; approx. every 2 days
pH Adjusted and pH	Not Reported; 7
Concentration	50 - 250 mg/kg
Composition and Test Temperature	microbial culture medium; 30°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	NR for sludge, just soil samples; bioreactor aerated with stone diffusers at the bottom of the reactor with 12-gauge galvanized wire; yes; Not applicable
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	GC-ECD; test substance, DBP; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	> 99% removal; Not reported; Not reported; Not applicable
Results Remarks and Results 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 Recovery and Results per Recovery	96%; Not applicable

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	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				

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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 Template:	Biodegradation in Water			
HERO ID:	1249569			
Domain		Metric	EVALUATION 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 Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The test inoculum source was reported and the test inoculum 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 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:	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 Presentation 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 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 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 Quality Determination			High	

Study Citation:	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.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	1316130

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Non-guideline batch anaerobic digestion study
Solvent, Reactivity, Storage, Stability	NR; 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 Sampling Frequency	32 days; test mat.: Sealed jars kept stationary in a water bath at 37°C; 0, 1, 2, 4, 8, 16 and 32 days
pH Adjusted and pH	Not Reported; Not reported
Concentration	0.5 - 10 mg/L
Composition and Test Temperature	50 mg/L sodium acetate, 25 mg/L sodium propionate and 25 mg/L sodium sulphide; 37°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not applicable; Not reported; Not reported
Results Details Method, Results per Degradation Parameter, and	GC-ECD; 63 Ni-ECD; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	t1/2=65 hours; Not reported; 32 days; Not reported
Results Remarks and Results Details	Not applicable; k1=10.6E-3 h-1 at S0=10 mg/L
Results Mean Total Recovery and Results per Recovery	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 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 Conditions				

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Study Citation:	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.			
OECD Harmonized Template:	Biodegradation in Water			
HERO ID:	1316130			
		EVALUATION		
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 retrievable from the referenced primary source.
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	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/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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Percent recovery and pH were not reported, but was unlikely to have a substantial impact 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.
Overall Quality Determination		High		

* Related References: Cited in HSDB and ECHA

Study Citation:	Alatraste-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.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	679194

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Anaerobic digestion of wastewater sludge
Solvent, Reactivity, Storage, Stability	NR; 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 Sampling Frequency	190 days, data reported for last 12 weeks; test mat.; bench-scale digesters; Not reported
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Not reported; Sludge; Feeding sludge and digester sludge; Not reported; Not reported; Not reported
Control Dark, Control, and Blank Concentration	Not reported; Not reported; Not reported
Analytical Method, Analytical Details, and Results Per Degredation Parameter	212.7 mg/L -
Results Remarks	Biogas: Gas chromatograph with thermal conductivity detector; Test material: gas chromatography with flame-ionization detection; Operated at 85°C, He flow 30 mL/min; Operated at 150 - 275°C, He flow 1.2 mL/min; 9 Biodegradation based on biogas evolution (CH ₄ /CO ₂). Average removal efficiency reported over 12 week period. Average influent: 212.7±49.6 mg/L Average effluent: 2.9±4.5 mg/L
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported; ± 3.4%; Not reported; Not reported
Results Details	Not Reported
Mean Total Recovery Results and Results Per Recovery	Not reported; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	96.9%; 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 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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Study Citation:	Alatrisme-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.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	679194			
Domain		Metric	EVALUATION	
			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 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 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 Organisms				
	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 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 and no notable uncertainties or limitations were expected to influence results.
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 Exposure	N/A	The metric is not applicable to this study type.
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 Kinetic Calculations	High	Statistical methods were clearly described and address the dataset(s).
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	N/A	The metric is not applicable to this study type.

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Study Citation:	Alatrisme-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.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	679194

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

Overall Quality Determination	High
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Study Citation:	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	5676112			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, Type, Guideline	Not Reported; biodegradability; experimental; Not Reported			
Solvent, Reactivity, Storage, Stability	Not Reported; Not Reported; Not Reported; Not Reported			
Radiolabel, Source, State, 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, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Not Reported; Not Reported; Not Reported; Not Reported; Not Reported; Not Reported			
Control Dark, Control, and Blank Concentration	Not Reported; Not Reported; Not Reported 500 µg/L			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Not Reported; Not Reported; Not 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 Results and Results Per Recovery	Not Reported; Not Reported			
Results Value, Direct Quantum Yield Results, and Transformation Products	Not Reported; 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	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.
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Study Citation:	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	5676112			
Domain	Metric	EVALUATION		Comments
		Rating		
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 Exposure	N/A	The metric is not applicable to the study.
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 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.
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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
Overall Quality 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:	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	5676112			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, Type, Guideline	Not Reported; biodegradability; experimental; Not Reported			
Solvent, Reactivity, Storage, Stability	Not Reported; Not Reported; Not Reported; Not Reported			
Radiolabel, Source, State, Purity	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 discharge point			
Duration, Parameter, System, and Sampling Frequency	Not Reported; CO2 evolution; Not Reported; Not Reported			
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Not Reported; Not Reported; Not Reported; Not Reported; Not Reported; Not Reported			
Control Dark, Control, and Blank Concentration	Not Reported; Not Reported; Not Reported 25.6 µg/L			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Not Reported; Not Reported; CO2 evolution			
Results Remarks	Not Reported			
Halfife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not Reported; Not Reported; Not Reported; Not Reported			
Results Details	Not Reported			
Mean Total Recovery Results and Results Per Recovery	Not Reported; Not Reported			
Results Value, Direct Quantum Yield Results, and Transformation Products	71-75%/14 days (in one soil, sample taken from discharge point, degradation was = 2.2%); Not Reported; Not Reported			
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	Metric 3: Metric 4:	Study Controls Test Substance Stability	Medium Medium	Limited detail reported in this secondary source; additional detail may be in source cited. Limited detail reported in this secondary source; additional detail may be in source cited.
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Study Citation:	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	5676112			
Domain	Metric	EVALUATION		Comments
		Rating		
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 Exposure	N/A	The metric is not applicable to the study.
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 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 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., 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 Template:	Biodegradation in Sediment
HERO ID:	1322110

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Removal efficiencies of on-site biological wastewater treatment plants used to treat effluent from two paper mills.
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; 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, and Sampling Frequency	Samples collected for four months; test mat.; Plant A used aerobic biological treatment; plant B used combined aerobic/anaerobic biological treatment.; 60 samples from each location over four months (120 total)
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Samples were refrigerated and transported directly to the laboratory for analysis.; Not reported; Not reported; Not reported; Not reported; Plant A: influent: 7.6-8.2; effluent: 7.0-7.4; Plant B: influent: 7.3-8.1; effluent: 7.0-7.4
Control Dark, Control, and Blank Concentration	Not Reported; Not reported; Not reported Not Reported
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-MS; Agilent 7890 GC-MS in splitless mode, 1µL injection. Concentrations calculated using calibration curves of standards.; 7
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
Half-life, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported; (Estimated from table) Plant A:±8%; Plant B:±2%; Not reported; Not reported
Results Details	Not reported
Mean Total Recovery Results and Results Per Recovery	Not reported; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	Plant A removal %: 73; Plant B removal %: 88; Not Reported; Not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	High
The test substance was identified using common nomenclature. 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.			

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Study Citation:	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 Template:	Biodegradation in Sediment			
HERO ID:	1322110			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	High	Test substance preparation and storage conditions 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	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.
Domain 4: Test Organisms				
	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 Assessment				
	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 unlikely to impact the study results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Uncertainty was accounted for in the measurements and 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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Percent recoveries were not reported but their omission is unlikely to have a substantial impact on the study results.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were not reported but their omission is unlikely to have a substantial impact on 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 the study type.
Overall Quality Determination		High		

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 Template:	Biodegradation in Sediment			
HERO ID:	679311			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-72-2; dibutyl phthalate			
Confidentiality, EndPoint, Type, Guideline	no; other; experimental; other: stability concentrations in pore-water			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	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, and Sampling Frequency	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 approximately 8 rpm.; periodically			
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	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 Blank Concentration	Not Reported; not applicable; not applicable			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	HPLC; Not Reported; test mat.			
Results Remarks	Not Reported			
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	2.0 days at 50 mg/kg; 59.7 days at 500 mg/kg; not calculated at 5000 mg/kg (equilibrium not reached); correlation (r)=-0.964 at 50 mg/kg; -0.080 at 500 mg/kg; not applicable; Not Reported			
Results Details	Not Reported			
Mean Total Recovery Results and Results Per Recovery	not reported; not reported			
Results Value, Direct Quantum Yield Results, and Transformation Products	Not Reported; 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.
	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	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.
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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 Template:	Biodegradation in Sediment			
HERO ID:	679311			
Domain	Metric	EVALUATION 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 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				
	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 Assessment				
	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/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.
	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	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.
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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 Template:	Biodegradation in Sediment			
HERO ID:	679311			
Domain		Metric	EVALUATION Rating	Comments
	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				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			Uninformative	

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 Template:	Biodegradation in Sediment			
HERO ID:	679311			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-72-2; dibutyl phthalate			
Confidentiality, EndPoint, Type, Guideline	no; other; experimental; other: stability concentrations in pore-water			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	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, and Sampling Frequency	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 approximately 8 rpm.; periodically			
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	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 reported			
Control Dark, Control, and Blank	Not Reported; not applicable; not applicable			
Concentration	100 - 10,000 mg/kg			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	HPLC; Not Reported; test mat.			
Results Remarks	Not Reported			
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	not calculable due to rapid loss at 100 mg/kg; 4.5 days at 1000 mg/kg; 89 days at 10,000 mg/kg; correlation (r)=-0.989 at 1000 mg/kg; -0.616 at 10,000 mg/kg; not applicable; Not Reported			
Results Details	Not Reported			
Mean Total Recovery Results and Results Per Recovery	not reported; not reported			
Results Value, Direct Quantum Yield Results, and Transformation Products	Not Reported; 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.
	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	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.
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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 Template:	Biodegradation in Sediment			
HERO ID:	679311			
Domain	Metric	EVALUATION 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				
	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 Assessment				
	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/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.
	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	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				

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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 Template:	Biodegradation in Sediment				
HERO ID:	679311				
EVALUATION					
Domain		Metric	Rating	Comments	
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.	
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.	
Overall Quality Determination			Uninformative		

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 Template:	Biodegradation in Sediment			
HERO ID:	679311			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-72-2; dibutyl phthalate			
Confidentiality, EndPoint, Type, Guideline	no; other; experimental; other: stability concentrations in pore-water			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR			
Oxygen and Inoculum	not specified; natural sediment: natural sediment from Pequaywan Lake (St. Louis County, Minnesota, USA)			
Duration, Parameter, System, and Sampling Frequency	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 approximately 8 rpm.; periodically			
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	1, 3 and 6 days; sediments/pore water; 14.1% TOC; 5.69% sand; 18.2% silt; 4.35% coarse clay; 71.7% fine clay; deionized water; not reported; not reported			
Control Dark, Control, and Blank Concentration	Not Reported; not applicable; not applicable			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	HPLC; Not Reported; test mat.			
Results Remarks	Not Reported			
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	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 25,000 mg/kg; not applicable; Not Reported			
Results Details	Not Reported			
Mean Total Recovery Results and Results Per Recovery	not reported; not reported			
Results Value, Direct Quantum Yield Results, and Transformation Products	Not Reported; 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.
	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	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.
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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 Template:	Biodegradation in Sediment			
HERO ID:	679311			
Domain	Metric	EVALUATION 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				
	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 Assessment				
	Metric 11:	Test Substance Identity	Uninformative	The assessment methodology did not address or report the outcome fate data of interest. 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.
	Metric 12:	Test Substance Purity	Medium	
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.
	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	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				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.

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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 Template:	Biodegradation in Sediment
HERO ID:	679311

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

Overall Quality Determination	Uninformative
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Study Citation:	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 Template:	Biodegradation in Sediment
HERO ID:	679331

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Anaerobic degradation
Solvent, Reactivity, Storage, Stability	Acetone; NR; NR; NR
Radiolabel, Source, State, 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	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;
Compartment, Water	Not reported; Not reported; Initial pH=7.0; range over 84 days=6.7-7.3
Compartment, CEC, and pH	
Control Dark, Control, and Blank	yes; Not reported; Autoclaved at 121 C for 1h, three times.
Concentration	Not Reported
Analytical Method, Analytical Details, and Results Per Degredation Parameter	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.
Half-life, 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 $S = S_0 \cdot (-k_1 t)$, where S is the substrate conc., S_0 is the initial conc., t is time, and k_1 is the biodegradation constant.
Mean Total Recovery Results and Results Per Recovery	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	$k = 0.074/\text{day}$ - inoculated control; 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 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.

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Study Citation:	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 Template:	Biodegradation in Sediment			
HERO ID:	679331			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	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 Organisms				
	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 Assessment				
	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/Variable Control				
	Metric 13: Confounding Variables	High		No confounding variables between study groups were noted.
	Metric 14: Health Outcomes Unrelated to Exposure	N/A		This metric is not applicable to the study type.
Domain 7: Data Presentation 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				
	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.
Overall Quality Determination		High		

Study Citation:	Chang, B. V., Wang, T. H., Yuan, S. Y. (2007). Biodegradation of four phthalate esters in sludge. Chemosphere 69(7):1116-1123.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	675049

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Non-guideline aerobic degradation in sludge
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Chem Services, West Chester, PA; NR; 99%
Oxygen and Inoculum	aerobic; sewage, industrial, adapted: Not reported
Duration, Parameter, System, and Sampling Frequency	Not reported; test mat.; Bioreactor; Not reported
Results Sample Time, Compartment, Sludge Compartment, Water	Not reported; Not reported; Not reported; Not reported; Not reported; 7.0
Compartment, CEC, and pH	
Control Dark, Control, and Blank Concentration	Not reported; Not reported; Sterile controls autoclaved at 121 C for 20 min. Not Reported
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-ECD (Hewlett-Packard 5890); on limit: 1.0 ug/L; 7
Results Remarks	Not reported
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	1.8 days; < 10%; Not reported; Not reported
Results Details	Not Reported
Mean Total Recovery Results and Results Per Recovery	Not Reported; 95.5%
Results Value, Direct Quantum Yield Results, and Transformation Products	k=0.379; Not Reported; Not Reported

EVALUATION				
Domain		Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High	The test substance was identified using established nomenclature and structure.
	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 utilized.
	Metric 4:	Test Substance Stability	High	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.

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Study Citation:	Chang, B. V., Wang, T. H., Yuan, S. Y. (2007). Biodegradation of four phthalate esters in sludge. Chemosphere 69(7):1116-1123.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	675049			
		EVALUATION		
Domain	Metric	Rating	Comments	
	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.
Domain 4: Test Organisms				
	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 Assessment				
	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: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Variance between samples was accounted for and did not influence the outcome.
	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	High	The percent recovery and degradation products were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis was performed using ANOVA.
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.
Overall Quality Determination		High		

* Related References: Cited in HSDB

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.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	1333126			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Biotransformation in subsurface microcosms			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, 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, and Sampling Frequency	153 days; test mat.; glove-box (anaerobic) glove-box amended with O2 (aerobic); not reported			
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	not reported; not reported; not reported; not reported; not reported; not reported			
Control Dark, Control, and Blank Concentration	Not Reported; not reported; included 5 mg/L			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	FID-GC; MDL 50 µg/L; 7			
Results Remarks	not reported			
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	not reported; see results; sterile controls; biotransformation rate=0.04±0 nmoles DBP/g sediment/day (aerobic sterile control); DPB transformed after 26 and 153 days=2.9±2.2 3nmoles DBP/g sediment and 6.1±2.2 nmoles DBP/g sediment (anaerobic sterile control)			
Results Details	biotransformation rate=0.57 µg DBP/g sediment/day, 2.05±0.90 nmoles DBP/g sediment/day (aerobic)			
Mean Total Recovery Results and Results Per Recovery	not reported; not reported			
Results Value, Direct Quantum Yield Results, and Transformation Products	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.
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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.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	1333126			
Domain		Metric	EVALUATION 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	Testing conditions were reported and appropriate for the method. Soil and water characteristics were limited.
	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	High	The system type and design were appropriate.
Domain 4: Test Organisms				
	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 Assessment				
	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.
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 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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	The target chemical 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	Limited detail regarding calculations.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

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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.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	1333126

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		Medium	

* Related References: Cited in HSDB

Study Citation:	Ejlertsson, J., Johansson, E., Karlsson, A., Meyerson, U., Svensson, B. H. (1996). Anaerobic degradation of xenobiotics by organisms from municipal solid waste under landfilling conditions. <i>Antonie van Leeuwenhoek</i> 69(1):67-74.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	1315944

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: municipal solid waste anaerobic microflora
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; MERCK; NR; NR
Oxygen and Inoculum	anaerobic; anaerobic microorganisms
Duration, Parameter, System, and Sampling Frequency	100 days; test mat.; Experimental bottles (118 ml); every 10 days
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	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
Control Dark, Control, and Blank Concentration	Not reported; Not reported; Yes, check for methane production from waste material in the inoculum 50 mgC/L
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC for methane and GC-MS for test substance detection; Not Reported; 1
Results Remarks	DBP completely hydrolyzed to monobutyl phthalate
Half-life, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	100% degradation at 100 days; Not reported; Not reported; Not reported
Results Details	Not reported
Mean Total Recovery Results and Results Per Recovery	Not reported; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	19%; Not Reported; monobutyl phthalate, methane and carbon dioxide

EVALUATION				
Domain	Metric		Rating	Comments
Domain 1: Test Substance	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				

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Study Citation:		Ejlertsson, J., Johansson, E., Karlsson, A., Meyerson, U., Svensson, B. H. (1996). Anaerobic degradation of xenobiotics by organisms from municipal solid waste under landfilling conditions. <i>Antonie van Leeuwenhoek</i> 69(1):67-74.		
OECD Harmonized Template:		Biodegradation in Sediment		
HERO ID:		1315944		
		EVALUATION		
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 Organisms				
	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 Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed 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 accepted methods for the chemical and media being analyzed.
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 Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation 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 Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

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 Template:	Biodegradation in Sediment
HERO ID:	679552

Parameter		EXTRACTION	
CASRN and Test Material	84-74-2; DBP		
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: anerobic biodegradation in batch kinetic experiment		
Solvent, Reactivity, Storage, Stability	Ethanol; NR; NR; NR		
Radiolabel, Source, State, Purity	NR; NR; NR; NR		
Oxygen and Inoculum	anaerobic; activated sludge, domestic, non-adapted: Primary sludge from Lundofte municipal wastewater treatment plant in Lyngby, Denmark, and 30 mL BA medium		
Duration, Parameter, System, and Sampling Frequency	14 d; test mat.; 58 mL serum vials; Not reported		
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Not reported; Not reported; Not Reported; Not Reported; Not reported; 6.9		
Control Dark, Control, and Blank Concentration	Not reported; Not reported; Not reported		
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Not Reported		
Results Remarks	gas chromatography with mass selective detector; Test material extracted with dichloromethane; Not Reported		
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not Reported		
Results Details	5.1 d; Not reported; Not reported; Not reported		
Mean Total Recovery Results and Results Per Recovery	Batch kinetic experiments Kinetic constant (K _h): 13.69E-2±1.78E-2 /dayR ² : 0.97		
Results Value, Direct Quantum Yield Results, and Transformation Products	Not reported; Not reported		
	Not reported; Not Reported; Not reported		
		EVALUATION	
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	High	The test substance was identified definitively.
	Metric 2:	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:	High	A concurrent negative control, or blank group, were included.
	Metric 4:	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 of sludge. Chemosphere 52(4):673-682.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	679552			
Domain	Metric	EVALUATION		Comments
		Rating		
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	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 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) 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 (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 Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation 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 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	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

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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 of sludge. Chemosphere 52(4):673-682.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	679552

Domain	Metric	EVALUATION Rating	Comments
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Overall Quality Determination	High
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* Related References: Cited in HSDB

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 Template:	Biodegradation in Sediment			
HERO ID:	679552			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: anerobic biodegradation in batch kinetic experiment			
Solvent, Reactivity, Storage, Stability	Ethanol; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR			
Oxygen and Inoculum	anaerobic; activated sludge, domestic, adapted: Primary sludge from Lundofte municipal wastewater treatment plant in Lyngby, Denmark, and 30 mL BA medium			
Duration, Parameter, System, and Sampling Frequency	14 d; test mat.; 58 mL serum vials; Not reported			
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Not reported; Not reported; Not Reported; Not Reported; Not reported; 6.9			
Control Dark, Control, and Blank Concentration	Not reported; Not reported; Not reported			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	gas chromatography with mass selective detector; Test material extracted with dichloromethane; Not Reported			
Results Remarks	Not Reported			
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	6.2 d; Not reported; Not reported; Not reported			
Results Details	Batch kinetic experiments Kinetic constant (K_h): 11.18E-2±1.24E-2 /dayR^2: 0.99			
Mean Total Recovery Results and Results Per Recovery	Not reported; Not reported			
Results Value, Direct Quantum Yield Results, and Transformation Products	Not reported; 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 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				
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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 of sludge. Chemosphere 52(4):673-682.		
OECD Harmonized Template:		Biodegradation in Sediment		
HERO ID:		679552		
		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.
	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 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) 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 (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 Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation 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 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	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination**High**

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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 of sludge. Chemosphere 52(4):673-682.		
OECD Harmonized Template:	Biodegradation in Sediment		
HERO ID:	679552		
		EVALUATION	
Domain	Metric	Rating	Comments

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 Template:	Biodegradation in Sediment
HERO ID:	679640

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	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, Purity	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, diluted to a slurry of 6% TS (w/w)
Duration, Parameter, System, and Sampling Frequency	490 d; test mat.; continuous stirred tank reactor; Not reported
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Not reported; water and sediment; influent sediment; influent and effluent liquid; Not reported; Not reported
Control Dark, Control, and Blank Concentration	Not reported; Not reported; Not reported
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-MS; DBP extracted with dichloromethane, detection limit 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
Half-life, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported; Not reported; Not reported; Not reported
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 Recovery	Not reported; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	74.0% / 443-490d; Not Reported; Not applicable

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	High	The test substance was identified definitively.
	Metric 2:	High	The test substance was identified by GC-MS.
Domain 2: Test Design			

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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 Template:	Biodegradation in Sediment			
HERO ID:	679640			
EVALUATION				
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 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 (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.
	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) 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 (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 Exposure	N/A	The metric is not applicable to this study type.
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 Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset(s).

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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 Template:		Biodegradation in Sediment			
HERO ID:		679640			
Domain		Metric	EVALUATION		Comments
Domain 8: Other			Rating		
	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 Quality Determination			High		

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 Template:	Biodegradation in Sediment			
HERO ID:	679640			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, EndPoint, Type, Guideline	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, Purity	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 Sampling Frequency	442 d; test mat.; continuous stirred tank reactor; Not reported			
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Not reported; water and sediment; influent sediment; influent and effluent liquid; Not reported; Not reported			
Control Dark, Control, and Blank Concentration	Not reported; Not reported; Not reported			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	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			
Halfife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported; Not reported; Not reported; Not reported			
Results Details	141-339 d: Kh=0.0652 / d340-442 d: Kh=0.1632 / d			
Mean Total Recovery Results and Results Per Recovery	Not reported; Not reported			
Results Value, Direct Quantum Yield Results, and Transformation Products	69.9% / 340-442d; Not Reported; Not applicable			
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	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 Conditions				
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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 Template:	Biodegradation in Sediment			
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.
	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) 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 (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 Exposure	N/A	The metric is not applicable to this study type.
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 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	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
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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 Template:	Biodegradation in Sediment
HERO ID:	679640

Domain	Metric	EVALUATION Rating	Comments
Overall Quality 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 treatment process. <i>Bioresource Technology</i> 101(20):7767–7772.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	1323136

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Laboratory scale waste water treatment
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	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 150-300µg/L, ammonium nitrate, potassium dihydrogen phosphate (COD:N:P=100:7:1) was used.
Duration, Parameter, System, and Sampling Frequency	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 hours); test mat.; Influent entered an anaerobic reactor, followed by an anoxic reactor then an oxic reactor, before reaching the settling tank.; Influent, effluent, and liquors in each reactor tank when sampled daily.
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	1 L samples were collected, timing not specified.; Not reported; Sludge taken from sewage treatment plant in Guangzhou.; DNBP concentrations tested were 150, 170, 180, 240, 260 and 300µg/L; Not reported; Samples were acidified to pH 3 with 3% sulfuric acid.
Control Dark, Control, and Blank Concentration	Not Reported; Not reported; Not reported
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-MS in electron impact (EI) and selective ion monitoring modes (SIM); Chemical organic demand, mixed liquor suspended solid, total nitrogen, 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 HRT and 15d SRT which achieve 72.66% DnBP degradation by activated sludge, 2.44% effluent discharge, 24.44% accumulation in system and 0.5% in waste sludge.
Half-life, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported; Not reported; Not reported; Not reported
Results Details	Removal kinetics in 1) anaerobic reactor: $Y=16.178x+0.0268$ ($R^2=0.9925$); 2) anoxic reactor: $Y=17.089x+0.0178$ ($R^2=0.9760$); 3) oxic reactor: $Y=16.256x+0.151$ ($R^2=0.9872$)
Mean Total Recovery Results and Results Per Recovery	Not reported; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	Influent/effluent removal (%) with HRT of 12, 18, 24, and 30 hours: 95.8, 97.4, 97.7, and 96.0, respectively. Removal with SRT of 10, 15, 20, and 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	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 substantial impact on the study results.

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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 treatment process. <i>Bioresource Technology</i> 101(20):7767–7772.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	1323136			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	No blank controls were included.
	Metric 4:	Test 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 Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable and the target chemical was tested below its aqueous solubility.
	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 Organisms				
	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 Assessment				
	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 Presentation and Analysis				
	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				
	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 the study type.

Overall Quality Determination**High**

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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 treatment process. Bioresource Technology 101(20):7767–7772.		
OECD Harmonized Template:	Biodegradation in Sediment		
HERO ID:	1323136		
		EVALUATION	
Domain	Metric	Rating	Comments

Study Citation:	Jianlong, W., Ping, L., Yi, Q. (1996). Biodegradation of phthalic acid esters by acclimated activated sludge. Environment International 22(6):737-741.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	2743049			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Degradation of DBP in activated sludge			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, 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	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).			
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	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 7H2O, CaCL2: 0.1g/L; FeCl3: 0.01g/L; Not reported; Not reported; Not reported; Not reported			
Control Dark, Control, and Blank Concentration	Not Reported; Not reported; Not reported ≥ 10 - ≤ 100 mg/L			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Gas chromatography-flame ionization detection (Hewlett Packard); Not reported; 7			
Results Remarks	Not reported			
Halfife, 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 Recovery	Not reported; Not reported			
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 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	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 omissions are unlikely to have a substantial impact on the study results.
Domain 3: Test Conditions				
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Study Citation:	Jianlong, W., Ping, L., Yi, Q. (1996). Biodegradation of phthalic acid esters by acclimated activated sludge. Environment International 22(6):737-741.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	2743049			
Domain	Metric	EVALUATION 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 evaluated.
	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	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 Assessment				
	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: Confounding/Variable Control				
	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 Presentation and Analysis				
	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 Quality Determination		Medium		

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 Template:	Biodegradation in Sediment
HERO ID:	1325551

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Aerobic biodegradation study in sediment
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	Carbonyl-14C labeled di-n-butyl phthalate, 1.53 mCi/mM; Mallinckrodt Chemical Co., St Louis, Mo.; NR; >99%
Oxygen and Inoculum	aerobic; natural water / sediment: freshwater: Little Dixie Lake, an agricultural watershed 16 km east of Columbia, Missouri. Sediment collected from the littoral zone.
Duration, Parameter, System, and Sampling Frequency	14 days; 14CO ₂ evolved; sealed flask, incubated; semi-weekly
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	14 days; sediment and water; Little Dixie Lake sediment, pre-exposed to test substance for 28 days; Little Dixie Lake water; Not reported; Not reported
Control Dark, Control, and Blank Concentration	yes; Not applicable; Peptone and glucose controls, untreated and carrier-solvent treated sediments 82 ug/L
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Beckman LS-230 liquid scintillation counter; Not Reported; 2
Results Remarks	primary biodegradation
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported; ± 2.1; Not reported; Not reported
Results Details	Not reported
Mean Total Recovery Results and Results Per Recovery	Not applicable; Not applicable
Results Value, Direct Quantum Yield Results, and Transformation Products	84.6% in 14 days; 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 chemical name.
	Metric 2:	Test Substance Purity	High	The test substance purity, radiolabel location 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.

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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 Template:	Biodegradation in Sediment			
HERO ID:	1325551			
Domain	Metric	EVALUATION		Comments
		Rating		
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.
	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 Exposure	N/A		The metric is not applicable to this study type.
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 Kinetic Calculations	Medium		Some calculation details were not reported but their omission was 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.
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-acid esters in freshwater sediments. Environmental Pollution Series B: Chemical and Physical 8(2):101-118.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	679999

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Biodegradation in Freshwater Sediments under static (aerobic) and flow through conditions (aerobic)
Solvent, Reactivity, Storage, Stability	Acetone; NR; NR; NR
Radiolabel, Source, State, 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, and Sampling Frequency	28 days; radiochem. meas.; Erlenmeyer flask (static) or reaction beaker (flow-through) sealed with rubber stopper; periodically
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	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, Control, and Blank Concentration	yes; Not reported; controls consisted of untreated sediments and solvent (acetone) treated sediments
Analytical Method, Analytical Details, and Results Per Degredation Parameter	0.082 - 82 µg/L
Results Remarks	liquid scintillation counter; Not reported; 6
Half-life, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	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
Results Details	Not reported; ± SD; Not reported; Not reported
Mean Total Recovery Results and Results Per Recovery	Not reported
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 not appear to distinguish between the aerobic static and flow-through 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 Substance	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.

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Study Citation:	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 Template:	Biodegradation in Sediment			
HERO ID:	679999			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Medium	The test methods were suitable.
	Metric 6:	Testing Conditions	High	Testing conditions were reported.
	Metric 7:	Testing Consistency	High	Testing conditions were consistent.
	Metric 8:	System Type and Design	High	The system type and design were appropriate.
Domain 4: Test Organisms				
	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 Assessment				
	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/Variable Control				
	Metric 13:	Confounding Variables	Low	Abiotic loss was not accounted for or discussed.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	Limited analytical detail; mass balance and recovery not reported; clear results based on flow-through and static conditions not apparent. Primary degradation was reported; ultimate degradation was not clear.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	Limited data reporting and lack of appropriate controls are serious flaws.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		Low		

* Related References: Cited in ECHA

Study Citation:	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 Template:	Biodegradation in Sediment
HERO ID:	679999

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, EndPoint, Type, Guideline	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, Purity	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, and Sampling Frequency	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 Compartment, CEC, and pH	Not reported; Not reported; Not reported; Not reported; Not reported; 7.6±0.4
Control Dark, Control, and Blank Concentration	yes; Not reported; Not reported 82 µg/L
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Static and flow-through respirometers were used with Liquid Scintillation counting; Beckman LS-230 LSC; 6
Results Remarks	After 7 days at 5, 12, 22, and 28°C, 16, 56, 73, and 86% biodegradation of DBP occurred.
Half-life, 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 Recovery	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

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 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				

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Study Citation:	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 Template:	Biodegradation in Sediment			
HERO ID:	679999			
		EVALUATION		
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 Organisms				
	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 Assessment				
	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/Variable Control				
	Metric 13:	Confounding Variables	High	Uncertainty was reported and unlikely to impact the outcome assessment.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	The analytical method was suitable for the detection of the test substance.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	A statistical analysis was not reported but the omission is unlikely to have a substantial impact on the study results.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		High		

Study Citation:	Johnson, B. T., Lulves, W. (1975). Biodegradation of di-n-butyl phthalate and di-2-ethylhexyl phthalate in freshwater hydrosol. Journal of the Fisheries Research Board of Canada 32(3):333-340.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	1333192

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Biodegradation of DBP by hydrosol taken from pond.
Solvent, Reactivity, Storage, Stability	Acetone; NR; NR; NR
Radiolabel, Source, State, Purity	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: Hydrosol was collected using a core sampler at a 1m pond depth. The sampler collected a 5cm deep sample.
Duration, Parameter, System, and Sampling Frequency	30 days; CO ₂ evolution; Flask contained 10g wet weight sediment and 20mL pond water and were dosed with 100µL of acetone containing 14-C DBP. Aerobic and anaerobic incubation was performed.; Days 1, 5, 7, 14, and 30
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Not reported; Sediment and pond water in same compartment.; Not reported; Not reported; Not reported; Not reported
Control Dark, Control, and Blank Concentration	no; 250mg/L sodium azide was added to some samples.; Acetone control and autoclaved (15lb pressure and 121°C for 20 min) samples. 1 mg/L
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Thin layer chromatography - autoradiography; Ether extract spotted on 0.2mm precoated silica gel TLC plate (Brinkman, EM Reagents). Quantification was done by scraping silica gel into a scintillation vial and counting with a fluorescent indicator.; 7
Results Remarks	Sterile (autoclaved and NaN ₃ dosed) controls had 100% recovery of DBP after 30 days.
Half-life, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported; Not reported; Not reported; Not reported
Results Details	Aerobic biodegradation occurred much faster than anaerobic.
Mean Total Recovery Results and Results Per Recovery	85±5%; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	% recovery of radioactivity from hydrosol (vs. control) under aerobic conditions after 1, 5, 7, 14, and 30 days, respectively: 95, 3, 5, 8, 3. Anaerobic (same days): 100, 69, 59, 39, 2.; Not Reported; n-butyl phthalate and phthalic acid were the only identifiable transformation products using TLC standards. 3 unidentifiable spots were also seen.

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 purity was >99%.
Domain 2: Test Design	Metric 3: Study Controls	High	Appropriate controls were used in the study.

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Study Citation:	Johnson, B. T., Lulves, W. (1975). Biodegradation of di-n-butyl phthalate and di-2-ethylhexyl phthalate in freshwater hydrosol. Journal of the Fisheries Research Board of Canada 32(3):333-340.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	1333192			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	High	The test substance preparation was 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	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 Organisms				
	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 Assessment				
	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 appropriate.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Uncertainty in the measurements was reported and reported values were adjusted appropriately.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	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				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.

Overall Quality Determination**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 Template:	Biodegradation in Sediment
HERO ID:	681974

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Anaerobic biodegradation in river sediment
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	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 Sampling Frequency	30 d; test mat.; Centrifuge tube; Every 5 days
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	1, 5, 10, 15, 20, 25, and 30 d; Solid phase; native freshwater sediment; distilled water; 15.3 cmol / kg; 7.8
Control Dark, Control, and Blank Concentration	Not Reported; Not reported; Included Not Reported
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Gas chromatography-mass spectroscopy; MDL 0.39 mg/kg; 7
Results Remarks	24% / 30d in unsterilized sediment sample, 3% / 30 d in sterilized sediment, representing abiotic transformation
Half-life, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported; Not reported; Not applicable; Not Reported
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 Recovery	97.3±6.7%; Not Reported
Results Value, Direct Quantum Yield Results, and Transformation Products	24%; Not Reported; Not applicable

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	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				

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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 Template:	Biodegradation in Sediment			
HERO ID:	681974			
		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 Exposure	N/A	The metric is not applicable to this study type.
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 Kinetic Calculations	High	Statistical methods were appropriate for the datasets.
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.
Overall Quality Determination		High		

Study Citation:	Kickham, P., Otton, S. V., Moore, M. M., Ikononou, 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.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	1339546

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; ready biodegradability; Experimental; other: Biodegradation of DnBP in marine sediment.
Solvent, Reactivity, Storage, Stability	Acetonitrile (Spectro grade distilled); NR; NR; NR
Radiolabel, Source, State, Purity	NR; Sigma-Aldrich; NR; NR
Oxygen and Inoculum	aerobic; natural water / sediment: freshwater: 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	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.
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Not reported; 30g spiked sediment and 10mL of water; Not reported; Not reported; Not reported; 8.0±0.1
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.
Concentration	10 µg/g
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Low resolution gas chromatography-mass spectrometry; Monoesters were analyzed using liquid chromatography electrospray-ionization mass spectrometry.; 7
Results Remarks	Not Reported
Half-life, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	t(1/2), days: 46; 0.015; Not reported; Not reported
Results Details	Concentration decreased during first 21 days; no significant decline was observed afterward. Sterilized controls showed no microbial activity.
Mean Total Recovery Results and Results Per Recovery	86±8%; 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 Substance	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 substantial impact on the study results.
Domain 2: Test Design	Metric 3:	Study Controls	High	Sterilized controls and method blanks were both used.

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Study Citation:	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.			
OECD Harmonized Template:	Biodegradation in Sediment			
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 Conditions				
	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 Organisms				
	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 Assessment				
	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/Variable Control				
	Metric 13:	Confounding Variables	High	Uncertainty was reported and does not 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 Presentation and Analysis				
	Metric 15:	Data Reporting	High	The analytical method was appropriate and sensitive enough to monitor the target chemical concentration and the extraction efficiency was reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The kinetic calculations and statistical methods were appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The results are reasonable and consistent with those obtained for other similar chemicals in the study.
	Metric 18:	QSAR 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. <i>Journal of Environmental Sciences</i> 18(4):793-796.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	675274

Parameter		EXTRACTION	
CASRN and Test Material	84-74-2; Dibutyl Phthalate		
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Non-guideline anaerobic biodegradation in natural sediment microcosms		
Solvent, Reactivity, Storage, Stability	Acetone; NR; NR; NR		
Radiolabel, Source, State, 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 K ₂ HPO ₄ , 272 mg KH ₂ PO ₄ , 530 mg NH ₄ Cl, 10 mg MgCl ₂ 6H ₂ O, 75 mg CaCl ₂ , 20 mg FeCl ₂ 4H ₂ O, 1.2 g NaHCO ₃ , 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; Not reported; 7.2		
Control Dark, Control, and Blank Concentration	yes; Not reported; Not reported		
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Not Reported		
Results Remarks	High Performance Liquid Chromatography; CCPE solvent delivery pump with PX-8010 solvent controller and UV-8010 spectrophotometric detector. TSK ODS 80-TM; 7		
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported		
Results Details	1.6 days; Not reported; Not reported; Not reported		
Mean Total Recovery Results and Results Per Recovery	Half lives calculated using $t(1/2)=\ln 2/k$		
Results Value, Direct Quantum Yield Results, and Transformation Products	Not reported; Not reported		
	Not reported; Not Reported; Not reported		
		EVALUATION	
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	High
			The test substance was identified using common nomenclature.
			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 substantial impact on the study results.
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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 Template:	Biodegradation in Sediment			
HERO ID:	675274			
Domain	Metric	EVALUATION		Comments
		Rating		
	Metric 4:	Test Substance Stability	High	The test substance storage conditions and preparation methods were reported and suitable.
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.
	Metric 8:	System Type and Design	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				
	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 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 Exposure	N/A	The metric is not applicable to this study type.
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 Kinetic Calculations	High	Kinetic calculations were reported and addressed 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 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. Journal of Environmental Sciences 18(4):793-796.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	675274

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl Phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Non-guideline anaerobic biodegradation in natural sediment microcosms
Solvent, Reactivity, Storage, Stability	Acetone; NR; NR; NR
Radiolabel, Source, State, Purity	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 K ₂ HPO ₄ , 272 mg KH ₂ PO ₄ , 530 mg NH ₄ Cl, 10 mg MgCl ₂ 6H ₂ O, 75 mg CaCl ₂ , 20 mg FeCl ₂ 4H ₂ O, 1.2 g NaHCO ₃ , 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; Not reported; 7.2
Control Dark, Control, and Blank	yes; Not reported; Not reported
Concentration	Not Reported
Analytical Method, Analytical Details, and Results 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 $t(1/2)=\ln 2/k$
Mean Total Recovery Results and Results Per Recovery	Not reported; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	Not reported; Not Reported; Not reported

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	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 substantial impact on the study results.
	Metric 4:	Test Substance Stability	High	The test substance storage conditions and preparation methods were reported and suitable.

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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 Template:	Biodegradation in Sediment			
HERO ID:	675274			
Domain	Metric	EVALUATION		Comments
		Rating		
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.
	Metric 8: System Type and Design	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				
	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 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 Exposure	N/A		The metric is not applicable to this study type.
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 Kinetic Calculations	High		Kinetic calculations were reported and addressed 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 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. Journal of Environmental Sciences 18(4):793-796.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	675274

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl Phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Non-guideline anaerobic biodegradation in natural sediment microcosms
Solvent, Reactivity, Storage, Stability	Acetone; NR; NR; NR
Radiolabel, Source, State, 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 K ₂ HPO ₄ , 272 mg KH ₂ PO ₄ , 530 mg NH ₄ Cl, 10 mg MgCl ₂ 6H ₂ O, 75 mg CaCl ₂ , 20 mg FeCl ₂ 4H ₂ O, 1.2 g NaHCO ₃ , 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; Not reported; 7.2
Control Dark, Control, and Blank Concentration	yes; Not reported; Not reported Not Reported
Analytical Method, Analytical Details, and Results 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	1.5 days; Not reported; Not reported; Not reported
Results Details	Half lives calculated using $t(1/2)=\ln 2/k$
Mean Total Recovery Results and Results Per Recovery	Not reported; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	Not reported; Not Reported; Not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	High
Domain 2: Test Design	Metric 3:	Study Controls	Medium
	Metric 4:	Test Substance Stability	High

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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 Template:	Biodegradation in Sediment			
HERO ID:	675274			
Domain	Metric	EVALUATION		Comments
		Rating		
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.
	Metric 8: System Type and Design	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				
	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 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 Exposure	N/A		The metric is not applicable to this study type.
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 Kinetic Calculations	High		Kinetic calculations were reported and addressed 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 study type.
Overall Quality Determination		High		

Study Citation:	Li, Y., Gao, J., Meng, F., Chi, J. (2015). Enhanced biodegradation of phthalate acid esters in marine sediments by benthic diatom <i>Cylindrotheca closterium</i> . Science of the Total Environment 508:251-257.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	2804033

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, Stability	acetone; NR; NR; NR
Radiolabel, Source, State, Purity	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, and Sampling Frequency	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;
Compartment, CEC, and pH	Not reported; 7.9
Control Dark, Control, and Blank Concentration	no; Not reported; sterilized controls included; elimination rate constants were much smaller than those in unsterilized tests 6.25±0.38 ug/L
Analytical Method, Analytical Details, and Results 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.
Half-life, 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 Results Per Recovery	Not reported; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	Not reported; 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 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:	Li, Y., Gao, J., Meng, F., Chi, J. (2015). Enhanced biodegradation of phthalate acid esters in marine sediments by benthic diatom <i>Cylindrotheca closterium</i> . Science of the Total Environment 508:251-257.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	2804033			
		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	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.
	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 Exposure	N/A	The metric is not applicable to this study type.
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 Kinetic Calculations	Medium	Some calculation details were not reported but their omission was 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.
Overall Quality Determination		High		

Study Citation:	Michigan State University, (1981). Final report to battelle columbus laboratories and EPA-OTS, subcontract no. T-6419 (7197)-033, 100179 - 093081.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	1316233

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; ready biodegradability; Experimental; other: Biodegradation of phthalic acid in anaerobic sludge from two STPs.
Solvent, Reactivity, Storage, Stability	Acetone; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Oxygen and Inoculum	anaerobic; activated sludge, adapted: Secondary anaerobic sewage sludge from two plants with significant industrial input.
Duration, Parameter, System, and Sampling Frequency	4 weeks for 10% sludge experiments; 9 weeks for whole sludge.; CH4 evolution; Digester bottles with 10% sludge were incubated for 4 weeks with 20 ppm of the test substance. Whole sludge experiments had incubations of 9-10 weeks.; Not reported
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Not reported; Not reported; Not reported; Not reported; Not reported; 7
Control Dark, Control, and Blank Concentration	Not Reported; Controls were used.; Not reported 20 ppm
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-FID with 2m Tenax-SC column.; Biodegradation was measured as CH4 evolution in 10% sludge and parent compound disappearance in whole 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 Substance Results, and Reference Substance Compartment Results	Not reported; Not reported; Not reported; Not reported
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 Results and Results Per Recovery	Adrian sludge: 102%; Jackson sludge: 97%; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	% Degradation after 4 weeks in Adrian sludge: 32; Jackson sludge: 85.; Not Reported; Not Reported

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	Medium	The test substance purity was not 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 blanks were used to measure background levels and correct concentration measurements.

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Study Citation:	Michigan State University, (1981). Final report to battelle columbus laboratories and EPA-OTS, subcontract no. T-6419 (7197)-033, 100179 - 093081.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	1316233			
Domain		Metric	EVALUATION Rating	Comments
	Metric 4:	Test Substance Stability	Medium	Some details regarding the test substance preparation were not reported but the omissions are unlikely to have an impact on the study results.
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 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 Organisms				
	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 Assessment				
	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: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	Uncertainty was not reported in the results 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 Presentation 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 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are plausible.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination

High

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

Study Citation:	O'Connor, O. A., Rivera, M. D., Young, L. Y. (1989). Toxicity and biodegradation of phthalic acid esters under methanogenic conditions. Environmental Toxicology and Chemistry 8(7):569-576.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	1316118

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; inherent biodegradability; Experimental; other: Biochemical methane potential assessed by a modified Hungate technique
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Fluka; NR; >99%
Oxygen and Inoculum	anaerobic; activated sludge, domestic (adaptation not specified): Secondary sludge from Suffern Municipal Wastewater Treatment Facility and mineral medium
Duration, Parameter, System, and Sampling Frequency	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 Concentration	yes; Toxicity test conducted; Yes 20 - 200 mg/L
Analytical Method, Analytical Details, and Results Per Degredation Parameter	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
Results Remarks	Percent total gas evolution of 20, 100, and 200 mg/L test substance, based on conversion stoichiometry: C16H22O4 + 8.5 H2O → 6.25 CO2 + 9.75 CH4
Half-life, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	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±0.10, 0.68±0.07, and 0.99±0.05 mmolTheoretical gas: 0.115, 0.576, and 1.152 mmolMethane yield: 0.09±0.001, 0.35±0.004, and 0.60±0.04 mmolTheoretical methane yield: 0.070, 0.351, and 0.702 mmolResidual substrate: 0, 0, and 0 mmol
Mean Total Recovery Results and Results Per Recovery	Not reported; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	100, 100, and 86%; 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.
	Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.
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.

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Study Citation:	O'Connor, O. A., Rivera, M. D., Young, L. Y. (1989). Toxicity and biodegradation of phthalic acid esters under methanogenic conditions. Environmental Toxicology and Chemistry 8(7):569-576.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	1316118			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	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 Organisms				
	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 Assessment				
	Metric 11:	Test Substance Identity	Medium	Sampling times were not clearly reported and biodegradation rate could not be determined.
	Metric 12:	Test Substance Purity	High	The sampling methods were reported and appropriate.
Domain 6: Confounding/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 Presentation 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 Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination			High	

Study Citation:	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	5492430			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Anaerobic biotransformation in freshwater lake sediment			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	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	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			
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	35 d; Not reported; Not reported; Not reported; Not reported; 7			
Control Dark, Control, and Blank	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 Results Per Degredation Parameter	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			
Results Remarks	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.			
Halfife, 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 and Results Per Recovery	Extraction efficiency for DBP (20-200 µM) 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				
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 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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Study Citation:		Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015.		
OECD Harmonized Template:		Biodegradation in Sediment		
HERO ID:		5492430		
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	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 Organisms				
	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 Assessment				
	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/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 Presentation 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 Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.

Overall Quality Determination**Medium**

* Related References: Cited in HSDB

Study Citation:	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	5492430			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Anaerobic biotransformation in salt marsh sediment			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, 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, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	36 d; Not reported; Not reported; Not reported; Not reported; 7.0			
Control Dark, Control, and Blank	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 (results not reported)			
Concentration	100 µmol/L			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	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			
Results Remarks	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 Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported; Not reported; Not reported; Not reported			
Results Details	100% of DBP disappeared after 22 days.			
Mean Total Recovery Results and Results Per Recovery	Extraction efficiency for DBP (100 µM): 74 ±9%.; 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				
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 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 Conditions	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
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Study Citation:	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	5492430			
Domain	Metric	EVALUATION		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 Organisms				
	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 Assessment				
	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/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 Presentation 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 Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		Medium		

Study Citation:	Parker, W. J., Monteith, H. D., Melcer, H. (1994). Estimation of anaerobic biodegradation rates for toxic organic compounds in municipal sludge digestion. Water Research 28(8):1779-1789.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	1316112

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Removal efficiency in pilot scale anaerobic digester
Solvent, Reactivity, Storage, Stability	Methanol; NR; NR; NR
Radiolabel, Source, State, Purity	NA; NR; NR; NR
Oxygen and Inoculum	anaerobic; activated sludge, domestic (adaptation not specified): Primary sludge and waste activated sludge in a 2:1 ratio
Duration, Parameter, System, and Sampling Frequency	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 3-4d (next 20 d of operation), every 7 d (final 21 d of operation)
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Not reported; Sludge and water; Non-dosed and dosed influent sludge; Influent, effluent; Not reported; 6.8 (6.7 - 7.1)
Control Dark, Control, and Blank Concentration	Not Reported; Not reported; Not reported 13500 mg/L
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC/MS in selective ion mode; Sludge measurements extracted with DCM; 7
Results Remarks	Overall removal efficiency. Primary digester removal 93.3%Secondary digester removal 81.9%Secondary supernatant residual 0.9%Secondary sludge residual 0.3%Kp: 14.3Kp calculated by log (100*Kp)=1.14 + 0.58*log Kow
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported; Not reported; Not reported; Not reported
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 Results and Results Per Recovery	Not reported; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	98.8%; Not Reported; Not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	Medium
Domain 2: Test Design	Metric 3:	Study Controls	Medium
	Metric 4:	Test Substance Stability	High

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Study Citation:	Parker, W. J., Monteith, H. D., Melcer, H. (1994). Estimation of anaerobic biodegradation rates for toxic organic compounds in municipal sludge digestion. Water Research 28(8):1779-1789.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	1316112			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	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, temperature).
	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 Organisms				
	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 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	Sampling methods were appropriate and addressed the outcomes of interest.
Domain 6: Confounding/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 Presentation 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 Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination			High	

* Related References: Cited in HSDB

Study Citation:	Peng, X., Li, X. (2012). Compound-specific isotope analysis for aerobic biodegradation of phthalate acid esters. Talanta 97:445-449.		
OECD Harmonized Template:	Biodegradation in Sediment		
HERO ID:	1315304		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	84-74-2; Dibutyl phthalate		
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other		
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR		
Radiolabel, Source, State, Purity	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, and Sampling Frequency	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, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	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 Blank Concentration	yes; Not reported; Autoclaved controls (120°C for 20 min) were used. 20 µg/g dry sediment		
Analytical Method, Analytical Details, and Results 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	Rate constant: 0.0472, r^2=0.985. ln c=3.204 - 0.0472t		
Mean Total Recovery Results and Results Per Recovery	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		
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 purity was reported.
Domain 2: Test Design	Metric 3: Study Controls	High	Autoclaved sterile controls were used.
	Metric 4: Test Substance Stability	High	The test substance preparation, storage, and homogeneity were reported and appropriate.
Domain 3: Test Conditions	Metric 5: Test Method Suitability	High	The test method was suitable for the test substance.
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Study Citation:	Peng, X., Li, X. (2012). Compound-specific isotope analysis for aerobic biodegradation of phthalate acid esters. Talanta 97:445-449.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	1315304			
Domain		Metric	EVALUATION	
			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 Organisms				
	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 Assessment				
	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/Variable Control				
	Metric 13:	Confounding Variables	High	Uncertainty in the extraction and analytical methods were reported.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation 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 Kinetic Calculations	High	Kinetic calculations and statistical analysis were reported and 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 the study type.
Overall Quality Determination			High	

Study Citation:	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 treatment plants. Journal of Water Pollution Control Federation 55(10):1286-1296.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	1316084

Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butylphthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Pilot scale WWTP removal efficiency
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Oxygen and Inoculum	aerobic; other: Raw wastewater
Duration, Parameter, System, and Sampling Frequency	312 days; test mat.; Pilot scale treatment process with parallel control and spiked systems. Primary influent was processed through a sewer simulator, an aerated grit chamber, a primary clarifier, and a conventional plug-flow activated sludge process.; Eight 24-h composite samples were collected.
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Not reported; Not reported; Not reported; Not reported; Not reported; Not reported
Control Dark, Control, and Blank Concentration	Not Reported; Not reported; A blank control experiment was operated in parallel 43.8 µg/L
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-MS; Not reported; 7
Results Remarks	Not reported
Half-life, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported; Average standard error of mean concentrations (all chemicals): Influent: 31.3%; primary effluent: 28.0%; Not reported; Not reported
Results Details	88% of activated sludge effluent samples contained DBP. Concentration range was 1.3-7.1µg/L
Mean Total Recovery Results and Results Per Recovery	Not reported; Influent samples: 67.5±10.2%; primary effluent: 73.4±13.2%
Results Value, Direct Quantum Yield Results, and Transformation Products	Total treatment removal %: 94; Not Reported; Not reported

Domain	Metric	EVALUATION 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	Medium	The test substance purity was not reported but its omission is unlikely to have a substantial impact on the study results.
Domain 2: Test Design			
Metric 3:	Study Controls	High	A blank control was used.

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Study Citation:	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 treatment plants. Journal of Water Pollution Control Federation 55(10):1286-1296.			
OECD Harmonized Template:	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: Test Conditions				
	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 Organisms				
	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 Assessment				
	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/Variable Control				
	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 Presentation 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				
	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 the study type.
Overall Quality Determination		High		

Study Citation:	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 Template:	Biodegradation in Sediment
HERO ID:	1333014

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butylphthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: WWTP removal efficiency
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Oxygen and Inoculum	aerobic; mixture of sewage, soil and natural water: Not reported
Duration, Parameter, System, and Sampling Frequency	Sampling was done in April and December; test mat.; Samples were collected from influent, effluent out of biodisc system, and sludge from storage tanks.; Samples were taken in duplicate.
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	24 or 72 hour composite samples were collected.; Not reported; Not reported; Not reported; Not reported; Not reported
Control Dark, Control, and Blank Concentration	Not Reported; Not reported; Sample blanks from the normal sampling program were taken. ≥ 3.3 - ≤ 496 µg/L
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-MS; Not reported; 7
Results Remarks	Phthalate contamination was introduced from solvents, glassware, rubber or plastic material.
Half-life, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported; Not reported; Not reported; Not reported
Results Details	Not reported
Mean Total Recovery Results and Results Per Recovery	Not reported; Recoveries of >60% were observed for most chemicals.
Results Value, Direct Quantum Yield Results, and Transformation Products	Influent/effluent removal % in April and December sampling: 100; Not Reported; Not reported

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	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.

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Study Citation:	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 Template:	Biodegradation in Sediment			
HERO ID:	1333014			
Domain	Metric	EVALUATION		Comments
		Rating		
	Metric 4:	Test Substance Stability	High	Some details regarding the test substance preparation and storage conditions were omitted but are unlikely to have a substantial impact on the study results.
Domain 3: Test Conditions				
	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 reported 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 Organisms				
	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 Assessment				
	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.
Domain 6: Confounding/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 Presentation and Analysis				
	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 Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination			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 treatment plant in South East Queensland, Australia. Chemosphere 69(4):644-654.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	675442

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; QSAR; other: WWTP removal
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; 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 a mixture of domestic and industrial influent
Duration, Parameter, System, and Sampling Frequency	Not reported; test mat.; Not reported; Not reported
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	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 Concentration	Not reported; Not reported; Not reported
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Not Reported
Results Remarks	gas chromatography-mass spectrometry; extracted from samples with solid phase extraction; 7
Half-life, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	These measured concentrations were reported from Tan et al. 2007 and used in this source to develop a QSAR model for WWTP removal
Results Details	Not Reported; Not reported; Not reported; Not reported
Mean Total Recovery Results and Results Per Recovery	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
Results Value, Direct Quantum Yield Results, and Transformation Products	Not reported; Not reported
	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.

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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 treatment plant in South East Queensland, Australia. Chemosphere 69(4):644-654.			
OECD Harmonized Template:	Biodegradation in Sediment			
HERO ID:	675442			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	N/A	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 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	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.
	Metric 12:	Test Substance Purity	N/A	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.
	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	N/A	The metric is not applicable to this study type.
	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 Results	High	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 Quality Determination		High		

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 Template:	Biodegradation in Sediment
HERO ID:	5541359

Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Not reported; biodegradation kinetics in Taiwanese river sediment
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Chem Service (West Chester, PA); NR; 99.0%
Oxygen and Inoculum	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, and Sampling Frequency	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, Compartment, Sludge Compartment, Water	Not reported; Sediment; Natural river sediment; Not reported; Not reported; Not reported
Compartment, CEC, and pH	
Control Dark, Control, and Blank	Not Reported; Not reported; Not reported
Concentration	5 ug/g
Analytical Method, Analytical Details, and Results Per Degredation Parameter	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 adaptation.
Half-life, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	2.9 d; Not Reported; Not reported; Not reported
Results Details	First order kinetics: $S=S_0 \cdot \exp(-k \cdot t)$, $t_{0.5}=0.693/k$
Mean Total Recovery Results and Results Per Recovery	96.5%; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	Not Reported; 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	High	The test substance source and purity were reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Controls were not explicitly included.

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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 Template:	Biodegradation in Sediment			
HERO ID:	5541359			
Domain		Metric		EVALUATION
				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.
	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.
	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 Exposure	N/A	Not applicable.
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 Kinetic Calculations	High	Kinetic calculations were described and applied appropriately.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The results were reasonable based on the method however many key study details were not reported, which reduces the reliability of this study.
	Metric 18:	QSAR Models	N/A	Not applicable.
Overall Quality Determination			High	

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 Template:	Biodegradation in Sediment			
HERO ID:	5541359			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Not reported; biodegradation kinetics in Taiwanese river sediment			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; Chem Service (West Chester, PA); NR; 99.0%			
Oxygen and Inoculum	anaerobic; 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, and Sampling Frequency	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, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Not reported; Sediment; Natural river sediment; Not reported; Not reported; Not reported			
Control Dark, Control, and Blank Concentration	Not Reported; Not reported; Not reported 5 ug/g			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	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: 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 Results, Reference Substance Results, and Reference Substance Compartment Results	14.4 d; Not Reported; Not reported; Not reported			
Results Details	First order kinetics: S=S_0*exp(-k*t), t0.5=0.693/k			
Mean Total Recovery Results and Results Per Recovery	96.5%; Not reported			
Results Value, Direct Quantum Yield Results, and Transformation Products	Not Reported; 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	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.
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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 Template:	Biodegradation in Sediment			
HERO ID:	5541359			
Domain	Metric	EVALUATION		Comments
		Rating		
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.
	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 Exposure	N/A		Not applicable.
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 Kinetic Calculations	High		Kinetic calculations were described and applied appropriately.
Domain 8: Other				
	Metric 17: Verification or Plausibility of Results	Medium		The results were reasonable based on the method however many key study details were not reported, which reduces the reliability of this study.
	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 Template:	Biodegradation in Sediment
HERO ID:	697286

Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; ready biodegradability; Experimental; other: Biodegradation in contaminated river sediment
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Chem Services, West Chester, PA; NR; 99%
Oxygen and Inoculum	aerobic; natural sediment: Inorganic medium (mg/L): K ₂ HPO ₄ , 65.3; KH ₂ PO ₄ , 25.5; Na ₂ HPO ₄ 12H ₂ O, 25.5; Na ₂ HPO ₄ 12H ₂ O, 133.8; NH ₄ Cl, 5.1; CaCl ₂ , 82.5; MgSO ₄ 7H ₂ O, 67.5; FeCl ₃ 6H ₂ O, 0.75g.
Duration, Parameter, System, and Sampling Frequency	Not reported; test mat.; 125mL serum bottle with 45 mL medium, 5g sediment, and 250ug/g of DEHP/DBP (125ug/g each); Not reported
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Not reported; Not reported; Not reported; Not reported; Not reported; 6.5-7.6
Control Dark, Control, and Blank Concentration	yes; Autoclaved samples were used as sterile control.; Not reported 125 µg/L
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Gas-chromatograph with electron capture detector.; Detection limit was 1.0 µg/L.; 7
Results Remarks	Not reported
Half-life, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	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 Results and Results Per Recovery	95.5%; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	K value (1/d) from sites A-E, respectively: 0.35, 0.43, 0.27, 0.24, 0.29; Not Reported; Not reported

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
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:	Study Controls	High	Appropriate sterile controls were used.
Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported and appropriate.

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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 Template:	Biodegradation in Sediment			
HERO ID:	697286			
Domain	Metric	EVALUATION		Comments
		Rating		
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				
	Metric 11:	Test Substance Identity	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 Exposure	N/A	This metric is not applicable to the study type.
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 Kinetic Calculations	High	Sufficient statistical analysis was reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to the study type.
Overall Quality Determination			High	

Study Citation:	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 Template:	Biodegradation in Sediment			
HERO ID:	1341868			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Aerobic biodegradation in sediment			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, 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, System, and Sampling Frequency	5 days; test mat.; Flask and rotary shaker; daily			
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	every 24 hrs; Not reported; Not reported; Not reported; Not reported; Not reported			
Control Dark, Control, and Blank	Not Reported; Not reported; Not reported			
Concentration	100 mg/L			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	HPLC and GC/MS; UV – Vis detector set at 228 nm; 7			
Results Remarks	Not reported			
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported; Not reported; Not reported; Not reported			
Results Details	Not reported			
Mean Total Recovery Results and Results Per Recovery	Not reported; Not reported			
Results Value, Direct Quantum Yield Results, and Transformation Products	100%/72hrs; Not Reported; mono-butyl phthalate and 9-octadecenoic acid			
EVALUATION				
Domain	Metric	Rating	Comments	
Domain 1: Test Substance	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	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.	
Domain 3: Test Conditions				
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Study Citation:		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 Template:		Biodegradation in Sediment		
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 Organisms				
	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 Assessment				
	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 Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	Some data were not reported such as mass balance, percent recovery and MDL.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Some calculation details were not reported but their omission was not likely to impact the study results.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		Uninformative		

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 Template:	Biodegradation in Soil			
HERO ID:	2882641			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; Not reported; Experimental; other: Non-Guideline biodegradation			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; Acros; NR; 99%			
Oxygen, pH, and CEC	aerobic; Not reported; Not reported			
Test Type, Test Temperature, 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, Microbial Biomass, and Humidity	Not reported; Not reported: Not reported			
Duration, Parameter, System, and Sampling Frequency	45 days; Not reported; Composting simulation reactor; Not reported			
Control and Blank	Not reported; Not reported			
Concentration	1000 other			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-MS with SIM detector; Not reported; Removal DBP (%)			
Results Remarks	Not reported			
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and Referencs Substance Compartment Results	>87; Not reported; Not reported; Not reported; Not reported			
Results Details	Not reported			
Mean Total Recovery Results and Results Per Recovery	Not reported; Not reported			
EVALUATION				
Domain	Metric	Rating	Comments	
Domain 1: Test Substance	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	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.
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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 Template:	Biodegradation in Soil			
HERO ID:	2882641			
Domain		Metric	EVALUATION 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.
	Metric 7:	Testing Consistency	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 Exposure	N/A	The metric is not applicable to this study type.
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 Kinetic Calculations	Low	Statistical method was not 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.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			Uninformative	

Study Citation:	Chang, B., Lu, Y., Yuan, S., Tsao, T., Wang, M. (2009). Biodegradation of phthalate esters in compost-amended soil. Chemosphere 74(6):873-877.		
OECD Harmonized Template:	Biodegradation in Soil		
HERO ID:	697764		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	Not Reported; Not Reported		
Confidentiality, EndPoint, Type, Guideline	None; screening test; experimental; other: batch		
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; 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 Humidity	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 Results 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, Sample Time Results, Reference Substance Results, and References Substance Compartment Results	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		
Results Details	first-order kinetics; p <0.05		
Mean Total Recovery Results and Results Per Recovery	96%; 91% DBP remained in sterile soil		
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 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.
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Study Citation:	Chang, B., Lu, Y., Yuan, S., Tsao, T., Wang, M. (2009). Biodegradation of phthalate esters in compost-amended soil. Chemosphere 74(6):873-877.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	697764			
Domain	Metric	EVALUATION		Comments
		Rating		
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.
	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 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 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	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 Presentation 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 Results	High	Reported values were expected.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

Study Citation:	Chang, B., Lu, Y., Yuan, S., Tsao, T., Wang, M. (2009). Biodegradation of phthalate esters in compost-amended soil. Chemosphere 74(6):873-877.		
OECD Harmonized Template:	Biodegradation in Soil		
HERO ID:	697764		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	Not Reported; Not Reported		
Confidentiality, EndPoint, Type, Guideline	None; screening test; experimental; other: batch		
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; 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 Humidity	Taoyuan Agricultural Research and Extension Station; 8.2E6 CFU/g bacterial count soil; 2.2E5 CFU/g bacterial count for compost: soil: not reported; compost 54.3% water content		
Duration, Parameter, System, and Sampling Frequency	20 days; test mat.; glass bottles containing medium, soil, mixture of DBP and DEHP, compost (animal manure); periodically		
Control and Blank	not reported; sterile controls		
Concentration	50 mg/kg		
Analytical Method, Analytical Details, and Results 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, Sample Time Results, Reference Substance Results, and References Substance Compartment Results	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, 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; not applicable; not applicable		
Results Details	first-order kinetics; p <0.05		
Mean Total Recovery Results and Results Per Recovery	96%; 91% DBP remained in sterile soil		
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 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.
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Study Citation:	Chang, B., Lu, Y., Yuan, S., Tsao, T., Wang, M. (2009). Biodegradation of phthalate esters in compost-amended soil. Chemosphere 74(6):873-877.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	697764			
		EVALUATION		
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 concentrations.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and 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 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	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 Presentation 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 Results	High	Reported values were expected.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

Study Citation:	Chang, B., Lu, Y., Yuan, S., Tsao, T., Wang, M. (2009). Biodegradation of phthalate esters in compost-amended soil. Chemosphere 74(6):873-877.		
OECD Harmonized Template:	Biodegradation in Soil		
HERO ID:	697764		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	Not Reported; Not Reported		
Confidentiality, EndPoint, Type, Guideline	None; screening test; experimental; other: batch		
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; 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, Microbial Biomass, and Humidity	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, Analytical Details, and Results 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, Sample Time Results, Reference Substance Results, and References 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 Results and Results Per Recovery	96%; 91% DBP remained in sterile soil		
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 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.
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Study Citation:	Chang, B., Lu, Y., Yuan, S., Tsao, T., Wang, M. (2009). Biodegradation of phthalate esters in compost-amended soil. Chemosphere 74(6):873-877.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	697764			
		EVALUATION		
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 concentrations.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and 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 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	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 Presentation 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 Results	High	Reported values were expected.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

Study Citation:	Chang, B., Lu, Y., Yuan, S., Tsao, T., Wang, M. (2009). Biodegradation of phthalate esters in compost-amended soil. Chemosphere 74(6):873-877.		
OECD Harmonized Template:	Biodegradation in Soil		
HERO ID:	697764		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	Not Reported; Not Reported		
Confidentiality, EndPoint, Type, Guideline	None; screening test; experimental; other: batch		
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 Humidity	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 Results 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, Sample Time Results, Reference Substance Results, and References Substance Compartment Results	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 50, 100, 200 mg/kg, respectively; 20 d; not applicable; not applicable		
Results Details	first-order kinetics; p <0.05		
Mean Total Recovery Results and Results Per Recovery	96%; 91% DBP remained in sterile soil		
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 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.
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Study Citation:	Chang, B., Lu, Y., Yuan, S., Tsao, T., Wang, M. (2009). Biodegradation of phthalate esters in compost-amended soil. Chemosphere 74(6):873-877.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	697764			
		EVALUATION		
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 concentrations.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and 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 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	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 Presentation 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 Results	High	Reported values were expected.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

Study Citation:	Chao, W. L., Lin, C. M., Shiung, I. I., Kuo, Y. L. (2006). Degradation of di-butyl-phthalate by soil bacteria. Chemosphere 63(8):1377-1383.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	1323231			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; Not Reported			
Confidentiality, EndPoint, Type, Guideline	None; screening test; Not Reported; other: degradation using isolate phthalate ester-degrading bacteria			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	None; Aldrich Chemical Co., Inc., WI; liquid; NR Notes: DBP			
Oxygen, pH, and CEC	aerobic; not reported; 8.25 cmol/kg			
Test Type, Test Temperature, and Test Details	laboratory; 30 deg C; run with 12 isolated bacteria from soil.			
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	clay loam; 36% clay, 8.4 g/kg organic carbon; not reported			
Soil Classification, Microbial Biomass, and Humidity	Agricultural Research Institute, Wufeng, Taichung, Taiwan.; Not Reported: not reported			
Duration, Parameter, System, and Sampling Frequency	7 d; test mat.; flasks, loosely sealed; day 1, 2, 3			
Control and Blank	not applicable; sterile; autoclaved DBP-amended basal salts solution			
Concentration	100 ppm			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-FID; detection limit 200 ug/L; test mat.			
Results Remarks	degradation was reported for isolated pure strains of bacteria.			
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and References Substance Compartment Results	96-100% in 3 days for fast group; 95-100% in 3 days for medium group, 32-90% degradation in 3 days for slow group; Not Reported; Not Reported; not applicable; not applicable			
Results Details	Not Reported			
Mean Total Recovery Results and Results Per Recovery	98.1+/-1.0%; 98.7±1.5, 99.6±1.4, 97.4±1.4 ppm at day 1, 2, 3, respectively			
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 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.
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Study Citation:	Chao, W. L., Lin, C. M., Shiung, I. I., Kuo, Y. L. (2006). Degradation of di-butyl-phthalate by soil bacteria. Chemosphere 63(8):1377-1383.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	1323231			
Domain	Metric	EVALUATION 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 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.
	Metric 8:	System Type and Design	N/A	This metric is not applicable to the study type.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Low	The inoculum was isolated pure bacteria.
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to the study type.
Domain 5: Outcome Assessment				
	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: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	This metric is not applicable to the study type.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to the study type.
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 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	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to the study type.

Overall Quality Determination**Uninformative**

Study Citation:	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 Template:	Biodegradation in Soil
HERO ID:	4829375

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Degradation in soils at different temperatures and soil moisture content
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, 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 Fangqiao, 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 Humidity	Aquic cambisols; Udic ferrosols; Aquic cambisols 211 mg/kg; Udic ferrosols 53.6 mg/kg; average: 50% WHC
Duration, Parameter, System, and Sampling Frequency	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	≥ 2 - less than or equal to 20 mg/kg
Analytical Method, Analytical Details, and Results Per Degredation Parameter	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, Sample Time Results, Reference Substance Results, and Reference Substance Compartment Results	0.338±0.003 days in Aquic cambisols and 1.20±0.05 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±0.018–1.41±0.04 days in Aquic cambisols; 0.870±0.012–4.60±0.13 days in Udic ferrosols; Under variable moisture conditions half-lives ranged from 0.315±0.010–0.653±0.008 days in Aquic cambisols; 0.918±0.103–20.4±1.1 days in Udic ferrosols
Mean Total Recovery Results and Results Per Recovery	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.
	Metric 2:	Test Substance Purity	High The test substance source and purity were reported.
Domain 2: Test Design			

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Study Citation:	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 Template:	Biodegradation in Soil			
HERO ID:	4829375			
Domain		Metric	EVALUATION	
			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 Conditions				
	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 Organisms				
	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 Assessment				
	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: Confounding/Variable Control				
	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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	The analytical method was appropriate; method detail reported in supplemental information 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 Results	Medium	The result was reasonable based on the method.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to the study type.
Overall Quality Determination			High	

Study Citation:	EC/HC, (1994). Canadian environmental protection act priority substances list assessment report: Dibutyl phthalate.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	1333071			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; dibutyl phthalate			
Confidentiality, EndPoint, Type, Guideline	no; other; experimental; other: not reported			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	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 Reported			
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	Not Reported; not reported; not reported			
Soil Classification, Microbial Biomass, and Humidity	not reported; unacclimated aerobic soil grab samples: not reported			
Duration, Parameter, System, and Sampling Frequency	not reported; not specified; not reported; not reported			
Control and Blank	not reported; not reported			
Concentration	Not Reported			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	not reported; not reported; half-life			
Results Remarks	not reported			
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and References Substance Compartment Results	2-23 days; Not Reported; not reported; not reported; Not Reported			
Results Details	Not Reported			
Mean Total Recovery Results and Results Per Recovery	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, 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.
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Study Citation:	EC/HC, (1994). Canadian environmental protection act priority substances list assessment report: Dibutyl phthalate.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	1333071			
Domain	Metric	EVALUATION 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 Conditions				
	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 Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	The inoculum was reported with limited details; 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 Assessment				
	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				
	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 Presentation 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				
	Metric 17:	Verification or Plausibility of Results	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.

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Study Citation:	EC/HC, (1994). Canadian environmental protection act priority substances list assessment report: Dibutyl phthalate.
OECD Harmonized	Biodegradation in Soil
Template:	
HERO ID:	1333071

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		Medium	

* Related References: cites: Howard, P.H., R.S. Boethling, W.F. Jarvis, W.M. Meylan, and E.M. Michalenko, "Handbook of Environmental Degradation Rates," Lewis Publishers Inc., Chelsea, MI (1991).

Study Citation:	EC/HC, (1994). Canadian environmental protection act priority substances list assessment report: Dibutyl phthalate.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	1333071			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; dibutyl phthalate			
Confidentiality, EndPoint, Type, Guideline	no; other; experimental; other: not reported			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	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 Reported			
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	other; not reported; not reported			
Soil Classification, Microbial Biomass, and Humidity	loam; sand; not reported: not reported			
Duration, Parameter, System, and Sampling Frequency	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 Results Per Degredation Parameter	not reported; not reported; half-life			
Results Remarks	not reported			
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and References Substance Compartment Results	~12 weeks @ 200 mg/kg; >26 weeks @ 800 mg/kg; not reported; not reported; not reported; Not Reported			
Results Details	Not Reported			
Mean Total Recovery Results and Results Per Recovery	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, 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 Conditions				
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Study Citation:	EC/HC, (1994). Canadian environmental protection act priority substances list assessment report: Dibutyl phthalate.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	1333071			
Domain	Metric	EVALUATION		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 Organisms				
	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 Assessment				
	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				
	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 Presentation 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				
	Metric 17:	Verification or Plausibility of Results	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 Quality Determination**Medium**

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

Study Citation:	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.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	1332923			
EXTRACTION				
Parameter		Data		
CASRN and Test Material		Not Reported; Not Reported		
Confidentiality, EndPoint, Type, Guideline		None; other; experimental; other: degradation in pure cultures of microorganisms		
Solvent, Reactivity, Storage, Stability		NR; NR; NR; NR		
Radiolabel, Source, State, Purity		None; NR; NR; NR Notes: DBP		
Oxygen, pH, and CEC		not specified; 7.2; not reported		
Test Type, Test Temperature, 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 Humidity		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, and Sampling Frequency		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 Results Per Degredation Parameter		UV; 275 nm; test mat.		
Results Remarks		degraded to form mono-n-butyl phthalate almost quantitatively		
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and Referencs Substance Compartment Results		not reported; not reported; not reported; Not Reported; Not Reported		
Results Details		not reported		
Mean Total Recovery Results and Results Per Recovery		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 structure.
	Metric 2:	Test Substance Purity	Medium	The test substance source or purity 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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Study Citation:	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.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	1332923			
Domain	Metric	EVALUATION 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 Conditions				
	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 Organisms				
	Metric 9:	Outcome Assessment Methodology	Low	Pure culture.
	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	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: 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	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 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 Determination**Uninformative**

Study Citation:	Fu, M. H., Alexander, M. (1995). Use of surfactants and slurring to enhance the biodegradation in soil of compounds initially dissolved in nonaqueous-phase liquids. Applied Microbiology and Biotechnology 43(3):551-558.
OECD Harmonized Template:	Biodegradation in Soil
HERO ID:	679520

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Mineralization of radio-labeled DBP in soil and soil slurries with phenanthrene contaminant.
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Aldrich Chemical Company, Milwaukee, WI; Liquid; Reagent grade
Oxygen, pH, and CEC	aerobic; 7.23; Not reported
Test Type, Test Temperature, and Test Details	laboratory; 30°C; Radiolabeled CO ₂ 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 Humidity	Lima Loam; 7.5% organic matter; Not reported: 70% based on field capacity
Duration, Parameter, System, and Sampling Frequency	43 days; CO ₂ 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 Results Per Degredation Parameter	Liquid scintillation counter (model LS 7500; Beckman Instruments); Radiolabeled CO ₂ was trapped in the side-arms of the biometer flasks with 0.5 NaOH. Radioactivity was calculated using liquid scintillation counter.; CO ₂ 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, and Reference Substance Compartment Results	2.21%; Not reported; 43 days; 37.7% 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 Results and Results Per Recovery	Not Reported; Not Reported

EVALUATION				
Domain	Metric		Rating	Comments
Domain 1: Test Substance	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 slurring to enhance the biodegradation in soil of compounds initially dissolved in nonaqueous-phase liquids. Applied Microbiology and Biotechnology 43(3):551-558.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	679520			
Domain		Metric	EVALUATION Rating	Comments
Domain 3: Test Conditions				
	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 substantial 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 impact on study results.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported.
	Metric 10:	Sampling Methods	Medium	Equilibrium was not established or reported but this was not likely to have a substantial 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 impact on study results.
Domain 5: Outcome Assessment				
	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/Variable Control				
	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 Presentation and Analysis				
	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				
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Study Citation:	Fu, M. H., Alexander, M. (1995). Use of surfactants and slurring to enhance the biodegradation in soil of compounds initially dissolved in nonaqueous-phase liquids. Applied Microbiology and Biotechnology 43(3):551-558.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	679520			
		EVALUATION		
Domain		Metric	Rating	Comments
	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 authors discussed potential reasons why DBP appeared to decreased phenanthrene degradation.
	Metric 18:	QSAR Models	N/A	this metric is not applicable to this study

Overall Quality Determination**Medium**

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 Template:	Biodegradation in Soil			
HERO ID:	679520			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Mineralization of radio-labeled DBP in soil slurries with phenanthrene contaminant.			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; Aldrich Chemical Company, Milwaukee, WI; Liquid; Reagent grade			
Oxygen, pH, and CEC	aerobic; 7.23; Not reported			
Test Type, Test Temperature, 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 Humidity	Lima Loam; 7.5% organic matter; Not reported: 70% based on field capacity			
Duration, Parameter, System, and Sampling Frequency	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 Results 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	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 Deviation Results, Sample Time Results, Reference Substance Results, and References Substance Compartment 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 Results and Results Per Recovery	Not reported; Not reported			
EVALUATION				
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	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.
Domain 3: Test Conditions				
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Study Citation:	Fu, M. H., Alexander, M. (1995). Use of surfactants and slurring to enhance the biodegradation in soil of compounds initially dissolved in nonaqueous-phase liquids. Applied Microbiology and Biotechnology 43(3):551-558.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	679520			
		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 Organisms				
	Metric 9:	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.
Domain 5: Outcome Assessment				
	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/Variable Control				
	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 Presentation and Analysis				
	Metric 15:	Data Reporting	Low	Sampling methods were not well described, but graphical outputs suggest regular sampling through the study duration.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	No statistical analyses were reported.
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 authors discussed potential reasons why DBP appeared to decreased phenanthrene degradation.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.
Overall Quality Determination		Medium		

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 Template:	Biodegradation in Soil
HERO ID:	790683

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Not reported; Ultimate biodegradation in soil
Solvent, Reactivity, Storage, Stability	Acetone; NR; 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; 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 Bulk Density	silt loam; 14.3% sand, 60.9% silt, 24.8% clay, 1.96% organic carbon; Not reported
Soil Classification, Microbial Biomass, and Humidity	Surface 15 cm Chalmers silt loam (Typic Haplaquoll); Not reported: Soil moisture -0.6 bar tension
Duration, Parameter, System, and Sampling Frequency	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 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, Analytical Details, and Results Per Degredation Parameter	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 Deviation Results, Sample Time Results, Reference Substance Results, and Reference Substance Compartment 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 Results and Results Per Recovery	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.
	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.

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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 Template:	Biodegradation in Soil			
HERO ID:	790683			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	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 Organisms				
	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 Assessment				
	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 frequency.
Domain 6: Confounding/Variable Control				
	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 Presentation 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 Quality Determination			High	

* Related References: Cited in HSDB

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 Template:	Biodegradation in Soil
HERO ID:	790683

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Not reported; Ultimate biodegradation in soil
Solvent, Reactivity, Storage, Stability	Acetone; NR; 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; 6.0; 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 Bulk Density	silt loam; 14.3% sand, 60.9% silt, 24.8% clay, 1.96% organic carbon; Not reported
Soil Classification, Microbial Biomass, and Humidity	Surface 15 cm Chalmers silt loam (Typic Haplaquoll); Not reported: Soil moisture -0.6 bar tension
Duration, Parameter, System, and Sampling Frequency	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 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, Analytical Details, and Results Per Degredation Parameter	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 Deviation Results, Sample Time Results, Reference Substance Results, and Reference Substance Compartment Results	88.1%; Not reported; 200 d; Sterile soil; 2.4%/200 d
Results Details	0.13%/3d, 0.3%/6d, 0.8%/11d, 1.6%/18d, 4.8%/32d, 32.4%/53d, 84.7%/80d, 88.1%/200d
Mean Total Recovery Results and Results Per Recovery	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.
	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.

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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 Template:	Biodegradation in Soil			
HERO ID:	790683			
		EVALUATION		
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 Organisms				
	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 Assessment				
	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 frequency.
Domain 6: Confounding/Variable Control				
	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 Presentation 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 Quality Determination

High

* Related References: Cited in HSDB

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 Template:	Biodegradation in Soil
HERO ID:	790683

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Not reported; Ultimate biodegradation in soil
Solvent, Reactivity, Storage, Stability	Acetone; NR; 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; 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 evaporate; moisture adjusted with 2 mL soil extract from soil sample and distilled water
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	silt loam; 14.3% sand, 60.9% silt, 24.8% clay, 1.96% organic carbon; Not reported
Soil Classification, Microbial Biomass, and Humidity	Surface 15 cm Chalmers silt loam (Typic Haplaquoll); Not reported: Soil moisture -0.6 bar tension
Duration, Parameter, System, and Sampling Frequency	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 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, Analytical Details, and Results Per Degredation Parameter	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 Deviation Results, Sample Time Results, Reference Substance Results, and References Substance Compartment Results	97.2%; Not reported; 200 d; Sterile soil; 2.4%/200 d
Results Details	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 Results and Results Per Recovery	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.
	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.

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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 Template:	Biodegradation in Soil			
HERO ID:	790683			
		EVALUATION		
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 Organisms				
	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 Assessment				
	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 frequency.
Domain 6: Confounding/Variable Control				
	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 Presentation 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 Quality Determination

High

* Related References: Cited in HSDB

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 Template:	Biodegradation in Soil
HERO ID:	790683

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Not reported; Ultimate biodegradation in soil
Solvent, Reactivity, Storage, Stability	Acetone; NR; 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	anaerobic; 6.0; 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 Bulk Density	silt loam; 14.3% sand, 60.9% silt, 24.8% clay, 1.96% organic carbon; Not reported
Soil Classification, Microbial Biomass, and Humidity	Surface 15 cm Chalmers silt loam (Typic Haplaquoll); Not reported: Soil moisture -0.6 bar tension
Duration, Parameter, System, and Sampling Frequency	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 1M KOH trap; 3, 6, 11, 18, 32, 53, 80, 200 d
Control and Blank	Not reported; Sterile control included (Chalmers aerobic, pH 6.0)
Concentration	1 mg/g
Analytical Method, Analytical Details, and Results Per Degredation Parameter	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 Deviation Results, Sample Time Results, Reference Substance Results, and References Substance Compartment Results	97.8%; Not reported; 200 d; Sterile soil; 2.4%/200 d
Results Details	0.04%/3d, 0.6%/6d, 6.6%/11d, 12.3%/18d, 45.1%/32d, 68.6%/53d, 83.7%/80d, 97.8%/200d
Mean Total Recovery Results and Results Per Recovery	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.
	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.

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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 Template:	Biodegradation in Soil			
HERO ID:	790683			
		EVALUATION		
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 Organisms				
	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 Assessment				
	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 frequency.
Domain 6: Confounding/Variable Control				
	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 Presentation 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 Quality Determination

High

* Related References: Cited in HSDB

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 Template:	Biodegradation in Soil
HERO ID:	790683

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Not reported; Ultimate biodegradation in soil
Solvent, Reactivity, Storage, Stability	Acetone; NR; 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 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 Bulk Density	silt loam; 14.3% sand, 60.9% silt, 24.8% clay, 1.96% organic carbon; Not reported
Soil Classification, Microbial Biomass, and Humidity	Surface 15 cm Chalmers silt loam (Typic Haplaquoll); Not reported: Soil moisture -0.6 bar tension
Duration, Parameter, System, and Sampling Frequency	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 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 Results Per Degredation Parameter	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 200 d due to mechanical failure.
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and Reference Substance Compartment Results	82.6%; Not reported; 80 d; Sterile soil; 2.4%/200 d
Results Details	0.13%/3d, 0.4%/6d, 1.4%/11d, 2.7%/18d, 9.8%/32d, 77.7%/53d, 82.6%/80d, ND/200d
Mean Total Recovery Results and Results Per Recovery	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.
	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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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 Template:	Biodegradation in Soil			
HERO ID:	790683			
		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	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 Organisms				
	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 Assessment				
	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 frequency.
Domain 6: Confounding/Variable Control				
	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 Presentation 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 Quality Determination		High		

* Related References: Cited in HSDB

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 Template:	Biodegradation in Soil
HERO ID:	790683

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Not reported; Ultimate biodegradation in soil
Solvent, Reactivity, Storage, Stability	Acetone; NR; 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; 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 Bulk Density	silt loam; 14.3% sand, 60.9% silt, 24.8% clay, 1.96% organic carbon; Not reported
Soil Classification, Microbial Biomass, and Humidity	Surface 15 cm Chalmers silt loam (Typic Haplaquoll); Not reported: Soil moisture -0.6 bar tension
Duration, Parameter, System, and Sampling Frequency	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 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 Results Per Degredation Parameter	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 - 200 d due to mechanical failure.
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and Reference Substance Compartment Results	1.9%; Not reported; 53 d; Sterile soil; 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 Results and Results Per Recovery	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.
	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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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 Template:	Biodegradation in Soil			
HERO ID:	790683			
		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	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 Organisms				
	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 Assessment				
	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 frequency.
Domain 6: Confounding/Variable Control				
	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 Presentation 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 Quality Determination		High		

* Related References: Cited in HSDB

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 Template:	Biodegradation in Soil
HERO ID:	790683

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; other: Experimental; other: Not reported; Ultimate biodegradation in soil
Solvent, Reactivity, Storage, Stability	Acetone; NR; 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; 6.2; 9.3 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 Bulk Density	sand; 90.3% sand, 7.1% silt, 2.6% clay, 1.38% organic carbon; Not reported
Soil Classification, Microbial Biomass, and Humidity	Surface 15 cm Plainfield sand (Typic Udipsamment); Not reported; Soil moisture -0.6 bar tension
Duration, Parameter, System, and Sampling Frequency	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 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, Analytical Details, and Results Per Degredation Parameter	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 appears to be the rate limiting step.
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and References Substance Compartment Results	89.6%; Not reported; 200 d; Sterile soil; 2.4%/200 d
Results Details	0.14%/3d, 0.1/6d, 0.2%/11d, 0.3%/18d, 0.6%/32d, 2.6%/53d, 77.9%/80d, 89.6%/200d
Mean Total Recovery Results and Results Per Recovery	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.
	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.

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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 Template:	Biodegradation in Soil			
HERO ID:	790683			
		EVALUATION		
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 Organisms				
	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 Assessment				
	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 frequency.
Domain 6: Confounding/Variable Control				
	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 Presentation 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 Quality Determination

High

* Related References: Cited in HSDB

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 Template:	Biodegradation in Soil
HERO ID:	790683

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Not reported; Ultimate biodegradation in soil
Solvent, Reactivity, Storage, Stability	Acetone; NR; 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; 5.9; 15.2 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 Bulk Density	silt loam; 13.5% sand, 69.7% silt, 16.8% clay, 1.24% organic carbon; Not reported
Soil Classification, Microbial Biomass, and Humidity	Surface 15 cm Fincastle silt loam (Aeric Ochraqulf); Not reported: Soil moisture -0.6 bar tension
Duration, Parameter, System, and Sampling Frequency	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 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, Analytical Details, and Results Per Degredation Parameter	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 appears to be the rate limiting step.
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and References 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%/11d, 0.7%/18d, 1.7%/32d, 8.7%/53d, 89.4%/80d, 93.0%/200d
Mean Total Recovery Results and Results Per Recovery	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.
	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.

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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 Template:	Biodegradation in Soil			
HERO ID:	790683			
		EVALUATION		
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 Organisms				
	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 Assessment				
	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 frequency.
Domain 6: Confounding/Variable Control				
	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 Presentation 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 Quality Determination**High**

* Related References: Cited in HSDB

Study Citation:	Mathur, S. P. (1974). Respirometric evidence of the utilization of Di-octyl and Di-2-ethylhexyl phthalate piasticizers. Journal of Environmental Quality 3(3):207-209.
OECD Harmonized Template:	Biodegradation in Soil
HERO ID:	1334165

EXTRACTION	
Parameter	Data
CASRN and Test Material	not reported; Not Reported
Confidentiality, EndPoint, Type, Guideline	No; other; degradation in soil; other: Non-guideline Warburg Respirometric Test
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Fisher Chem. Co.; NR; NR Notes: NR
Oxygen, pH, and CEC	aerobic; Not reported; Not reported
Test Type, Test Temperature, and Test Details	laboratory; 22-25Å°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 Humidity	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, Analytical Details, and Results Per Degredation Parameter	TLC and UV photometry; empirical estimations made from silica gel extracts of TLC plate scrapings; % decrease from endogenous consumption 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 consumption in the unamended soil. DBP oxygen consumption was enhanced in the soil previously amended with DOP, DEHP and DiBP.
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and Referenc 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 Results and Results Per Recovery	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 source was reported, purity was not reported.
Domain 2: Test Design	Metric 3:	Study Controls	High	Controls were included.

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Study Citation:	Mathur, S. P. (1974). Respirometric evidence of the utilization of Di-octyl and Di-2-ethylhexyl phthalate piasticizers. Journal of Environmental Quality 3(3):207-209.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	1334165			
Domain	Metric	EVALUATION 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 Conditions				
	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 Organisms				
	Metric 9:	Outcome Assessment Methodology	High	Soil source was reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study.
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	Low	Limited detail regarding this metric; extract of TLC scrapings were used for analysis.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Low	Sources of variability and uncertainty in the measurements 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.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	Analytical detail was omitted; % recovery, mass balance, MDL.
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	The metric is not applicable to this study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information on analytical methods, 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 Quality Determination**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.
OECD Harmonized Template:	Biodegradation in Soil
HERO ID:	5348332

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	no; other; experimental; other: not specified
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; 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 Humidity	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 Results 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 Deviation Results, Sample Time Results, Reference Substance Results, and References Substance Compartment 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 Results and Results Per Recovery	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 test source and purity 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	Medium	The test substance stability was not reported but may be available in the cited reference.
Domain 3: Test Conditions				

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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.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	5348332			
		EVALUATION		
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 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	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	Medium	Sampling method details were not reported but may be available in the cited reference.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Confounding variables were not addressed but may be available in the cited reference.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to the study type.
Domain 7: Data Presentation 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 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 Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to the study type.

Overall Quality Determination**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)

Study Citation:	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.
OECD Harmonized Template:	Biodegradation in Soil
HERO ID:	1315929

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: shake flask
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Fisher Scientific; NR; NR Notes: Di-n-butyl phthalate
Oxygen, pH, and CEC	aerobic; Not reported; Not reported
Test Type, Test Temperature, and Test Details	laboratory; 25±2°C; Not Reported
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	other; 0.77-1.59% organic carbon; 0.9-1.2
Soil Classification, Microbial Biomass, and Humidity	Broome County (NY); NR, natural soil used: Not reported
Duration, Parameter, System, and Sampling Frequency	120 hours; test mat.; Erlenmeyer shake flask; reported as periodically
Control and Blank	Not reported; autoclaved flasks or 0.1% formaldehyde
Concentration	3 - 10 ppm
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-ECD; Not reported; test substance
Results Remarks	Not reported
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and References Substance Compartment Results	Broome County soil: DBP disappeared (100%) at 72 hours, 30%±3 remained in sterilized control. Leachate sprayed soils: DBP disappeared (100%) at 120 hours, 29% (±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 Results and Results Per Recovery	NR, hexane used; Not reported

EVALUATION				
Domain	Metric		Rating	Comments
Domain 1: Test Substance	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 Conditions				

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Study Citation:	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.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	1315929			
		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 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 Organisms				
	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 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	This metric met the criteria for high confidence as expected for this type of study.
Domain 6: Confounding/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 Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Some result details were not reported; however, these omissions would not have a substantial 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				
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

Study Citation:	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 Template:	Biodegradation in Soil
HERO ID:	1333345

Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other
Solvent, Reactivity, Storage, Stability	Methanol; NR; NR; NR
Radiolabel, Source, State, 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, 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 then were plugged and mixed before moisture adjustment and incubation. Anaerobic tests were done by flooding tubes with sterile water
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	Not Reported; Not reported; Not reported
Soil Classification, Microbial Biomass, and Humidity	Not reported; Not reported: 60%
Duration, Parameter, System, and Sampling Frequency	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, Analytical Details, and Results Per Degredation Parameter	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, Sample Time Results, Reference Substance Results, and References Substance Compartment Results	DBP concentration (µg/g soil) under aerobic conditions on day 0, 5, 10, 15, 20, 30: 472±14 (0% Removal), 110±13 (77% Removal), 40±6 (92% Removal), 0 (>99% Removal), 0 (>99% Removal), 0 (>99% Removal). Anaerobic: 470±17 (0% Removal), 402±9 (15% Removal), 348±8 (26% Removal), 301±9 (36% Removal), 239±9 (49% Removal), 159±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 Recovery	Not reported; Not reported

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	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.

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Study Citation:	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 Template:	Biodegradation in Soil			
HERO ID:	1333345			
Domain		Metric	EVALUATION	
			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 Conditions				
	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 Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The soil was sufficiently described for the purposes of the study.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to 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	High	Sampling methods were clearly reported and appropriate.
Domain 6: Confounding/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 Presentation and Analysis				
	Metric 15:	Data Reporting	High	The data reporting was appropriate.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The statistical analysis was appropriate and no kinetic calculations were presented.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination			High	

Study Citation:	Vavilin, V. A. (2010). Analysis of the mechanism and mathematical modeling of diethylhexylphthalate degradation in aquatic environment. Water Resources 37(3):399-410.
OECD Harmonized Template:	Biodegradation in Soil
HERO ID:	792131

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; inherent biodegradability; Calculation; other: Kinetics calculation of anaerobic phthalate degradation
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: Experimental details described elsewhere
Oxygen, pH, and CEC	anaerobic; 5.5; Not reported
Test Type, Test Temperature, and Test Details	laboratory; Not reported; Study details reported in other source; the methanogenesis in acidogenic reactor received 144 - 169 week old leachate from an acidogenic reactor which was diluted during weeks 18 - 52
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	Not Reported; Not reported; Not reported
Soil Classification, Microbial Biomass, and Humidity	Not reported; Not reported; 65% moisture
Duration, Parameter, System, and Sampling Frequency	250 wk; test mat.; Cylindrical reactor, lysimeter, simulating a landfill; Not reported
Control and Blank	Not reported; Not reported
Concentration	14500 µg/L
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Not reported; Not reported; Test substance in solution
Results Remarks	Final concentration in solution: est. 4000 ug/Ldesorption/sorption rate constants: k1/k2=0.035/12=0.003
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and References Substance Compartment Results	est. 98%; Not reported; 250 d; Not reported; Not reported
Results Details	Degradation constant=NR
Mean Total Recovery Results and Results Per Recovery	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 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.

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Study Citation:	Vavilin, V. A. (2010). Analysis of the mechanism and mathematical modeling of diethylhexylphthalate degradation in aquatic environment. Water Resources 37(3):399-410.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	792131			
Domain		Metric	EVALUATION	
			Rating	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 Conditions				
	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 Organisms				
	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 Assessment				
	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/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 Presentation 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 Results	High	The results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			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 35(8):1747-1754.
OECD Harmonized Template:	Biodegradation in Soil
HERO ID:	1333189

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: DBP biodegradation by indigenous soil bacteria.
Solvent, Reactivity, Storage, Stability	Methanol; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Beijing Chemical Plant; NR; Analytical grade Notes: NR
Oxygen, pH, and CEC	aerobic; 7.2; Not reported
Test Type, Test Temperature, 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 Organic Carbon, and Bulk Density	Not Reported; Total organic carbon: 1.14%; Not reported
Soil Classification, Microbial Biomass, and Humidity	Natural soil from grounds of Tsinghua Garden.; Not reported: 60%
Duration, Parameter, System, and Sampling Frequency	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 Results 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 Deviation Results, Sample Time Results, Reference Substance Results, and Reference Substance 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 Results and Results Per Recovery	Not reported; Not reported

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 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.

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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.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	1333189			
Domain		EVALUATION		Comments
	Metric	Rating		
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	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.
Domain 4: Test Organisms				
	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 Assessment				
	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/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 Presentation and Analysis				
	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 Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination			High	

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 agricultural soils of China. Science of the Total Environment 393(2-3):333-340.
OECD Harmonized Template:	Biodegradation in Soil
HERO ID:	698216

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Non-guideline
Solvent, Reactivity, Storage, Stability	Methanol; NR; NR; NR
Radiolabel, Source, State, 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 Temperature, 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, Microbial Biomass, and Humidity	Black soil and fluvo-aquic soil; Not reported: 30%
Duration, Parameter, System, and Sampling Frequency	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 Results Per Degredation Parameter	GC-MS; Detection limit: 0.01mg/kg; Test material analysis
Results Remarks	Not reported
Results Value, Standard Deviation Results, Sample 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 Results and Results Per Recovery	97.6%; Not reported

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 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.

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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 agricultural soils of China. Science of the Total Environment 393(2-3):333-340.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	698216			
Domain	Metric	EVALUATION		Comments
		Rating		
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 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 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 the study type.
Domain 5: Outcome Assessment				
	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: Confounding/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 Presentation and Analysis				
	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.
Overall Quality Determination		High		

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 Template:	Biodegradation in Soil
HERO ID:	1249569

Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Batch test
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Chem Service (West Chester, PA, USA); NR; 99.0% Notes: DBP
Oxygen, pH, and CEC	aerobic; 7; 11.4 cmol/kg
Test Type, Test Temperature, 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 Organic Carbon, and Bulk Density	clay loam; 23.0% clay, 60.5 % silt, 16.5 % sand, 13.5 g/ kg organic carbon; discussed but NR
Soil Classification, Microbial Biomass, and Humidity	Not applicable; Sewage sludge samples from Neihu municipal sewage treatment plant in Taipei: Not reported
Duration, Parameter, System, and Sampling Frequency	10 days; test mat.; bioreactor; approx. every 2 days
Control and Blank	Not applicable; autoclaved
Concentration	200 mg/kg
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-ECD; Not Reported; test material
Results Remarks	k1=0.58-0.63 day ⁻¹
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and Reference Substance Compartment 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 Results and Results Per Recovery	93%; Not applicable

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	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				

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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 Template:	Biodegradation in Soil			
HERO ID:	1249569			
		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 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 Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The test inoculum source was reported and the test inoculum 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 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:	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 Presentation 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 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 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 Quality Determination		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 a novel <i>Providencia</i> sp 2D and its stimulation in a compost-amended soil. <i>Biology and Fertility of Soils</i> 52(1):65-76.
OECD Harmonized Template:	Biodegradation in Soil
HERO ID:	3352270

EXTRACTION	
Parameter	Data
CASRN and Test Material	Not Reported; di-n-butylphthalate
Confidentiality, EndPoint, Type, Guideline	None; other; experimental; other: pure culture amended biodegradation
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	None; Aladdin Chemistry Co., Ltd. (Shanghai, China); NR; 98.7% Notes: DBP
Oxygen, pH, and CEC	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 Organic Carbon, and Bulk Density	other; 11.99% clay/52.34% silt/35.67% sand/1.5% organic matter; not reported
Soil Classification, Microbial Biomass, and Humidity	soil amended with compost; Strain 2D: compost samples with mineral salt medium incubated with DBP and PA transferred serially >10 times to enrich culture: 40% water-holding capacity
Duration, Parameter, System, and Sampling Frequency	10 days (from figure); test mat; Soil/compost-amended soil in Erlenmeyer flasks and treated with DBP, drip irrigation used to add inoculum; periodically
Control and Blank	not reported; negative control: uninoculated; positive control: aerobic sterile soil/compost
Concentration	50 - 1000 mg/L
Analytical Method, Analytical Details, and Results Per Degredation Parameter	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, Sample Time Results, Reference Substance Results, and References Substance Compartment Results	almost completely at ≤200 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%
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 (1000 mg/L)
Mean Total Recovery Results and Results Per Recovery	92.0-96.5%; Not Reported

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

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Study Citation:	Zhao, H., Du, H., Feng, N., Xiang, L., Li, Y., Li, H., Cai, Q. Y., Mo, C. (2016). Biodegradation of di-n-butylphthalate and phthalic acid by a novel <i>Providencia</i> sp 2D and its stimulation in a compost-amended soil. <i>Biology and Fertility of Soils</i> 52(1):65-76.			
OECD Harmonized Template:	Biodegradation in Soil			
HERO ID:	3352270			
		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 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.
	Metric 8:	System Type and Design	N/A	This metric is not applicable to the study type.
Domain 4: Test Organisms				
	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 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	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 Presentation 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 Results	High	Reported values were expected.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to the study type.

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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 Template:	Biodegradation in Soil
HERO ID:	3352270

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		High	

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. <i>Journal of Toxicology and Environmental Health, Part A: Current Issues</i> 78(12):761-777.
OECD Harmonized Template:	Aquatic Bioconcentration
HERO ID:	2940328

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, Type, and Guideline	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; NR
Radiolabel, Source, State, Purity	NR; Sigma-Aldrich (Switzerland); NR; 99% Notes: DBP
Test Organism and Test Organism Details	Tilapia zillii, Hepsetus odoe, Parachanna obscura and Chrysichthys nigrodigitatus, Mormyrus rume, and a decapod crustacean (African river prawn, Macrobrachium vollehovenii); Natural biota samples
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; NR; temperature was measured at the sampling site using a mercury-in-glass thermometer.; NR; measured using a Consort C933T electrochemistry meter; Not reported
Media Type, TOC, and Salinity	natural water: marine; NR; measured using a Consort C933T electrochemistry meter; NR; measured using a Consort C933T electrochemistry meter
Dissolved Oxygen, Conductivity, and Hardness	NR; measured using a Consort C933T electrochemistry meter; NR; measured using a Consort C933T electrochemistry meter; Not reported
Exposure Route, Elimination, and Nominal Measurements	Environmental; Natural; Measured
Test Type, Test Temperature, and Test Condition Comments	field study; NR; temperature was measured at the sampling site using a mercury-in-glass thermometer.; Water and sediment samples were collected from lakes Asejire and Eleyele in Nigeria
Duration, Parameter, and Sampling 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 Analytical Details	HPLC; Detailed protocols, including quality assurance, are given in Supplementary Material 1;
Rate Constant and Results per Recovery	Not reported; Not reported
Statistics, Basis, and Calculation 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 Details	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 Results Reference Substance	Not reported; 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.

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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 Template:	Aquatic Bioconcentration			
HERO ID:	2940328			
EVALUATION				
Domain		Metric	Rating	Comments
	Metric 2:	Test Substance Purity	High	Test substance 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 Conditions				
	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 measurement 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 Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.
	Metric 10:	Sampling Methods	Medium	Test organism species and source were reported, limited organism characteristics reported.
Domain 5: Outcome Assessment				
	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: 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 Exposure	N/A	This metric is not applicable to this type of study.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Some details were omitted; however, this does not hinder the interpretation of the results.
	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.
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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 Template:	Aquatic Bioconcentration
HERO ID:	2940328

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

Overall Quality Determination	High
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Study Citation:	Adeogun, A. O., Ibor, O. R., Omogbemi, E. D., Chukwuka, A. V., Adegbola, R. A., Adewuyi, G. A., Arukwe, A. (2015). Environmental occurrence and biota concentration of phthalate esters in Epe and Lagos Lagoons, Nigeria. Marine Environmental Research 108:24-32.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	2915546			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutyl phthalate			
Confidentiality, Type, and Guideline	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; NR			
Radiolabel, Source, State, Purity	NR; Sigma Aldrich (Switzerland); NR; Analytical standard Notes: Monitoring study			
Test Organism and Test Organism Details	Macrobrachium vollenhovenii; Chrysichthys nigrodigitatus, Tilapia guineensis; Natural biota samples; whole body BSAF values reported for Macrobrachium vollenhovenii; organ BSAF reported for Chrysichthys nigrodigitatus, Tilapia guineensis			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; 7.21±0.26 (Epe) 7.4±0.18 (Lagos); Not reported			
Media Type, TOC, and Salinity	natural water: marine; Total dissolved solids: 226.14±57.1 mg/L (Epe) 336.50±18.6 mg/L (Lagos); 0.27±0.12 mg/L (Epe) 4.02±0.34 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, and Nominal Measurements	Environmental; Natural; Measured			
Test Type, Test Temperature, and Test Condition	field study; Not reported; Water and sediment samples were collected from four stations, including two landing sites of Lagos and Epe lagoons			
Comments				
Duration, Parameter, and Sampling Frequency	Sampling conducted May 2011 to July 2011; DT50; Not reported			
Concentration	0.18 ± 0.01 (Epe sediment), 0.14 ± 0.01 (Lagos sediment) - ug/g			
Analytical Method and Analytical Details	HPLC; Not reported;			
Rate Constant and Results per Recovery	Not reported; Not reported			
Statistics, Basis, and Calculation 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 Details	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 Results Reference Substance	Not reported; 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.
	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.
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Study Citation:	Adeogun, A. O., Ibor, O. R., Omogbemi, E. D., Chukwuka, A. V., Adegbola, R. A., Adewuyi, G. A., Arukwe, A. (2015). Environmental occurrence and biota concentration of phthalate esters in Epe and Lagos Lagoons, Nigeria. Marine Environmental Research 108:24-32.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	2915546			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	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 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 Organisms				
	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 reported.
Domain 5: Outcome Assessment				
	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: 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 Exposure	N/A	This metric is not applicable to this type of study.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Some details were omitted; however, this does not hinder the interpretation of the results.
	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.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

Study Citation:	Adeogun, A. O., Ibor, O. R., Omogbemi, E. D., Chukwuka, A. V., Adegbola, R. A., Adewuyi, G. A., Arukwe, A. (2015). Environmental occurrence and biota concentration of phthalate esters in Epe and Lagos Lagoons, Nigeria. Marine Environmental Research 108:24-32.		
OECD Harmonized Template:	Aquatic Bioconcentration		
HERO ID:	2915546		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	84-74-2; Dibutylphthalate		
Confidentiality, Type, and Guideline	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; NR		
Radiolabel, Source, State, Purity	NR; Sigma Aldrich (Switzerland); NR; Analytical standard Notes: Monitoring study		
Test Organism and Test Organism Details	Macrobrachium vollenhovenii; Chrysichthys nigrodigitatus, Tilapia guineensis; Natural biota samples; whole body BCF values reported for Macrobrachium vollenhovenii; organ BCF reported for Chrysichthys nigrodigitatus, Tilapia guineensis		
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; 7.21±0.26 (Epe) 7.4±0.18 (Lagos); Not reported		
Media Type, TOC, and Salinity	natural water: marine; Total dissolved solids: 226.14±57.1 mg/L (Epe) 336.50±18.6 mg/L (Lagos); 0.27±0.12 mg/L (Epe) 4.02±0.34 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, and Nominal Measurements	Environmental; Natural; Measured		
Test Type, Test Temperature, and Test Condition	field study; Not reported; Water and sediment samples were collected from four stations, including two landing sites of Lagos and Epe lagoons		
Comments			
Duration, Parameter, and Sampling Frequency	Sampling conducted May 2011 to July 2011; DT50; Not reported		
Concentration	Not Reported		
Analytical Method and Analytical Details	HPLC; Not reported;		
Rate Constant and Results per Recovery	Not reported; Not reported		
Statistics, Basis, and Calculation 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 Details	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 Results Reference Substance	Not reported; 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.
	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 Conditions			
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Study Citation:	Adeogun, A. O., Ibor, O. R., Omogbemi, E. D., Chukwuka, A. V., Adegbola, R. A., Adewuyi, G. A., Arukwe, A. (2015). Environmental occurrence and biota concentration of phthalate esters in Epe and Lagos Lagoons, Nigeria. Marine Environmental Research 108:24-32.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	2915546			
		EVALUATION		
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 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 Organisms				
	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 reported.
Domain 5: Outcome Assessment				
	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: 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 Exposure	N/A	This metric is not applicable to this type of study.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Some details were omitted; however, this does not hinder the interpretation of the results.
	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.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

Study Citation:	Call, D. J., Brooke, L. T., Ahmad, N. (1980). Toxicity, bioconcentration, and metabolism of selected chemicals in aquatic organisms: Fourth quarterly progress report to EPA (1 January - 31 March 1980).			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	3634375			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butylphthalate			
Confidentiality, Type, and Guideline	None; Experimental; other: Bioconcentration of DBP in Fathead Minnows.			
Solvent, Reactivity, Storage, Stability	Methanol; NR; NR; NR			
Radiolabel, Source, State, 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 Organism 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 Temperature, pH, and Depuration Time	measured but not reported; 25.4±0.46°C; 7.22; 21 days			
Media Type, TOC, and Salinity	natural water: freshwater; Not reported; Not reported			
Dissolved Oxygen, Conductivity, and Hardness	54.2% saturation; Not reported; 52.8±1.06 mg/L CaCO3			
Exposure Route, Elimination, and Nominal Measurements	aqueous; Not reported; Measured			
Test Type, Test Temperature, and Test Condition	semi-static; 25.4±0.46°C; Artificial lighting; 16 hr light/8 hr dark			
Comments				
Duration, Parameter, and Sampling 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 depuration.			
Concentration	4.83 - 34.85 µg/L			
Analytical Method and Analytical 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 per Recovery	Not reported; mean extraction efficiency for water and fish samples: 97.59±1.32% and 83.61±10.08%			
Statistics, Basis, and Calculation Basis	Not reported; whole body; other			
Results Value and Results 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 concentrations.			
Metabolites, Reference, and Results Reference Substance	Not reported; 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	High	The source and purity of the test substance were reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Concurrent controls were included.
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Study Citation:	Call, D. J., Brooke, L. T., Ahmad, N. (1980). Toxicity, bioconcentration, and metabolism of selected chemicals in aquatic organisms: Fourth quarterly progress report to EPA (1 January - 31 March 1980).			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	3634375			
Domain	Metric	EVALUATION		Comments
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, 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.
	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 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 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				
	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 Presentation 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 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.

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Study Citation:	Call, D. J., Brooke, L. T., Ahmad, N. (1980). Toxicity, bioconcentration, and metabolism of selected chemicals in aquatic organisms: Fourth quarterly progress report to EPA (1 January - 31 March 1980).
OECD Harmonized Template:	Aquatic Bioconcentration
HERO ID:	3634375

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		Medium	

Study Citation:	Cassery, D. M., Davis, E. M., Downs, T. D., Guthrie, R. K. (1983). Sorption of organics by <i>Selenastrum capricornutum</i> . Water Research 17(11):1591-1594.
OECD Harmonized Template:	Aquatic Bioconcentration
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; NR			
Radiolabel, Source, State, Purity	NR; 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 Depuration Time	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; Not reported			
Exposure Route, Elimination, and Nominal Measurements	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 multichemical test, respectively.			
Comments				
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 Substance	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 substantial 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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Study Citation:	Casserly, D. M., Davis, E. M., Downs, T. D., Guthrie, R. K. (1983). Sorption of organics by <i>Selenastrum capricornutum</i> . Water Research 17(11):1591-1594.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	1333375			
Domain	Metric	EVALUATION		Comments
		Rating		
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 Exposure	N/A	The metric is not applicable to the organism type.
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.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical analysis was not reported but the omission is unlikely to have a substantial impact on the study results.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR 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 and effects data base on 14 phthalate esters.
OECD Harmonized Template:	Aquatic Bioconcentration
HERO ID:	7325943

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, and Guideline	no; Calculation; other: not specified
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR
Test Organism and Test Organism Details	NR; NR
Lipid Content, Test Temperature, pH, and Depuration Time	NR; NR; NR; NR
Media Type, TOC, and Salinity	NR; NR; NR
Dissolved Oxygen, Conductivity, and Hardness	NR; NR; NR
Exposure Route, Elimination, and Nominal Measurements	NR; NR; NR
Test Type, Test Temperature, and Test Condition	NR; NR; NR
Comments	
Duration, Parameter, and Sampling Frequency	NR; NR; NR
Concentration	NR NR - NR NR NR
Analytical Method and Analytical Details	NR; NR;
Rate Constant and Results per Recovery	NR; NR
Statistics, Basis, and Calculation Basis	NR; NR; NR
Results Value and Results Details	NR; Reports a predicted BCF=525; $\log BCF = (0.542 \times \log Kow) + 0.124$; calculated from actual Kow determinations.
Metabolites, Reference, and Results Reference Substance	NR; NR; NR

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 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 Conditions	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.

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Study Citation:	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.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	7325943			
Domain		Metric	EVALUATION	
			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 Organisms				
		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 Assessment				
		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: Confounding/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 Presentation and Analysis				
		Metric 15:	Data Reporting	N/A This metric does not apply to this study type.
		Metric 16:	Statistical Methods and Kinetic Calculations	Medium Equation used for calculation was 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.
		Metric 18:	QSAR Models	N/A A QSAR model was not reported.
Overall Quality Determination			High	

Study Citation:	Chi, J. (2009). Phthalate acid esters in Potamogeton crispus L. from Haihe River, China. Chemosphere 77(1):48-52.
OECD Harmonized Template:	Aquatic Bioconcentration
HERO ID:	697462

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, Type, and 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, 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 Organism 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 Salinity	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, Conductivity, and Hardness	Not reported; Not reported; Not reported
Exposure Route, Elimination, and Nominal Measurements	Sediment and water; Not reported; Measured
Test Type, Test Temperature, 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
Comments	
Duration, Parameter, and Sampling 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/L Sediment LOD: 0.02 mg/kg Plant 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 Calculation Basis	SD water 3-15%; SD sediment 5-16%; SD plant 6-18%; organ w.w.; steady state
Results Value and Results 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 and 8
Metabolites, Reference, and Results Reference Substance	Not reported; Not applicable; Not applicable

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	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.

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Study Citation:	Chi, J. (2009). Phthalate acid esters in Potamogeton crispus L. from Haihe River, China. Chemosphere 77(1):48-52.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	697462			
Domain		Metric	EVALUATION Rating	Comments
	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 Conditions				
	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 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 species was reported and is routinely used for similar study types.
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	High	The sampling methods were reported and appropriate for the study type.
Domain 6: Confounding/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 Presentation and Analysis				
	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 Results	High	The results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			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 <i>Chlorella vulgaris</i> . Bulletin of Environmental Contamination and Toxicology 77(1):21-29.
OECD Harmonized Template:	Aquatic Bioconcentration
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, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Sigma Company; NR; 99%
Test Organism and Test Organism Details	<i>Chlorella vulgaris</i> ; alga
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; 13 and 25°C; Not reported; Not reported
Media Type, TOC, and Salinity	0.45 μ m filtered lake water, sterilized; 29.0 mg/L dissolved organic carbon; Not reported
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; Not reported
Exposure Route, Elimination, and Nominal Measurements	alga in media or lake water; Not reported; Measured
Test Type, Test Temperature, and Test Condition	static; 13 and 25°C; Not applicable
Comments	
Duration, Parameter, and Sampling Frequency	150 hours; other; 7 datapoints over 150 hours
Concentration	0.273 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 Calculation Basis	SD and average reported; not specified; steady state
Results Value and Results Details	BCF; \leq 10,800
Metabolites, Reference, and Results Reference Substance	Not reported; 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 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.

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Study Citation:	Chi, J., Liu, H., Li, B., Huang, G. L. (2006). Accumulation and biodegradation of dibutyl phthalate in <i>Chlorella vulgaris</i> . Bulletin of Environmental Contamination and Toxicology 77(1):21-29.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	1323214			
Domain		Metric	EVALUATION 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 Organisms				
	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 characteristics were not provided.
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	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	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 Presentation 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 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.
Overall Quality Determination			High	

* Related References: Cited in HSDB

Study Citation:	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.
OECD Harmonized Template:	Aquatic Bioconcentration
HERO ID:	1332769

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, Type, and Guideline	None; Experimental; other: Plant concentration factors in submerged Potamogeton crispus L.
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Sigma; NR; 99% Notes: NR
Test Organism and Test Organism Details	Potamogeton crispus L.; Submerged herbaceous perennial plant. Tissue was cultured from a parent material collected from Jingye Lake, China.
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; 20±1°C; 7.8-7.9; Not Reported
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, Conductivity, and Hardness	Not reported; Not reported; Not reported
Exposure Route, Elimination, and Nominal Measurements	DBP was added to inflow water at 0.3-0.5mg/L; Not reported; Not reported
Test Type, Test Temperature, and Test Condition	flow-through; 20±1°C; In- and out-flow rates were 0.2L/h.
Comments	
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 Analytical 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 per Recovery	Not reported; Average recovery in water, sediment, and plant: >92.5, >87.9, and >89.6%.
Statistics, Basis, and Calculation Basis	Relative standard deviation in water: 2-11%; in sediment: 5-14%; in plant: 3-13%; Not Reported; Not Reported
Results Value and Results Details	Plant concentration factor: 16.9-36.0 L/kg; PCF=DBP plant conc./DBP water conc.
Metabolites, Reference, and Results Reference Substance	Not reported; Not reported; Not reported

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 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 Conditions	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.

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Study Citation:	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.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	1332769			
		EVALUATION		
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 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 information was reported and 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	High	The sampling methods were reported and appropriate for the study type.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Uncertainties in the measurements were reported and experiments were done in triplicate 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 Presentation 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 Results	High	The study results were consistent with field derived values according to the authors.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		High		

Study Citation:	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			
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, Storage, Stability	NR; 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 Organism Details	Pimephales promelas; Juvenile fathead minnows			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; 22±1°C; 7.48 (AWT water); 8.25 (Miramar water); Not reported			
Media Type, TOC, and Salinity	other; Not reported; Not reported			
Dissolved Oxygen, Conductivity, and Hardness	≥ 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, Elimination, and Nominal Measurements	Contaminated waters; target analyte concentration not reported; Not reported; Measured			
Test Type, Test Temperature, and Test Condition	flow-through; 22±1°C; Bioaccumulation of contaminants over a 28-d period using water from and advanced wastewater treatment facility (AWT water) and a Water Treatment facility (Miramar water)			
Comments				
Duration, Parameter, and Sampling Frequency	28 days; other; 0, 7, 14, and 28 days			
Concentration	Not Reported			
Analytical Method and Analytical 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 fish plastic shipping bags, trace amount in extraction solvent blanks			
Statistics, Basis, and Calculation Basis	p <0.05; BMDP Statistical Software was used for data analysis; other; other			
Results Value and Results Details	25% (AWT water); 25% (Miramar water); Percentage of samples above DL (1 ug/kg)			
Metabolites, Reference, and Results Reference Substance	Not reported; 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	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.

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Study Citation:	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			
Domain	Metric	EVALUATION		Comments
	Metric 4:	Test Substance Stability	Rating N/A	
				The metric is not applicable to this study type.
Domain 3: Test Conditions				
	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 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 was a standard species; however, prior contamination from plastic shipping bags noted but was not quantified.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Uninformative	There was incomplete reporting of outcome assessment method; BCF or BAF value 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: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Uninformative	Prior contamination from plastic shipping bags noted but not assessed or quantified; 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 Presentation and Analysis				
	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 Kinetic Calculations	High	Statistical analysis reported and acceptable.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Uninformative	Quantitative results for bioaccumulation were not reported.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination**Uninformative**

Study Citation:	EC/HC, (1994). Canadian environmental protection act priority substances list assessment report: Dibutyl phthalate.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	1333071			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; dibutyl phthalate			
Confidentiality, Type, and Guideline	no; experimental; Not Reported: not reported			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR			
Test Organism and Test Organism Details	brown shrimp; fathead minnow; Penaeus aztecus; Pimephales promelas			
Lipid Content, Test Temperature, pH, and Depuration Time	not reported; not reported; not reported; not reported			
Media Type, TOC, and Salinity	not reported; not reported; not reported			
Dissolved Oxygen, Conductivity, and Hardness	not reported; not reported; not reported			
Exposure Route, Elimination, and Nominal Measurements	not reported; not reported; not reported			
Test Type, Test Temperature, and Test Condition	not reported; not reported; not reported			
Comments				
Duration, Parameter, and Sampling 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 Calculation Basis	not reported; not reported; not specified			
Results Value and Results Details	2.9 for brown shrimp; 2125 for fathead minnow; Not Reported			
Metabolites, Reference, and Results Reference Substance	Not Reported; 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, 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 Conditions				
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Study Citation:	EC/HC, (1994). Canadian environmental protection act priority substances list assessment report: Dibutyl phthalate.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	1333071			
Domain	Metric	EVALUATION		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 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:	Sampling Methods	N/A	The metric is not applicable to this study.
Domain 5: Outcome Assessment	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	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 Presentation 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	Metric 17:	Verification or Plausibility of Results	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 Quality Determination**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).

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 Template:	Aquatic Bioconcentration
HERO ID:	3661424

EXTRACTION	
Parameter	Data
CASRN and Test Material	Not Reported; Dibutylphthalate
Confidentiality, Type, and Guideline	None; experimental; other: Not specified
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	14C; NR; NR; NR Notes: NR
Test Organism and Test Organism Details	fathead minnow (<i>Pimephales promelas</i>); NR
Lipid Content, Test Temperature, pH, and Depuration Time	NR; NR; NR; NR
Media Type, TOC, and Salinity	NR; NR; NR
Dissolved Oxygen, Conductivity, and Hardness	NR; NR; NR
Exposure Route, Elimination, and Nominal Measurements	NR; NR; NR
Test Type, Test Temperature, and Test Condition	NR; NR; NR
Comments	
Duration, Parameter, and Sampling Frequency	NR; other; NR
Concentration	Not Reported
Analytical Method and Analytical Details	NR; NR;
Rate Constant and Results per Recovery	NR; NR
Statistics, Basis, and Calculation Basis	NR; NR; 14C content
Results Value and Results Details	BCF = 2,125; Both 14CDBP and any 14C-labelled metabolites of DBP were measured. Data for brown shrimp (<i>Penaus aztecus</i>) already reported.
Metabolites, Reference, and Results Reference Substance	NR; NR; NR

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 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.

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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 Template:	Aquatic Bioconcentration			
HERO ID:	3661424			
Domain	Metric	EVALUATION		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.
	Metric 7:	Testing Consistency	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 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 Presentation 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 Results	Medium	The study results were reasonable.
	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 Annex XV dossier proposing restrictions on four phthalates.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	3661424			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; Dibutylphthalate			
Confidentiality, Type, and 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; NR			
Radiolabel, Source, State, Purity	14C; NR; NR; NR Notes: NR			
Test Organism and Test Organism Details	Carp (Cyprinus carpio); NR			
Lipid Content, Test Temperature, pH, and Depuration Time	NR; NR; NR; NR			
Media Type, TOC, and Salinity	NR; NR; NR			
Dissolved Oxygen, Conductivity, and Hardness	NR; NR; NR			
Exposure Route, Elimination, and Nominal Measurements	NR; NR; NR			
Test Type, Test Temperature, and Test Condition	NR; NR; NR			
Comments				
Duration, Parameter, and Sampling Frequency	28 days; other; NR			
Concentration	10 - 50 ug/L			
Analytical Method and Analytical Details	NR; NR;			
Rate Constant and Results per Recovery	NR; NR			
Statistics, Basis, and Calculation Basis	NR; NR; 14C content			
Results Value and Results 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-ester MBP, was not analysed were noted in the study summary.			
Metabolites, Reference, and Results Reference Substance	None; NR; NR			
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	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				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
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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 Template:	Aquatic Bioconcentration			
HERO ID:	3661424			
Domain		Metric	EVALUATION 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 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	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 Presentation 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 Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	A QSAR model was not reported.
Overall Quality Determination			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 11(2):184-197.
OECD Harmonized Template:	Aquatic Bioconcentration
HERO ID:	1333588

EXTRACTION	
Parameter	Data
CASRN and Test Material	not reported; Not Reported
Confidentiality, Type, and Guideline	no; other; other: non-guideline
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR
Test Organism and Test Organism Details	Pulex (daphnids); not reported
Lipid Content, Test Temperature, pH, and Depuration Time	not reported; not reported; not reported; not reported
Media Type, TOC, and Salinity	not reported; not reported; not reported
Dissolved Oxygen, Conductivity, and Hardness	not reported; not reported; not reported
Exposure Route, Elimination, and Nominal Measurements	not reported; not reported; not reported
Test Type, Test Temperature, and Test Condition	not reported; not reported; not reported
Comments	
Duration, Parameter, and Sampling Frequency	not reported; not reported; not reported
Concentration	not reported not reported - not reported not reported not reported
Analytical Method and Analytical Details	not reported; not reported;
Rate Constant and Results per Recovery	not reported; not reported
Statistics, Basis, and Calculation Basis	not reported; not reported; steady state (BCF at equilibrium)
Results Value and Results Details	log BCF = 3.70; experimental data from cited reference in the study
Metabolites, Reference, and Results Reference Substance	not reported; 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	No details reported in this secondary source; additional detail may be in primary literature.
Domain 2: Test Design	Metric 3:	Study Controls	Low	No details reported in this secondary source; additional detail may be in primary literature.
	Metric 4:	Test Substance Stability	Low	No details reported in this secondary source; additional detail may be in primary literature.

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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.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	1333588			
Domain	Metric	EVALUATION		Comments
		Rating		
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	Low	No details reported in this secondary source; additional detail may be in primary literature.
	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	Low	No details reported in this secondary source; additional detail may be in primary literature.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Low	No details reported in this secondary source; additional detail may be in primary literature.
	Metric 14:	Health Outcomes Unrelated to Exposure	Low	No details reported in this secondary source; additional detail may be in primary literature.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	No details reported in this secondary source; additional detail may be in primary literature.
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	Not applicable to this study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	No details reported in this secondary source; additional detail may be in primary literature.
	Metric 18:	QSAR Models	N/A	0

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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.
OECD Harmonized Template:	Aquatic Bioconcentration
HERO ID:	1333588

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		Low	

* 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.

Study Citation:	Huang, G. L., Sun, H. W., Song, Z. H. (1999). Interactions between dibutyl phthalate and aquatic organisms. Bulletin of Environmental Contamination and Toxicology 63(6):759-765.			
OECD Harmonized Template:	Aquatic Bioconcentration			
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, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR			
Test Organism and Test Organism Details	Scenedesmus obliquus; Green algae (Scenedesmus obliquus) purchased from Institute for Hydrobiology, Academy of Science, China			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; 7.40; Not reported			
Media Type, TOC, and Salinity	not specified; Not reported; Not reported			
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; Not reported			
Exposure Route, Elimination, and Nominal Measurements	Cultures; Not reported; Measured			
Test Type, Test Temperature, and Test Condition	static; Not reported; Not reported			
Comments				
Duration, Parameter, and Sampling Frequency	168 hours; other; 1L algae culture and 0.5L control tested at 8, 48, 96, and 168 hours			
Concentration	50 µg/L			
Analytical Method and Analytical Details	GC-FID; DBP in water and algae measured; no further details;			
Rate Constant and Results per Recovery	Not reported; Not reported			
Statistics, Basis, and Calculation Basis	relative deviation between observed and predicted data was 7.59%; Not Reported; other			
Results Value and Results Details	BCF=4.33E3 (at 8 hrs); DBP peaked at 8 hr and declined due to degradation (and a small amount due to growth dilution effect)			
Metabolites, Reference, and Results Reference Substance	Not reported; Control with 5% formaldehyde included; Loss was ca. 2.0%			
EVALUATION				
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	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 Conditions				
	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.
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Study Citation:	Huang, G. L., Sun, H. W., Song, Z. H. (1999). Interactions between dibutyl phthalate and aquatic organisms. Bulletin of Environmental Contamination and Toxicology 63(6):759-765.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	5551982			
Domain	Metric	EVALUATION		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 Organisms	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.
Domain 5: Outcome Assessment	Metric 11:	Test Substance Identity	Low	Limited detail provided regarding this metric.
	Metric 12:	Test Substance Purity	Low	No detail provided.
Domain 6: Confounding/Variable Control	Metric 13:	Confounding Variables	N/A	No details provided.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Not applicable to this study type.
Domain 7: Data Presentation and Analysis	Metric 15:	Data Reporting	Low	Informative quantitative data was limited.
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Limited or no detail provided regarding this metric.
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 Determination		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 factors and the biota-sediment accumulation factor. Chemosphere 73(4):539-544.
OECD Harmonized Template:	Aquatic Bioconcentration
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, Storage, Stability	Hexane; NR; In amber vial at -20°C; NR
Radiolabel, Source, State, Purity	Nr; Supelco, Bellefonte, PA; NR; >99.0 %
Test Organism and Test Organism Details	Fish: <i>Oreochromis niloticus niloticus</i> , <i>Liza subviridis</i> , <i>Acanthopagrus schlegeli</i> , <i>Zacco platypus</i> and <i>Acrossocheilus paradoxus</i> ; 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 Depuration Time	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 Salinity	natural sediment; Mean (g TOC/ g of sediment): 0.025 (0.008-0.056); SD=0.013.; Not reported
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; Not reported
Exposure Route, Elimination, and Nominal Measurements	Not reported; Not reported; Not reported
Test Type, Test Temperature, 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; Not reported

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	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 Conditions	Metric 5:	Test Method Suitability	High	The test method was suitable for the test material.

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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 factors and the biota-sediment accumulation factor. Chemosphere 73(4):539-544.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	675207			
EVALUATION				
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	
	Metric 8:	System Type and Design	High	
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	Test organism information was reported and suitable 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	High	The sampling methods were reported and appropriate for the study type.
Domain 6: Confounding/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 Exposure	N/A	
Domain 7: Data Presentation and Analysis				
	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				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			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 differences, organism home range, and field sampling design on trophic magnification factors. Science of the Total Environment 551-552:438-451.
OECD Harmonized Template:	Aquatic 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, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; 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 Salinity	natural water / sediment - marine; not applicable; not applicable
Dissolved Oxygen, Conductivity, and Hardness	0.26 mg/L; not applicable; not applicable
Exposure Route, Elimination, and Nominal Measurements	environmental; not applicable; not applicable
Test Type, Test Temperature, and Test Condition	field study data; 15; data were applied using 6 different scenarios
Comments	
Duration, Parameter, and Sampling Frequency	not applicable; TMF; not applicable
Concentration	Not Reported
Analytical Method and Analytical Details	scenarios: S1 spatial concentration gradients in water and sediment were not present; S2 spatial concentration gradients were present in both water and sediment; S3 spatial concentration gradients were present in water but not in sediment; S4 spatial concentration gradients were present in sediment but not in water; S5 judgment sampling concentration gradient: (Area-1<Area-2<Area-3); S6 judgment sampling concentration gradient: (Area-1>Area-2>Area-3); fugacity ratio: S1-fixed; S2-fixed; S3-varied; S4-varied; S5-fixed; S6-fixed;
Rate Constant and Results per Recovery	Not Reported; not applicable
Statistics, Basis, and Calculation Basis	Not Reported; other; Not Reported
Results Value and Results 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 Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	N/A
Domain 2: Test Design	Metric 3:	Study Controls	N/A

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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 differences, organism home range, and field sampling design on trophic magnification factors. Science of the Total Environment 551-552:438-451.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	3350326			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.
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 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	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 of interest.
	Metric 12:	Test Substance Purity	N/A	The metric is not applicable to this study type.
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.
	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	High	Data reporting was appropriate.
	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	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		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 in the Asan Lake of Korea. Environment International 126:635-643.
OECD Harmonized Template:	Aquatic Bioconcentration
HERO ID:	5043593

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, and Guideline	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, Purity	NA; Asan Lake, Korea; NA; NA
Test Organism and Test Organism Details	Crucian carp; n=9
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; Not reported; Not reported
Media Type, TOC, and Salinity	natural water / sediment; Not reported; Not reported
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; Not reported
Exposure Route, Elimination, and Nominal Measurements	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 Sampling Frequency	Not applicable; Not Reported; October 2016. January 2017 (water and sediment only), May and July 2017
Concentration	Not Reported
Analytical Method and Analytical 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	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: 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; 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	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.

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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 in the Asan Lake of Korea. Environment International 126:635-643.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	5043593			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	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 Organisms				
	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 information.
Domain 5: Outcome Assessment				
	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/Variable Control				
	Metric 13:	Confounding Variables	Medium	Standard deviation was not reported, seasonal variation in fish samples was not addressed.
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No differences in organism health were reported.
Domain 7: Data Presentation 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 Quality Determination		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 in the Asan Lake of Korea. Environment International 126:635-643.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	5043593			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, Type, and Guideline	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, Purity	NA; Asan Lake, Korea; NA; NA			
Test Organism and Test Organism Details	Skygager; n=7			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; Not reported; Not reported			
Media Type, TOC, and Salinity	natural water / sediment; Not reported; Not reported			
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; Not reported			
Exposure Route, Elimination, and Nominal Measurements	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	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			
Comments	Not applicable; Not Reported; October 2016. January 2017 (water and sediment only), May and July 2017			
Duration, Parameter, and Sampling Frequency	Not Reported			
Analytical Method and Analytical 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	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: 2.4; log BSAF: -1.5 kg/kg dw; Fish: 8.0 ug/kg dw			
Metabolites, Reference, and Results Reference Substance	Not reported; 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.
	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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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 in the Asan Lake of Korea. Environment International 126:635-643.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	5043593			
		EVALUATION		
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 Organisms				
	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 information.
Domain 5: Outcome Assessment				
	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/Variable Control				
	Metric 13:	Confounding Variables	Medium	Standard deviation was not reported, seasonal variation in fish samples was not addressed.
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No differences in organism health were reported.
Domain 7: Data Presentation 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 Quality Determination		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 in the Asan Lake of Korea. Environment International 126:635-643.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	5043593			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, Type, and Guideline	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, Purity	NA; Asan Lake, Korea; NA; NA			
Test Organism and Test Organism Details	Bluegill; n=9			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; Not reported; Not reported			
Media Type, TOC, and Salinity	natural water / sediment; Not reported; Not reported			
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; Not reported			
Exposure Route, Elimination, and Nominal Measurements	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 Sampling Frequency	Not applicable; Not Reported; October 2016. January 2017 (water and sediment only), May and July 2017			
Concentration	Not Reported			
Analytical Method and Analytical 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	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: 2.0; log BSAF: -1.6 kg/kg dw; Fish: 3.3 ug/kg dw			
Metabolites, Reference, and Results Reference Substance	Not reported; 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.
	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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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 in the Asan Lake of Korea. Environment International 126:635-643.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	5043593			
		EVALUATION		
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 Organisms				
	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 information.
Domain 5: Outcome Assessment				
	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/Variable Control				
	Metric 13:	Confounding Variables	Medium	Standard deviation was not reported, seasonal variation in fish samples was not addressed.
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No differences in organism health were reported.
Domain 7: Data Presentation 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 Quality Determination		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 in the Asan Lake of Korea. Environment International 126:635-643.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	5043593			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, Type, and Guideline	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, Purity	NA; Asan Lake, Korea; NA; NA			
Test Organism and Test Organism Details	Bass; n=5			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; Not reported; Not reported			
Media Type, TOC, and Salinity	natural water / sediment; Not reported; Not reported			
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; Not reported			
Exposure Route, Elimination, and Nominal Measurements	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 Sampling Frequency	Not applicable; Not Reported; October 2016. January 2017 (water and sediment only), May and July 2017			
Concentration	Not Reported			
Analytical Method and Analytical 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	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			
Metabolites, Reference, and Results Reference Substance	Not reported; 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.
	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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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 in the Asan Lake of Korea. Environment International 126:635-643.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	5043593			
		EVALUATION		
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 Organisms				
	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 information.
Domain 5: Outcome Assessment				
	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/Variable Control				
	Metric 13:	Confounding Variables	Medium	Standard deviation was not reported, seasonal variation in fish samples was not addressed.
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No differences in organism health were reported.
Domain 7: Data Presentation 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 Quality Determination		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 aquatic food web: Comparison to polychlorinated biphenyls. <i>Environmental Science & Technology</i> 38(7):2011-2020.
OECD Harmonized Template:	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; NR
Radiolabel, Source, State, Purity	NR; 18 marine species; NR; NR
Test Organism and Test Organism 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 ochraceus; jPer=Cymatogaster aggregata; He=Clupea harengus pallasii; PP=Rhacochilus vacca; SP=Embiotoca lateralis; Sc=Leptocottus armatus; So=Pleuronectes ventulus; WG=Hexagrammos stelleri; Dg=Squalus acanthias; SS=Melanitta perspicillata
Lipid Content, Test Temperature, pH, and Depuration Time	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, and Nominal Measurements	environmental; 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; MC=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 (embryo); SS=2.84
Test Type, Test Temperature, and Test Condition	field study; not applicable; 9 individual samples of each species.
Comments	
Duration, Parameter, and Sampling Frequency	samples collected June-September 1999; food-web magnification factor (FWMF); not applicable
Concentration	Not Reported
Analytical Method and Analytical Details	GC/LRMS; LC/ESI-MS; Not Reported;
Rate Constant and Results per 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, and Results Reference Substance	not applicable; 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			

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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 aquatic food web: Comparison to polychlorinated biphenyls. Environmental Science & Technology 38(7):2011-2020.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	789501			
		EVALUATION		
Domain	Metric	Rating	Comments	
	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 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	High	Equilibrium was established.
Domain 4: Test Organisms				
	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.
	Metric 10:	Sampling Methods	High	Test organism information was reported, including species or sex, age, and starting body weight.
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	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	High	There were multiple study groups, and there were no differences among the study groups in organism attrition or health outcomes that influenced the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	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.
	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	High	Reported values were expected.

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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 aquatic food web: Comparison to polychlorinated biphenyls. Environmental Science & Technology 38(7):2011-2020.
OECD Harmonized Template:	Aquatic Bioconcentration
HERO ID:	789501

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

Overall Quality Determination	High
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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 Template:	Aquatic Bioconcentration
HERO ID:	1334646

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, Type, and Guideline	None; Experimental; other
Solvent, Reactivity, Storage, Stability	NR; NR; Stock solutions made in water; NR
Radiolabel, Source, State, Purity	14-C carbonyl labeled DBP (1.53 mCi/mmol); NR; NR; NR
Test Organism and Test Organism Details	Midge larvae; Chironomus plumosus, n=18 (number of organisms in each sample replicate)
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; 21±1°C; 7.4; None
Media Type, TOC, and Salinity	natural water: freshwater; Not reported; Not reported
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; 270 mg/L as CaCO ₃
Exposure Route, Elimination, and Nominal Measurements	Not reported; Not reported; 0.18±0.015 µg/L
Test Type, Test Temperature, and Test Condition	semi-static; 21±1°C; Not Reported
Comments	
Duration, Parameter, and Sampling Frequency	14 days; Not Reported; Days 1, 3, 7 and 14
Concentration	Not Reported
Analytical Method and Analytical Details	Liquid scintillation counting.; Beckman 200 L liquid scintillation counter.;
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	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 Substance	Not reported; Not Reported; Not Reported

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	Medium	The test substance purity was not reported but the omission is unlikely to have a substantial 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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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 Template:	Aquatic Bioconcentration			
HERO ID:	1334646			
Domain	Metric	EVALUATION		Comments
		Rating		
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	The testing conditions were consistent among study groups.
	Metric 8:	System Type and Design	High	Equilibrium was established and maintained.
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 reported and appropriate.
Domain 5: Outcome Assessment				
	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 Presentation 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				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		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 Template:	Aquatic Bioconcentration			
HERO ID:	1334646			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutyl phthalate			
Confidentiality, Type, and Guideline	None; Experimental; other			
Solvent, Reactivity, Storage, Stability	NR; NR; Stock solutions made in water; NR			
Radiolabel, Source, State, Purity	14-C carbonyl labeled DBP (1.53 mCi/mmol); NR; NR; NR			
Test Organism and Test Organism Details	Water flea; Daphnia magna, n=180 (number of organisms in each sample replicate)			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; 21±1°C; 7.4; None			
Media Type, TOC, and Salinity	natural water: freshwater; Not reported; Not reported			
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; 270 mg/L as CaCO3			
Exposure Route, Elimination, and Nominal Measurements	Not reported; Not reported; 0.08±0.005 µg/L			
Test Type, Test Temperature, and Test Condition	semi-static; 21±1°C; Not Reported			
Comments				
Duration, Parameter, and Sampling Frequency	14 days; Not Reported; Days 1, 3, 7 and 14			
Concentration	Not Reported			
Analytical Method and Analytical Details	Liquid scintillation counting.; Beckman 200 L liquid scintillation counter.;			
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	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 Results Reference Substance	Not reported; Not Reported; Not Reported			
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	Medium	The test substance purity was not reported but the omission is unlikely to have a substantial 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.
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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 Template:	Aquatic Bioconcentration			
HERO ID:	1334646			
		EVALUATION		
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 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 reported and appropriate.
Domain 5: Outcome Assessment				
	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 Presentation 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				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		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 Template:	Aquatic Bioconcentration			
HERO ID:	1334646			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutyl phthalate			
Confidentiality, Type, and Guideline	None; Experimental; other			
Solvent, Reactivity, Storage, Stability	NR; NR; Stock solutions made in water; NR			
Radiolabel, Source, State, Purity	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)			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; 21±1°C; 7.4; None			
Media Type, TOC, and Salinity	natural water: freshwater; Not reported; Not reported			
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; 270 mg/L as CaCO3			
Exposure Route, Elimination, and Nominal Measurements	Not reported; Not reported; 0.10±0.010 µg/L			
Test Type, Test Temperature, and Test Condition	semi-static; 21±1°C; Not Reported			
Comments				
Duration, Parameter, and Sampling Frequency	14 days; Not Reported; Days 1, 3, 7 and 14			
Concentration	Not Reported			
Analytical Method and Analytical Details	Liquid scintillation counting.; Beckman 200 L liquid scintillation counter.;			
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	Magnification factor after 1, 3, 7 and 14 days: 1700, 3700, 6500, 6700; Concentrations were derived from original specific activity, which was assumed to represent 14-C di-n-butyl phthalate			
Metabolites, Reference, and Results Reference Substance	Not reported; Not Reported; Not Reported			
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	Medium	The test substance purity was not reported but the omission is unlikely to have a substantial 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.
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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 Template:	Aquatic Bioconcentration			
HERO ID:	1334646			
		EVALUATION		
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 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 reported and appropriate.
Domain 5: Outcome Assessment				
	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 Presentation 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				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		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 Template:	Aquatic Bioconcentration			
HERO ID:	1334646			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutyl phthalate			
Confidentiality, Type, and Guideline	None; Experimental; other			
Solvent, Reactivity, Storage, Stability	NR; NR; Stock solutions made in water; NR			
Radiolabel, Source, State, Purity	14-C carbonyl labeled DBP (1.53 mCi/mmol); NR; NR; NR			
Test Organism and Test Organism Details	Mayfly; Hexagenia bilineata, n=9 (number of organisms in each sample replicate)			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; 21±1°C; 7.4; None			
Media Type, TOC, and Salinity	natural water: freshwater; Not reported; Not reported			
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; 270 mg/L as CaCO3			
Exposure Route, Elimination, and Nominal Measurements	Not reported; Not reported; 0.08±0.001 µg/L			
Test Type, Test Temperature, and Test Condition	semi-static; 21±1°C; Not Reported			
Comments				
Duration, Parameter, and Sampling Frequency	14 days; Not Reported; Days 1, 3, 7 and 14			
Concentration	Not Reported			
Analytical Method and Analytical Details	Liquid scintillation counting.; Beckman 200 L liquid scintillation counter.;			
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	Magnification factor after 1, 3, 7 and 14 days: 500, 980, 1900, NR; Concentrations were derived from original specific activity, which was assumed to represent 14-C di-n-butyl phthalate			
Metabolites, Reference, and Results Reference Substance	Not reported; Not Reported; Not Reported			
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	Medium	The test substance purity was not reported but the omission is unlikely to have a substantial 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.
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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 Template:	Aquatic Bioconcentration			
HERO ID:	1334646			
		EVALUATION		
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 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 reported and appropriate.
Domain 5: Outcome Assessment				
	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 Presentation 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				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		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 Template:	Aquatic Bioconcentration			
HERO ID:	1334646			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutyl phthalate			
Confidentiality, Type, and Guideline	None; Experimental; other			
Solvent, Reactivity, Storage, Stability	NR; NR; Stock solutions made in water; NR			
Radiolabel, Source, State, Purity	14-C carbonyl labeled DBP (1.53 mCi/mmol); NR; NR; NR			
Test Organism and Test Organism Details	Glass shrimp; Palaemonetes kadiakensis, n=9 (number of organisms in each sample replicate)			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; 21±1°C; 7.4; None			
Media Type, TOC, and Salinity	natural water: freshwater; Not reported; Not reported			
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; 270 mg/L as CaCO3			
Exposure Route, Elimination, and Nominal Measurements	Not reported; Not reported; 0.08±0.001 µg/L			
Test Type, Test Temperature, and Test Condition	semi-static; 21±1°C; Not Reported			
Comments				
Duration, Parameter, and Sampling Frequency	14 days; Not Reported; Days 1, 3, 7 and 14			
Concentration	Not Reported			
Analytical Method and Analytical Details	Liquid scintillation counting.; Beckman 200 L liquid scintillation counter.;			
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	Magnification factor after 1, 3, 7 and 14 days: 1500, 5000, NR, NR; Concentrations were derived from original specific activity, which was assumed to represent 14-C di-n-butyl phthalate			
Metabolites, Reference, and Results Reference Substance	Not reported; Not Reported; Not Reported			
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	Medium	The test substance purity was not reported but the omission is unlikely to have a substantial 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.
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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 Template:	Aquatic Bioconcentration			
HERO ID:	1334646			
		EVALUATION		
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 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 reported and appropriate.
Domain 5: Outcome Assessment				
	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 Presentation 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				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		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 Template:	Aquatic Bioconcentration			
HERO ID:	1334646			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutyl phthalate			
Confidentiality, Type, and Guideline	None; Experimental; other			
Solvent, Reactivity, Storage, Stability	NR; NR; Stock solutions made in water; NR			
Radiolabel, Source, State, Purity	14-C carbonyl labeled DBP (1.53 mCi/mmol); NR; NR; NR			
Test Organism and Test Organism Details	Damselfly; Ischnura verticalis, n=9 (number of organisms in each sample replicate)			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; 21±1°C; 7.4; None			
Media Type, TOC, and Salinity	natural water: freshwater; Not reported; Not reported			
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; 270 mg/L as CaCO3			
Exposure Route, Elimination, and Nominal Measurements	Not reported; Not reported; 0.10±0.005 µg/L			
Test Type, Test Temperature, and Test Condition	semi-static; 21±1°C; Not Reported			
Comments				
Duration, Parameter, and Sampling Frequency	14 days; Not Reported; Days 1, 3, 7 and 14			
Concentration	Not Reported			
Analytical Method and Analytical Details	Liquid scintillation counting.; Beckman 200 L liquid scintillation counter.;			
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	Magnification factor after 1, 3, 7 and 14 days: 1000, 1600, 2700, NR; Concentrations were derived from original specific activity, which was assumed to represent 14-C di-n-butyl phthalate			
Metabolites, Reference, and Results Reference Substance	Not reported; Not Reported; Not Reported			
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	Medium	The test substance purity was not reported but the omission is unlikely to have a substantial 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.
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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 Template:	Aquatic Bioconcentration			
HERO ID:	1334646			
		EVALUATION		
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 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 reported and appropriate.
Domain 5: Outcome Assessment				
	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 Presentation 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				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		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. Chemosphere 14(10):1561-1569.
OECD Harmonized Template:	Aquatic Bioconcentration
HERO ID:	6814285

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, and Guideline	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, Purity	NA; Inner Harbor Navigational Canal, Chef Menteur Pass, and The Rigolets at Lake Pontchartrain, Louisiana; Sediment and organism samples; NA
Test Organism and Test Organism Details	Oyster, Crassostrea virginica; n=8
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; Not reported; Not applicable
Media Type, TOC, and Salinity	natural water / sediment; Not reported; Not reported
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; Not reported
Exposure Route, Elimination, and Nominal Measurements	Sediment; Not applicable; Measured
Test Type, Test Temperature, and Test Condition	field study; Not reported; Samples collected from mouth of Inner Harbor Navigational Channel at Lake Pontchartrain, Louisiana
Comments	
Duration, Parameter, and Sampling 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 Calculation Basis	Not Reported; BCF, tissue, wet wt.; steady state
Results Value and Results Details	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

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	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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Study Citation:	Mcfall, J. A., Antoine, , S. R., Deleon, I. R. (1985). Base-neutral extractable organic pollutants in biota and sediments from Lake Pontchartrain. Chemosphere 14(10):1561-1569.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	6814285			
Domain		Metric	EVALUATION	
			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 Organisms				
	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 Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining bioaccumulation.
	Metric 12:	Test Substance Purity	High	Number of samples collected was reported, sample processing methods were appropriate.
Domain 6: Confounding/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 Presentation 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 characteristics (lipid content of organisms, organic carbon content of sediments), broader conclusions on bioavailability and accumulation cannot be determined.
	Metric 18:	QSAR Models	N/A	Not applicable.
Overall Quality Determination			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 Template:	Aquatic Bioconcentration			
HERO ID:	6814285			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, Type, and Guideline	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, Purity	NA; Inner Harbor Navigational Canal, Chef Menteur Pass, and The Rigolets at Lake Pontchartrain, Louisiana; Sediment and organism samples; NA			
Test Organism and Test Organism Details	Clams, Rangia cuneata; Composite sample			
Lipid Content, Test Temperature, pH, and Depu-ration Time	Not reported; Not reported; Not reported; Not applicable			
Media Type, TOC, and Salinity	natural water / sediment; Not reported; Not reported			
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; Not reported			
Exposure Route, Elimination, and Nominal Mea-surements	Sediment; Not applicable; Measured; detected at Chef Menteur only, not Rigolets			
Test Type, Test Temperature, and Test Condition	field study; Not reported; Samples collected from mouths of Chef Menteur and Rigolets at Lake Pontchartrain, Louisiana			
Comments				
Duration, Parameter, and Sampling 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 applicable; Not reported			
Statistics, Basis, and Calculation Basis	Not Reported; BCF, tissue, wet wt.; steady state			
Results Value and Results Details	Not determined; Not detected in organisms			
Metabolites, Reference, and Results Reference Substance	Not reported; 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.
	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.
	Metric 6:	Testing Conditions	Medium	No field environmental conditions were reported, no sediment sample characteristics were reported.
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Study Citation:	Mcfall, J. A., Antoine, , S. R., Deleon, I. R. (1985). Base-neutral extractable organic pollutants in biota and sediments from Lake Pontchartrain. Chemosphere 14(10):1561-1569.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	6814285			
		EVALUATION		
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 Organisms				
	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 Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining bioaccumulation.
	Metric 12:	Test Substance Purity	High	Number of samples collected was reported, sample processing methods were appropriate.
Domain 6: Confounding/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 Presentation 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 characteristics (lipid content of organisms, organic carbon content of sediments), broader conclusions on bioavailability and accumulation cannot be determined.
	Metric 18:	QSAR Models	N/A	Not applicable.
Overall Quality Determination		High		

Study Citation:	Monsanto, (1983). Investigation of phthalate ester concentrations in a Michigan sewage pond.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	1316180			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Not Reported			
Confidentiality, Type, and Guideline	No; Monitoring study; other: Non-guideline			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	No; Samples collected from sewage lagoon at Michigan State University; Field samples; NR Notes: NR			
Test Organism and Test Organism Details	Daphnia magna; Collected from municipal sewage lagoon			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Ambient; Not reported; Not reported			
Media Type, TOC, and Salinity	Natural water,sewage lagoon; Not reported; Not reported			
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; Not reported			
Exposure Route, Elimination, and Nominal Measurements	Whole body; Not reported; Mesured			
Test Type, Test Temperature, and Test Condition	Field study; Ambient; Sample preparation: Environmental Sciences method ES-78-M-7 (water) and ES-78-M-6 (Daphnia)			
Comments	Not applicable; Not applicable; Not applicable			
Duration, Parameter, and Sampling Frequency	= 35 (Daphnid); ND to <0.1 (water) - = 54 (Daphnid); 0.36 (water) µg/L			
Concentration	Sample analysis: GC/MS with external standard; Analytical standard: DMP, DEP, DBP, S-160, DCHP, DEHP, DUP at 2 Âµg/L; no additional details;			
Analytical Method and Analytical Details	Not reported; Recoveries from spiked samples were reported for DEHP = 48% and BBP = 83%			
Rate Constant and Results per Recovery	Relative error reported for DEHP: Â±29%; Not specified; Not applicable			
Statistics, Basis, and Calculation Basis	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)			
Results Value and Results Details	Not reported; Not reported; Not reported			
Metabolites, Reference, and Results Reference Substance				
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 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 Conditions				
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Study Citation:	Monsanto, (1983). Investigation of phthalate ester concentrations in a Michigan sewage pond.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	1316180			
		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 Organisms				
	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 Assessment				
	Metric 11:	Test Substance Identity	Uninformative	The assessment methodology did not address or report the outcome of interest. This is a serious flaw that makes the study unusable.
	Metric 12:	Test Substance Purity	High	Methods were appropriate.
Domain 6: Confounding/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 Exposure	N/A	The metric is not applicable to this study.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	Analytical detail was omitted.
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Standard error was only reported for one chemical analysis (DEHP) as high as $\hat{A} \pm 29\%$
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the results was not possible.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study.

Overall Quality Determination**Uninformative**

Study Citation:	Ray, L. E., Murray, H. E., Giam, C. S. (1983). Organic pollutants in marine samples from Portland, Maine. Chemosphere 12(7-8):1031-1038.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	5568740			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, Type, and Guideline	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, Purity	NA; Samples collected from Portland, Maine, from the Fore River and Back Cove; NA; NA			
Test Organism and Test Organism Details	Clams; Not reported			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; Not reported; Not applicable			
Media Type, TOC, and Salinity	natural water / sediment; Not reported; Not reported			
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; Not reported			
Exposure Route, Elimination, and Nominal Measurements	Sediment; Not applicable; Measured, 170 ng/g (Fore River), 280 ng/g (Back Cove)			
Test Type, Test Temperature, and Test Condition	field study; Not reported; Sediment and organism samples collected from the Fore River and Back Cove near Portland, Maine			
Comments				
Duration, Parameter, and Sampling 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=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, and Results Reference Substance	Not reported; 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.
	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., Murray, H. E., Giam, C. S. (1983). Organic pollutants in marine samples from Portland, Maine. Chemosphere 12(7-8):1031-1038.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	5568740			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	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 Organisms				
	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 Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining bioaccumulation.
	Metric 12:	Test Substance Purity	Medium	Sampling methods were acceptable, frequency was not reported and may not be representative. Sampling does not account for possible seasonal variation.
Domain 6: Confounding/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 Presentation and Analysis				
	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				
	Metric 17:	Verification or Plausibility of Results	Low	The results were reasonable based on the method but the study omitted many details, one of the most important of which was organism species and lipid content.
	Metric 18:	QSAR Models	N/A	Not applicable.
Overall Quality Determination		Medium		

Study Citation:	Ray, L. E., Murray, H. E., Giam, C. S. (1983). Organic pollutants in marine samples from Portland, Maine. Chemosphere 12(7-8):1031-1038.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	5568740			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, Type, and Guideline	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, Purity	NA; Samples collected from Portland, Maine, from the Fore River and Back Cove; NA; NA			
Test Organism and Test Organism Details	Neanthes virens; Not reported			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; Not reported; Not applicable			
Media Type, TOC, and Salinity	natural water / sediment; Not reported; Not reported			
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; Not reported			
Exposure Route, Elimination, and Nominal Measurements	Sediment; Not applicable; Measured, 170 ng/g (Fore River), 280 ng/g (Back Cove)			
Test Type, Test Temperature, and Test Condition Comments	field study; Not reported; Sediment and organism samples collected from the Fore River and Back Cove near Portland, Maine			
Duration, Parameter, and Sampling 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, and Results Reference Substance	Not reported; 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.
	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 Conditions				
	Metric 5:	Test Method Suitability	High	The field study method was appropriate for the test substance.
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Study Citation:		Ray, L. E., Murray, H. E., Giam, C. S. (1983). Organic pollutants in marine samples from Portland, Maine. Chemosphere 12(7-8):1031-1038.		
OECD Harmonized Template:		Aquatic Bioconcentration		
HERO ID:		5568740		
Domain	Metric	EVALUATION		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 Organisms				
	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 Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology was appropriate for determining bioaccumulation.
	Metric 12:	Test Substance Purity	Medium	Sampling methods were acceptable, frequency was not reported and may not be representative. Sampling does not account for possible seasonal variation.
Domain 6: Confounding/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 Presentation and Analysis				
	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				
	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.
Overall Quality Determination			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):101-113.
OECD Harmonized Template:	Aquatic Bioconcentration
HERO ID:	1249662

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DnBP
Confidentiality, Type, and Guideline	None; Experimental; other: BSAF field study
Solvent, Reactivity, Storage, Stability	iso-octane; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Supelco by way of Sigma-Aldrich, St. Quentin Fallavier, France; NR; NR Notes: di-n-butyl phthalate
Test Organism and Test Organism Details	Roach, Chub, and Perch; Liver, gonad, and muscle from roach and muscle only from chub and perch.
Lipid Content, Test Temperature, pH, and Depuration Time	Not applicable; Not applicable; Not applicable; Not applicable
Media Type, TOC, and Salinity	natural water: freshwater; Not applicable; Not applicable
Dissolved Oxygen, Conductivity, and Hardness	Not applicable; Not applicable; Not applicable
Exposure Route, Elimination, and Nominal Measurements	Field study; Not applicable; Not applicable
Test Type, Test Temperature, and Test Condition Comments	Not applicable; Not applicable; Orge river fish, water and sediment study
Duration, Parameter, and Sampling Frequency	Not applicable; other; sediment and water (n=8) and fish collected 3 times in a year (July and October 2009, April 2010)
Concentration	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 80.8% in fish tissue
Statistics, Basis, and Calculation Basis	averages and SD reported; total lipid content; other
Results Value and Results Details	Roach: 5.5±4.8, Chub: 6.0±2.3, and Perch: 11.8±12.6; BSAF
Metabolites, Reference, and Results Reference Substance	Not reported; Not applicable; NA; Field study

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	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 Conditions	Metric 5:	Test Method Suitability	High	This metric met the criteria for high confidence as expected for this type of study.

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Study Citation:	Teil, M. J., Tlili, K., Blanchard, M., Chevreuril, 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):101-113.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	1249662			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 6:	Testing Conditions	High	Adequate sediment, water, and test organism characteristics were reported.
	Metric 7:	Testing Consistency	High	Exposure conditions were reported and comparable across groups; 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 Organisms				
	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 Assessment				
	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/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 Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	BAF values were not explicitly reported for the phthalate studies and actual concentrations 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 Kinetic Calculations	Medium	Some statistical calculation details were omitted; however, these details were not likely to have a substantial impact on the study result interpretation.
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 the study type.
Overall Quality Determination		High		

* Related References: Cited in HSDB

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. <i>Ecotoxicology and Environmental Safety</i> 5(2):202-210.
OECD Harmonized Template:	Aquatic Bioconcentration
HERO ID:	789995

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, and Guideline	None; Experimental; other: Not reported
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	Carboxy-labeled C-14 dibutylphthalate (9.98 mCi/mmol); 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 Organism Details	American oyster, <i>Crassostrea virginica</i> ; Collected from Galveston Bay, Texas
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; Not reported; Not applicable
Media Type, TOC, and Salinity	other; Not reported; 20 to 30 o/oo
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; Not reported
Exposure Route, Elimination, and Nominal Measurements	Water; Not applicable; Nominal 100 ppb (10 ppb labelled, 0 ppb unlabeled) and 500 ppb (10 ppb labelled, 490 ppb unlabeled)
Test Type, Test Temperature, and Test Condition	static; Not reported; Test solution allowed to equilibrate 30 minutes after dosing; concentrations decreased 30-70% during experiment, possibly due to sorption to oyster shells
Comments	
Duration, Parameter, and Sampling 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 chloroform: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 Details	BCF=21.1±9.3 (100 ppb) and 41.6±5.1 (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 Substance	Metric 1:	High	The test substance was identified by name.
	Metric 2:	Medium	The test substance source but not purity was reported.
Domain 2: Test Design			
	Metric 3:	Medium	A baseline organism measurement was not conducted, control group was not explicitly included.

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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. <i>Ecotoxicology and Environmental Safety</i> 5(2):202-210.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	789995			
		EVALUATION		
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 Conditions				
	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:	Test Substance Purity	High	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.
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No effects to organism health were reported.
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 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.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

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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 Template:	Aquatic Bioconcentration
HERO ID:	789995

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		High	

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 Template:	Aquatic Bioconcentration			
HERO ID:	789995			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, Type, and Guideline	None; Experimental; other: Not reported			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	Carboxy-labeled C-14 dibutylphthalate (9.98 mCi/mmol); 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 Organism Details	Brown shrimp, <i>Penaecus aztecus</i> ; Collected from Galveston Bay, Texas			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; Not reported; Not applicable			
Media Type, TOC, and Salinity	other; Not reported; 20 to 30 o/oo			
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; Not reported			
Exposure Route, Elimination, and Nominal Measurements	Water; Not applicable; Nominal 100 ppb (10 ppb labelled, 0 ppb unlabeled) and 500 ppb (10 ppb labelled, 490 ppb unlabeled)			
Test Type, Test Temperature, and Test Condition	static; Not reported; Test solution allowed to equilibrate 30 minutes after dosing			
Comments				
Duration, Parameter, and Sampling 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 chloroform: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); Whole organism; steady state			
Results Value and Results Details	BCF=2.9±0.1 (100 ppb) and 30.6±3.4 (500 ppb); Biodegradability index (ratio of metabolites to unmetabolized diester, average of exposures): 24.13			
Metabolites, Reference, and Results Reference Substance	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; 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.
	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.
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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. <i>Ecotoxicology and Environmental Safety</i> 5(2):202-210.			
OECD Harmonized Template:	Aquatic Bioconcentration			
HERO ID:	789995			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	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 the 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:	Test Substance Purity	High	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.
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No effects to organism health were reported.
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 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.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination

High

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 Template:	Aquatic Bioconcentration			
HERO ID:	789995			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, Type, and Guideline	None; Experimental; other: Not reported			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	Carboxy-labeled C-14 dibutylphthalate (9.98 mCi/mmol); 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 Organism Details	Sheepshead minnow, Cyprinodon variegatus; Collected from Galveston Bay, Texas			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; Not reported; Not applicable			
Media Type, TOC, and Salinity	other; Not reported; 20 to 30 o/oo			
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; Not reported			
Exposure Route, Elimination, and Nominal Measurements	Water; Not applicable; Nominal 100 ppb (10 ppb labelled, 0 ppb unlabeled) and 500 ppb (10 ppb labelled, 490 ppb unlabeled); data reported for 100 ppb only			
Test Type, Test Temperature, and Test Condition	static; Not reported; Test solution allowed to equilibrate 30 minutes after dosing			
Comments				
Duration, Parameter, and Sampling 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 chloroform: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 Details	BCF=11.7 (100 ppb) and NR (500 ppb); Biodegradability index (ratio of metabolites to unmetabolized diester): 5.85			
Metabolites, Reference, and Results Reference Substance	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 Substance				
	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 Conditions				
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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. <i>Ecotoxicology and Environmental Safety</i> 5(2):202-210.			
OECD Harmonized Template:	Aquatic Bioconcentration			
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:	Test Substance Purity	High	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 Exposure	High	No effects to organism health were reported.
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 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.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination**High**

Study Citation:	Yan, H., Ye, C., Yin, C. (1995). Kinetics of phthalate ester biodegradation by <i>Chlorella pyrenoidosa</i> . Environmental Toxicology and Chemistry 14(6):931-938.
OECD Harmonized Template:	Aquatic Bioconcentration
HERO ID:	1316261

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, Type, and Guideline	None; Experimental; other: Non-guideline study evaluating the concentration of test substance in water and algae
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Test Organism and Test Organism Details	<i>Chlorella pyrenoidosa</i> ; From the institute of Hydrobiology, Academia Sinica, China
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; 24°C; 7.0; Not reported
Media Type, TOC, and Salinity	other; Not reported; Not reported
Dissolved Oxygen, Conductivity, and Hardness	Not reported; Not reported; Not reported
Exposure Route, Elimination, and Nominal Measurements	algae grown in media containing test substance; Not reported; measured
Test Type, Test Temperature, and Test Condition	other; 24°C; medium-PES solution
Comments	
Duration, Parameter, and Sampling 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 Details	BCF=4077; changed over course of time and algae growth
Metabolites, Reference, and Results Reference Substance	Not reported; Not reported; Not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	Medium
Domain 2: Test Design	Metric 3:	Study Controls	Medium
	Metric 4:	Test Substance Stability	Medium
Domain 3: Test Conditions			

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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 Template:	Aquatic Bioconcentration			
HERO ID:	1316261			
		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	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 Exposure	N/A	The metric is not applicable to this study type.
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 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	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

Study Citation:	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	5676112			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Not Reported			
Confidentiality, EndPoint, Type, Guideline	none; bioaccumulation: terrestrial; qualitative; other: not specified			
Solvent, Reactivity, Storage, Stability	Not Reported; Not Reported; Not Reported; Not Reported			
Radiolabel, Source, State, Purity	Not Reported; Not Reported; Not Reported; Not Reported			
Test Organism and Test Organism Details	Not Reported; Not Reported			
Lipid Content, Test Temperature, pH, and Depuration Time	Not Reported; Not Reported; Not Reported; Not Reported			
Moisture, TOC, and Test Conditions Comments	Not Reported; Not Reported; Not Reported			
Nominal Measured and Time 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 Deviation	dose-dependent uptake of di-n-butyl phthalate from soil observed in corn, soybean, and wheat seedlings; Not Reported; Not Reported			
Calculation Basis and Basis	Not Reported; Not Reported			
Elimination, Metabolites, Kinetic Parameter, and Statistics	Not Reported; Not Reported; 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	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	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:	ATSDR, (1999). Toxicological profile for di-n-butyl phthalate (update): Draft for public comment.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	5676112			
Domain	Metric	EVALUATION		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 Organisms				
	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 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 Exposure	N/A	The metric is not applicable to the study.
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 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 Quality Determination			Medium	

* Related References: Source cited: Shea et al 1982 HERO ID 790006 (not in distiller at time of extraction)

Study Citation:	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 (<i>Oryza sativa</i> L.) genotypes and selection of cultivars for low DBP exposure. Environmental Science and Pollution Research 24(8):7298-7309.
OECD Harmonized Template:	Terrestrial Bioconcentration
HERO ID:	3515116

Parameter		EXTRACTION	
CASRN and Test Material	84-74-2; DBP		
Confidentiality, EndPoint, Type, Guideline	None; bioaccumulation: terrestrial; Experimental; other: Not reported		
Solvent, Reactivity, Storage, Stability	Acetone; NR; NR; NR		
Radiolabel, Source, State, Purity	NA; Tianjin Chemical Reagent Factory, China; Liquid; >98.5%		
Test Organism and Test Organism Details	7 non-hybrid cultivars and 13 hybrid of rice grown in Guangdong Province, China; 15 seedlings (3 plants/pot)		
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; Not reported; Not reported		
Moisture, TOC, and Test Conditions Comments	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		
Nominal Measured and Time Plateau	20 mg/kg dw in soil; Not reported		
Duration, Parameter, and Sampling 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	steady state; organ d.w.		
Elimination, Metabolites, Kinetic Parameter, and Statistics	Not reported; Not reported; Not applicable; ANOVA performed using Statistical Analysis System v. 8.2		
		EVALUATION	
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	High	The test substance was identified by name.
	Metric 2:	High	The test substance source and purity was reported.
Domain 2: Test Design	Metric 3:	Medium	Controls were not explicitly included, however background pollutant analysis in soil was reported (0.19 mg/kg)
	Metric 4:	Medium	Test substance preparation was reported, storage conditions were not reported.
Domain 3: Test Conditions	Metric 5:	High	The method was suitable for the test substance.
	Metric 6:	Medium	Temperature, pH, and study duration in days were not reported, soil characteristics were reported.
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Study Citation:	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 (<i>Oryza sativa</i> L.) genotypes and selection of cultivars for low DBP exposure. Environmental Science and Pollution Research 24(8):7298-7309.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	3515116			
Domain		Metric	EVALUATION	
			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 Organisms				
	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 Assessment				
	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/Variable Control				
	Metric 13:	Confounding Variables	High	Variability in measurements was addressed by statistical methods.
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No differences in organism health or attrition were reported.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Raw data only reported graphically. Limits of detection and extraction recovery reported. 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 Results	High	The results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			High	

Study Citation:	Cai, Q., Mo, C., Wu, Q., Zeng, Q. (2008). Polycyclic aromatic hydrocarbons and phthalic acid esters in the soil-radish (<i>Raphanus sativus</i>) system with sewage sludge and compost application. <i>Bioresource Technology</i> 99(6):1830-1836.
OECD Harmonized Template:	Terrestrial Bioconcentration
HERO ID:	698314

EXTRACTION	
Parameter	Data
CASRN and Test Material	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, Storage, Stability	Extracted from plant with ether and acetone/DCM; NR; 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; <i>Raphanus sativus</i> - 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 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 Basis	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	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 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 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.

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Study Citation:	Cai, Q., Mo, C., Wu, Q., Zeng, Q. (2008). Polycyclic aromatic hydrocarbons and phthalic acid esters in the soil-radish (<i>Raphanus sativus</i>) system with sewage sludge and compost application. <i>Bioresource Technology</i> 99(6):1830-1836.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	698314			
Domain		Metric	EVALUATION	
			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 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	High	Test organism information was reported and is routinely used for similar study types.
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 sampling methods that address the outcomes of interest and are widely accepted.
Domain 6: Confounding/Variable Control				
	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 Exposure	High	There were multiple study groups and there were no reported differences among the study groups in organism attrition.
Domain 7: Data Presentation 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 Kinetic Calculations	High	Statistical methods and calculations were applied appropriately.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The results were plausible.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			High	

* Related References: Cited in ECHA

Study Citation:	Chi, J., Gao, J. (2015). Effects of Potamogeton crispus L.-bacteria interactions on the removal of phthalate acid esters from surface water. Chemosphere 119:59-64.
OECD Harmonized Template:	Terrestrial Bioconcentration
HERO ID:	2510797

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; bioaccumulation: terrestrial; Experimental; other: Removal of phthalate acid esters from surface water in a plant-water system study
Solvent, Reactivity, Storage, Stability	Absolute ethanol; NR; stored in a refrigerator (4 deg. C) prior to use; NR
Radiolabel, Source, State, Purity	NR; Sigma; stock solutions prepared in absolute ethanol (2 g/L); 99% Notes: DBP
Test Organism and Test Organism Details	other; Potamogeton crispus L. (pondweed)
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; 7.9 (before) 7.7 (after); Not reported
Moisture, TOC, and Test Conditions Comments	Not reported; Not reported; Surface water from Haihe River (not autoclaved)
Nominal Measured and Time Plateau	Measured; Not reported
Duration, Parameter, and Sampling Frequency	10 days; other; Not reported
Analytical Method and Analytical 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 Deviation	4.43-8.04 L/kg (Plant concentration factor); BCF; Not Reported
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 Substance	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 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 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.

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Study Citation:	Chi, J., Gao, J. (2015). Effects of Potamogeton crispus L.-bacteria interactions on the removal of phthalate acid esters from surface water. Chemosphere 119:59-64.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	2510797			
Domain		Metric	EVALUATION	
			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 Organisms				
	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 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.
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	This metric is not applicable to this type of study.
Domain 7: Data Presentation 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 Results	Medium	The results are reasonable.
	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 (<i>Eisenia fetida</i>) in artificially contaminated soils. <i>Ecotoxicology and Environmental Safety</i> 62(1):26-34.
OECD Harmonized Template:	Terrestrial Bioconcentration
HERO ID:	481534

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; bioaccumulation: terrestrial; Experimental; other: Biota-to-soil accumulation factor (BSAF) at steady state conditions
Solvent, Reactivity, Storage, Stability	NR; 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	<i>Eisenia fetida</i> - [Annelida]; Earthworms from Agricultural University of China (Beijing, China)
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; 22°C; Soil 1 = 7.58; Soil 2 = 8.28; 24 hours
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 and forest soils
Nominal Measured and Time Plateau	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 Analytical Details	GC-ECD; LOD = 10.29 µg/kg;
Results Value, Result Type, and Results Standard Deviation	0.307 (soil 1); 0.242 (soil 2); BSAF; Not Reported
Calculation Basis and Basis	steady state; not specified
Elimination, Metabolites, Kinetic Parameter, and Statistics	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				
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	High	The test substance source and purity were reported.
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 Conditions	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.

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Study Citation:	Hu, X. Y., Wen, B., Zhang, S., Shan, X. Q. (2005). Bioavailability of phthalate congeners to earthworms (<i>Eisenia fetida</i>) in artificially contaminated soils. <i>Ecotoxicology and Environmental Safety</i> 62(1):26-34.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
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 Exposure	N/A	The metric is not applicable to this study type.
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 Kinetic Calculations	High	Some detail lacking; however that statistical analysis reported is acceptable.
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.
Overall Quality Determination			High	

Study Citation:	Hu, X. Y., Wen, B., Zhang, S., Shan, X. Q. (2005). Bioavailability of phthalate congeners to earthworms (<i>Eisenia fetida</i>) in artificially contaminated soils. <i>Ecotoxicology and Environmental Safety</i> 62(1):26-34.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	481534			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; bioaccumulation: terrestrial; Experimental; other: Biota-to-soil accumulation factor (BSAF) at steady state conditions			
Solvent, Reactivity, Storage, Stability	NR; 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	<i>Eisenia fetida</i> - [Annelida]; Earthworms from Agricultural University of China (Beijing, China)			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; 22°C; Soil 1 = 7.58; Soil 2= 8.28; 24 hours			
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 and forest soils			
Nominal Measured and Time Plateau	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 Analytical Details	GC-ECD; LOD = 10.29 ug/kg;			
Results Value, Result Type, and Results Standard Deviation	0.23-30 (soil 1); 0.18-0.23 (soil 2); range from 5 test concentrations; BSAF; Not Reported			
Calculation Basis and Basis	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 Substance	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	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 Conditions	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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Study Citation:	Hu, X. Y., Wen, B., Zhang, S., Shan, X. Q. (2005). Bioavailability of phthalate congeners to earthworms (<i>Eisenia fetida</i>) in artificially contaminated soils. <i>Ecotoxicology and Environmental Safety</i> 62(1):26-34.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	481534			
Domain	Metric	EVALUATION		Comments
		Rating		
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 Exposure	N/A	The metric is not applicable to this study type.
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 Kinetic Calculations	High	Some detail lacking; however that statistical analysis reported is acceptable.
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.
Overall Quality Determination		High		

Study Citation:	Ji, L. L., Deng, L.,iP (2016). Influence of carbon nanotubes on dibutyl phthalate bioaccumulation from contaminated soils by earthworms.
OECD Harmonized Template:	Terrestrial Bioconcentration
HERO ID:	3502662

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, EndPoint, Type, Guideline	None; bioaccumulation: terrestrial; Experimental; other: Not reported
Solvent, Reactivity, Storage, Stability	Acetone, 2.92 mmol/L; NR; NR; NR
Radiolabel, Source, State, Purity	NA; ITC, Shanghai, China; Liquid; >97%
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 Temperature, pH, and Depuration Time	Not reported; Room temperature; Not reported; 24 hours
Moisture, TOC, and Test Conditions 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 Time Plateau	65 mg/kg in soil (measured); Not reported
Duration, Parameter, and Sampling Frequency	21 days; Not Reported; 3, 7, 14, and 21 d
Analytical Method and Analytical 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 Deviation	0.460; BSAF; Not Reported
Calculation Basis and Basis	kinetic; not specified
Elimination, Metabolites, Kinetic Parameter, and Statistics	Elimination by organism in soil rate constant: 0.310 ± 0.074 / d; Not reported; Uptake of pollutant from soil rate constant: 0.143 ± 0.020 g/g d; 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	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 conditions were not reported.
Domain 3: Test Conditions	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.

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Study Citation:	Ji, L. L., Deng, L.,iP (2016). Influence of carbon nanotubes on dibutyl phthalate bioaccumulation from contaminated soils by earthworms.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	3502662			
Domain	Metric	EVALUATION		Comments
	Metric 8:	System Type and Design	High	Equilibrium was established and the system 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	Test organism species and non-commercial source were reported, no other organism details were reported.
Domain 5: Outcome 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 rates were able to be calculated.
Domain 6: Confounding/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 Presentation and Analysis	Metric 15:	Data Reporting	Medium	No raw data included, extraction efficiency and limits of quantification not reported, analytical 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 Results	High	The results were reasonable.
	Metric 18:	QSAR 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 Template:	Terrestrial Bioconcentration
HERO ID:	5041214

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DnBP
Confidentiality, EndPoint, Type, Guideline	None; bioaccumulation: terrestrial; Experimental; other: Not applicable; bioaccumulation in soil-grain systems
Solvent, Reactivity, Storage, Stability	NA; NR; 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 Organism Details	Winter wheat, Triticum aestivum L.; Varieties: Jimai (2015 only), Zhongmai, Shimai, Nongda, Shifu, Lunxuan (2016 only)
Lipid Content, Test Temperature, pH, and Depuration Time	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 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 Time 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 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 Deviation	0.89 and 0.42 (reclaimed water), 0.80 and 0.33 (mixed water), 0.91 and 0.43 (ground water); BCF; Not Reported
Calculation Basis and Basis	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 Substance	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 Conditions	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.

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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 Crops Irrigated with Treated Sewage Effluent. Water 10(8):999.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
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.
	Metric 8:	System Type and Design	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.
	Metric 10:	Sampling Methods	High	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 Exposure	High	No significant differences in plant height or grain yield among varieties or study groups was reported.
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 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 comparable to previous studies.
	Metric 18:	QSAR 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 Template:	Terrestrial Bioconcentration			
HERO ID:	5041214			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DnBP			
Confidentiality, EndPoint, Type, Guideline	None; bioaccumulation: terrestrial; Experimental; other: Not applicable; bioaccumulation in soil-grain systems			
Solvent, Reactivity, Storage, Stability	NA; NR; 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 Organism Details	Summer maize, Zea mays L.; Varieties: Ji yuan, Jingdan, Xinyu, Tianyumi, and Nianyumi			
Lipid Content, Test Temperature, pH, and Depuration Time	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 Conditions 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 Time 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 Sampling 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			
Calculation Basis and Basis	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 Substance	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 Conditions	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 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.
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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 Crops Irrigated with Treated Sewage Effluent. Water 10(8):999.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	5041214			
		EVALUATION		
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 Organisms	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 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 Exposure	High	No significant differences in plant height or grain yield among varieties or study groups was reported.
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 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 comparable to previous studies.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

Study Citation:	LUA, (2016). Phthalate esters in soil, plastic film, and vegetable from greenhouse vegetable production bases in Beijing, China: Concentrations, sources, and risk assessment. Science of the Total Environment 568:1037-1043.
OECD Harmonized Template:	Terrestrial Bioconcentration
HERO ID:	3350219

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DnBP
Confidentiality, EndPoint, Type, Guideline	None; bioaccumulation: terrestrial; Field study; other: Not reported
Solvent, Reactivity, Storage, 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 Organism Details	Onion, celery, pepper, tomato, bitter melon, eggplant, and long podded cowpea; n = 16
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; 7.07 (range: 6.12 - 8.54); Not reported
Moisture, TOC, and Test 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 Time Plateau	n=60; average measured 0.44 mg/kg; Not applicable
Duration, Parameter, and 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, and Results Standard Deviation	1.14; BCF; Not Reported
Calculation Basis and Basis	steady state; edible fraction
Elimination, Metabolites, Kinetic Parameter, and Statistics	Not applicable; Not reported; Not applicable; Pearson correlation matrix $p < 0.05$ and $p < 0.01$

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 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.

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Study Citation:	LUA, (2016). Phthalate esters in soil, plastic film, and vegetable from greenhouse vegetable production bases in Beijing, China: Concentrations, sources, and risk assessment. Science of the Total Environment 568:1037-1043.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	3350219			
Domain		Metric	EVALUATION	
			Rating	Comments
	Metric 8:	System Type and Design	High	Equilibrium was established and test systems were capable of maintaining 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	Test organism reported by common name only, mass and life stage not reported.
Domain 5: Outcome Assessment				
	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/Variable Control				
	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 Presentation 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 Results	High	The detected concentrations were comparable to previous studies.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			High	

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 site. Environmental Geochemistry and Health 35(4):465-476.
OECD Harmonized Template:	Terrestrial Bioconcentration
HERO ID:	1597686

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, EndPoint, Type, Guideline	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 Organism Details	other; agricultural plant material
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; 25C; soil pH = 5.56; Not reported
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 Time Plateau	Measured; Not reported
Duration, Parameter, and Sampling 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, and Results Standard Deviation	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
Calculation Basis and Basis	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 significance (p<0.05)

EVALUATION				
Domain	Metric	Rating	Comments	
Domain 1: Test Substance	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 Conditions				

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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 site. Environmental Geochemistry and Health 35(4):465-476.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	1597686			
Domain		Metric	EVALUATION	
			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 discrepancies 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 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	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	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: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Low	Sources of variability and uncertainty in the measurements and 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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Data were reported in a bar graph.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Details regarding statistical methods were reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			High	

Study Citation:	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. European Journal of Soil Biology 50:76-82.
OECD Harmonized Template:	Terrestrial Bioconcentration
HERO ID:	5522239

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, EndPoint, Type, Guideline	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)
Solvent, Reactivity, Storage, Stability	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 Organism Details	other; Alfalfa: Medicago sativa L. (A), E. splendors (E), S. plumbizincicola (S)
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Average temperature ranged from 14 to 23C; 5.56; Not reported
Moisture, TOC, and Test Conditions 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 Time Plateau	Measured; Not reported
Duration, Parameter, and Sampling 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, and Results Standard Deviation	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
Calculation Basis and Basis	BCF = Cap/Cat; other
Elimination, Metabolites, Kinetic Parameter, and Statistics	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 Substance	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 Conditions	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.

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Study Citation:	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. European Journal of Soil Biology 50:76-82.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	5522239			
Domain		Metric	EVALUATION	
			Rating	Comments
	Metric 8:	System Type and Design	High	Field study; therefore, equilibrium is assumed.
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	Test organism species reported.
Domain 5: Outcome Assessment				
	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				
	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 Presentation 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 Results	Medium	The results were reasonable.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.
Overall Quality Determination			High	

Study Citation:	Overcash, M. R., Weber, J. B. (1986). Behavior of organic compounds in land treatment systems with the presence of municipal sludge. :125-131.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	5243691			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DnBP			
Confidentiality, EndPoint, Type, Guideline	None; bioaccumulation: terrestrial; Experimental; other: Guideline not specified, greenhouse study on the North Carolina State University campus (35.8 N, 78.6 W)			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	14C-labelled compounds and nonlabelled compounds used, no further details; NR; NR; NR			
Test Organism and Test Organism Details	other; Altona soybeans (Glycine max [L.] Merr.); Average height: 5.2 ± 1.1 cm (immature plant), 23 ± 3 cm (mature plant)			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; 80°F; 5.0; Not reported			
Moisture, TOC, and Test Conditions Comments	60% (relative humidity); 1.5%; Test substance uniformly mixed with the top 15 cm of soil			
Nominal Measured and Time Plateau	0.22 mg/kg dry wt loading rate; 220 ppb; Not reported			
Duration, Parameter, and Sampling 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 Deviation	Average uptake: 1,000 (immature plants), 280 (mature plants) ppb extractable C14; at soil concentration: 220 ppb; Not Reported; Not Reported			
Calculation Basis and Basis	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 Substance	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 Conditions	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 appropriately maintaining the substance.
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Study Citation:	Overcash, M. R., Weber, J. B. (1986). Behavior of organic compounds in land treatment systems with the presence of municipal sludge. :125-131.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	5243691			
Domain	Metric	EVALUATION		Comments
		Rating		
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 species is routinely used for similar study types however organism weight was not reported.
Domain 5: Outcome Assessment				
	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/Variable Control				
	Metric 13:	Confounding Variables	Medium	Variability between study groups was qualitatively accounted for in the outcome assessment, 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 Presentation 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 Results	Medium	Difficult to determine if results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

Study Citation:	Sablayrolles, C., Montréjaud-Vignoles, M., Benanou, D., Patria, L., Treilhou, M. (2005). Development and validation of methods for the trace determination of phthalates in sludge and vegetables. Journal of Chromatography A 1072(2):233-242.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	789400			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; Not Reported			
Confidentiality, EndPoint, Type, Guideline	None; concentrations in plant materials; experimental; other			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	None; Cluzeau Info Labo (France); NR; NR			
Test Organism and Test Organism Details	tomato plants (Lycopersicum esculentum var Rondello F1); roots, leaves, fruits tested			
Lipid Content, Test Temperature, pH, and Depuration Time	not reported; not reported; not reported; not reported			
Moisture, TOC, and Test Conditions Comments	not reported; not reported; plant containers inside a temperature and humidity regulated plant house dosed with pure substance			
Nominal Measured and Time Plateau	not reported; not reported			
Duration, Parameter, and 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, and Results Standard Deviation	995 (roots); 50 (leaves); <10 (fruit) ug/kg dry matter; <10 (sap) ug/kg fresh matter; concentration; ±10 (roots); ±6 (leaves) ug/kg dry matter			
Calculation Basis and Basis	other; other			
Elimination, Metabolites, Kinetic Parameter, and Statistics	not reported; not reported; 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 molecular formula.
	Metric 2:	Test Substance Purity	High	The source or purity of the test substance 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	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.
	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 discrepancies were not likely to have a substantial impact on study results.
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Study Citation:	Sablayrolles, C., Monréjaud-Vignoles, M., Benanou, D., Patria, L., Treilhou, M. (2005). Development and validation of methods for the trace determination of phthalates in sludge and vegetables. Journal of Chromatography A 1072(2):233-242.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	789400			
Domain	Metric	EVALUATION		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 Organisms	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 Assessment	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: 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	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.
Overall Quality Determination			Uninformative	

Study Citation:	Sablayrolles, C., Montréjaud-Vignoles, M., Benanou, D., Patria, L., Treilhou, M. (2005). Development and validation of methods for the trace determination of phthalates in sludge and vegetables. Journal of Chromatography A 1072(2):233-242.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	789400			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; Not Reported			
Confidentiality, EndPoint, Type, Guideline	None; concentrations in plant materials; experimental; other			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	None; Cluzeau Info Labo (France); NR; NR			
Test Organism and Test Organism Details	tomato plants (Lycopersicum esculentum var Rondello F1); roots, leaves, fruits tested			
Lipid Content, Test Temperature, pH, and Depuration Time	not reported; not reported; not reported; not reported			
Moisture, TOC, and Test Conditions Comments	not reported; not reported; plant containers inside a temperature and humidity regulated plant house dosed with sludge tea			
Nominal Measured and Time Plateau	not reported; not reported			
Duration, Parameter, and 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, and Results Standard Deviation	<10 (roots); <10 (leaves); <10 (fruit) ug/kg dry matter; <10 (sap) ug/kg fresh matter; concentration; not applicable			
Calculation Basis and Basis	other; other			
Elimination, Metabolites, Kinetic Parameter, and Statistics	not reported; not reported; 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 molecular formula.
	Metric 2:	Test Substance Purity	High	The source or purity of the test substance 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	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.
	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 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
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Study Citation:	Sablayrolles, C., Monréjaud-Vignoles, M., Benanou, D., Patria, L., Treilhou, M. (2005). Development and validation of methods for the trace determination of phthalates in sludge and vegetables. Journal of Chromatography A 1072(2):233-242.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	789400			
Domain	Metric	EVALUATION Rating		Comments
Domain 4: Test Organisms				
	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 Assessment				
	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: 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	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.

Overall Quality Determination**Uninformative**

Study Citation:	Sun, J., Wu, X., Gan, J. (2015). Uptake and metabolism of phthalate esters by edible plants. Environmental Science & Technology 49(14):8471-8478.
OECD Harmonized Template:	Terrestrial Bioconcentration
HERO ID:	5555815

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; bioaccumulation: terrestrial; Experimental; other: Bioconcentration Factor (BCF) values in edible plants
Solvent, Reactivity, Storage, Stability	stock solutions prepared in n-hexane; NR; stored in amber glass vials at -20°C; NR
Radiolabel, Source, State, Purity	NR; AccuStandard (New Haven, CT, USA); internal standard: DnBP-d4 (Pointe-Claire, Quebec, Canada); NR; NR Notes: DnBP
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 Temperature, pH, and Depuration Time	Not applicable; 26°C (carrot cell suspension); Not reported; Not reported
Moisture, TOC, and Test Conditions Comments	65% relative humidity; Not reported; plants cultivated in sand spiked with target chemical and hydroponic nutrient solution
Nominal Measured and Time Plateau	nominal spiked concentration: 500 µg/kg; Not reported
Duration, Parameter, and 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±0.01; strawberry leaf 0.34±0.08; carrot leaf 1.09±0.21; lettuce root 0.77±0.09; strawberry root 2.61±0.42; carrot root 4.78±0.59; BCF; Not Reported
Calculation Basis and Basis	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 Substance	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 Conditions	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.

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Study Citation:	Sun, J., Wu, X., Gan, J. (2015). Uptake and metabolism of phthalate esters by edible plants. Environmental Science & Technology 49(14):8471-8478.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	5555815			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 8:	System Type and Design	High	Equilibrium is assumed in this type of study.
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	Test organisms were reported.
Domain 5: Outcome Assessment				
	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: Confounding/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 Presentation 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 Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

Study Citation:	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.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	2149497			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; bioaccumulation: terrestrial; Experimental; other: Bioaccumulation based on concentrations of contaminants in roaches, waters and sedi- ments in the Seine River and Orge River			
Solvent, Reactivity, Storage, Stability	Isooctane; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; Supelco (via Sigma-Aldrich, St. Quentin Fallavier, France); Solution of 6 standards in isooctane; DMP, DEP, DnBP, BBP, DEHP, DnOP; NR			
Test Organism and Test Organism Details	Notes: DnBP other; Rutilus rutilus (Cyprinidae; roach)			
Lipid Content, Test Temperature, pH, and Depu- ration Time	Not reported; Not reported; Not reported; Not reported			
Moisture, TOC, and Test Conditions Comments	Not reported; Not reported; BAF based on environmental monitoring			
Nominal Measured and Time Plateau	Measured; Not reported			
Duration, Parameter, and Sampling Frequency	Not reported; other; Not reported			
Analytical Method and Analytical Details	GC-MS; detected in blanks: DnBP (≤11 ng), BBP (≤52 ng), DEHP (≤10 ng);			
Results Value, Result Type, and Results Standard Deviation	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; Not Reported			
Calculation Basis and Basis	other; not specified			
Elimination, Metabolites, Kinetic Parameter, and Statistics	Not reported; Not reported; 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; however, the purity was not reported.
Domain 2: Test Design	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 Conditions	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.
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Study Citation:	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.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	2149497			
Domain		Metric	EVALUATION Rating	Comments
	Metric 8:	System Type and Design	N/A	This metric is not applicable to this type of study.
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 is not routinely used for similar study types.
Domain 5: Outcome Assessment				
	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: 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 Exposure	N/A	This metric is not applicable to this type of study.
Domain 7: Data Presentation and Analysis				
	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 Kinetic Calculations	High	The statistical methods reported were appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Uninformative	Quantitative results are not explicit.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			Uninformative	

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 Haihe River, China. Journal of Soils and Sediments 14(1):243-250.
OECD Harmonized Template:	Terrestrial Bioconcentration
HERO ID:	3110319

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	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
Solvent, Reactivity, Storage, Stability	Acetone (dried before experiment); NR; NR; NR
Radiolabel, Source, State, Purity	No; NR; NR; NR Notes: DBP
Test Organism and Test Organism Details	other; Potamogeton crispus L.
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; sediment pH = 7.5; Not reported
Moisture, TOC, and Test Conditions Comments	Not reported; sediment organic carbon 2.41%; Spiked and non-spiked (control) sediments
Nominal Measured and Time Plateau	Measured; Not reported
Duration, Parameter, and Sampling Frequency	17 days; other; Sediments and plants were sampled after 17 days
Analytical Method and Analytical Details	GC-MS; GC equipped with an Agilent 5975 MS detector and a HP-5 MS capillary column coated with 0.25 μ m of film 5% phenyl methyl siloxane; LOD: 10 ng/g (sediment samples), 20 ng/g (plant samples); recovery: 95.0% (sediment), 92.8% (plants); root bioconcentration RCF: 9.60 \pm 0.8 (control; lower conc in found sediment) 1.75 \pm 0.2 (spiked; higher conc found in sediment); stems and leaves bioconcentration SCF: 7.40 \pm 0.5 (control; lower conc in sed) 1.38 \pm 0.1 (spiked; higher conc found in sediment); Not Reported; Not Reported
Results Value, Result Type, and Results Standard Deviation	
Calculation Basis and Basis	other; not specified
Elimination, Metabolites, Kinetic Parameter, and Statistics	Notes: plant roots were damaged in spiked system; Not reported; 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	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 Conditions	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.

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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 Haihe 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 Organisms				
	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 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	This metric met the criteria for high confidence as expected for this type of study.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Other loss processes; biotic/abiotic were addressed with limited detail.
	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	Medium	This metric met the criteria for medium confidence as expected for this type of study; analytical details were omitted.
	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 Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

Study Citation:	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.
OECD Harmonized Template:	Terrestrial Bioconcentration
HERO ID:	1450450

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; bioaccumulation: terrestrial; Experimental; other: Field study Qingnian Lake and Aiwan Lake in Tainjin, China
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Test Organism and Test Organism Details	other; P. australis and Typha orientalis; root systems collected
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; Not reported; Not reported; Not reported
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 PAE concentration in plant roots to the TOC-normalized PAE concentration in the rhizosphere sediments
Nominal Measured and Time 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 ng/g; average recovery = 98.3% in sediments, 94.1% in roots;
Results Value, Result Type, and Results Standard Deviation	2.11 to 9.32; RBF; Not Reported
Calculation Basis and Basis	Not Reported; Not Reported
Elimination, Metabolites, Kinetic Parameter, and Statistics	Not reported; 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

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 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 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 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.

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Study Citation:	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.			
OECD Harmonized Template:	Terrestrial Bioconcentration			
HERO ID:	1450450			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 8:	System Type and Design	High	Equilibrium is assumed in a monitoring study.
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	Limited detail reported for test organisms.
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.
Domain 6: Confounding/Variable Control	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty not identified.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.
Domain 7: Data Presentation 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 Results	Medium	The results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

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 Template:	Adsorption and Desorption
HERO ID:	698293

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, Guideline	none; Field study; other: Partitioning between leachate and suspended sediment in leachate treatment facilities of municipal solid waste landfills
Solvent, Reactivity, Storage, Stability	extracted with hexane; NR; sealed brown glass bottles; bottled prewashed 2x with acetone and dichloromethane; NR
Radiolabel, Source, State, Purity	NA; 5 facilities treating leachate from municipal solid waste landfills; Liquid; NA Notes: source and purity of analytical standards not reported
Sampling Frequency, Sampling Details, and Number of Replicates	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), coagulation and sedimentation (sites 1-5) and activated carbon adsorb (site 4); Not reported
pH, Test Temperature, Buffer, and Test Details	7.9 - 8.3, 6.8 - 7.8, 6.6 - 7.1, 6.8 - 7.5, and 7.8 - 8.5 per site respectively; 15 - 20, 22 -23, 18 - 19, 16 - 18, and 15°C per site respectively; Not reported; Measured leachate and suspended sediment concentrations
Matrix, Clay Silts and Organic 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 Details	Not reported; Not reported
Media, Recovery, and Statistics	suspended sediment in landfill leachate; Not reported; Not reported
Transformation Products, Equilibrium	Not reported; Not Reported; Not Reported
Adsorption Details, and Equilibrium Desorption Details	
Reference Substance, Reference Substance Results, and Percent Adsorption	Not applicable; Not applicable; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Not Reported; Not Reported; Not Reported; Not Reported
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	log Kp = 4.4 (ratio of suspended sediment to the filtrate); Influent (median): 5.5 ug/L1st aeration (median): 5.2 ug/Lbiological treatment (median): 4.6 ug/LCS treatment (median): 4.1 ug/LACA treatment (median): 5.7 ug/L
Partition Coefficient Phase and Partition Coefficient Results	suspended matter-water; Median value
Mass Balance	Concentration in suspended sediment 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	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.

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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 Template:	Adsorption and Desorption			
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.
	Metric 12:	Test Substance Purity	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 Exposure	N/A	The metric is not applicable to the study type.
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 Kinetic Calculations	High	Statistical methods applied to the datasets 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.
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 & Research 16(5):446-454.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	1333362			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutyl phthalate			
Confidentiality, Type, Guideline	None; experimental; other			
Solvent, Reactivity, Storage, Stability	methanol; NR; NR; NR			
Radiolabel, Source, State, Purity	Not Reported; Aldrich; not reported; Not Reported			
Sampling Frequency, Sampling Details, and Number of Replicates	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 Details	not applicable (field samples); DOC 33-1626 mg/L			
Media, Recovery, and Statistics	Not Reported; not reported; Not Reported			
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	not reported; field samples assumed to be in equilibrium; field samples assumed to be in equilibrium			
Reference Substance, Reference Substance Results, and Percent Adsorption	not applicable (field samples); not applicable (field samples); Not Reported			
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not Reported; Not Reported; Not Reported; Not Reported			
Partition Coefficient Type and Partition Coefficient Results	Not Reported; Dissolved phase DBP concentration 0.1-62.7 ug/L; suspended solids DBP concentrations 3.5-126.0 ug/g.			
Partition Coefficient Phase and Partition Coefficient Results	Not Reported; 3-96% of DBP (of phthalic acid esters) was found in the solution phase of 26 municipal landfill leachates.			
Mass Balance	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	High	The source or purity of the test substance 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	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.
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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 & Research 16(5):446-454.				
OECD Harmonized Template:	Adsorption and Desorption				
HERO ID:	1333362				
Domain		Metric	EVALUATION Rating		Comments
Domain 3: Test Conditions					
	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 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	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 Exposure	N/A	The metric is not applicable to this study type.	
Domain 7: Data Presentation and Analysis					
	Metric 15:	Data Reporting	Low	There was insufficient data reported.	
	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.	
Overall Quality Determination			Medium		

Study Citation:	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 a sludge landfill. <i>Frontiers of Environmental Science & Engineering</i> 6(6):778-783.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5618886

EXTRACTION	
Parameter	Data
CASRN and Test Material	not reported; di-n-butyl phthalate
Confidentiality, Type, Guideline	none; experimental; other: non-guideline: abiotic association with humic acids
Solvent, Reactivity, Storage, Stability	stock solution in methanol; NR; NR; NR
Radiolabel, Source, State, Purity	Uniformly-ring 14C-labeled DBP; Hartmann Analytic GmbH (Braunschweig, Germany); NR; NR Notes: 60 µg/L
Sampling Frequency, Sampling Details, and Number of Replicates	not reported; not reported; not reported
pH, Test Temperature, Buffer, and Test Details	3.0, 7.0, 9.0; sludge pH 7.24-7.52; room temperature; not reported; A dialysis equilibrium technique was used to assess the association of 14C-labeled DBP with HA from sludge at various pH values.
Matrix, Clay Silts and Organic Carbon, and CEC	other; >15% organic content; 83.27-88.6% water content; 4.7% total nitrogen; 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 identified as Ha, Hb, Hc respectively) collected at the Bai Long Gang Wastewater Treatment Plant
Media, Recovery, and Statistics	not specified; not reported; not reported
Transformation Products, Equilibrium	not reported; not reported; not reported
Adsorption Details, and Equilibrium Desorption Details	
Reference Substance, Reference Substance Results, and Percent 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 hours; therefore, the radioactivity was equally distributed on both sides of the membrane when HAs were absent.; not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	not reported; not reported; not reported; not reported
Desorption Type	
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; Hb association intensity (log partition coefficient KsubA) = 3.00±0.04, 2.74±0.02, and 2.10±0.02 at pH 3, 7, and 9, respectively; Hb association intensity (log partition coefficient KsubA) = 3.05±0.03, 2.96±0.01, and 2.53±0.02 at pH 3, 7, and 9, respectively at Hb molecular weight of 10,000; Hb association intensity (log partition coefficient KsubA) = 3.00±0.04, 2.74±0.02, and 2.10±0.02 at pH 3, 7, and 9, respectively at Hb molecular weight of 100 Daltons; Hc association intensity (log partition coefficient KsubA) = 3.12±0.03, 2.93±0.01, and 2.53±0.02 at pH 3, 7, and 9, respectively.
Partition Coefficient Phase and Partition Coefficient Results	humic acid/diluted solutions; Values are means of three determinations at equilibrium time.
Mass Balance	not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	High	The test substance was identified clearly.
	Metric 2:	High	The source of the test substance was reported.

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Study Citation:	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 a sludge landfill. Frontiers of Environmental Science & Engineering 6(6):778-783.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	5618886			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Appropriate control was included.
	Metric 4:	Test Substance Stability	Medium	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 Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable.
	Metric 6:	Testing Conditions	Medium	There were omissions in specific testing conditions; 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	Reported test conditions were consistent.
	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 reportedand 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 Assessment				
	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 assessment.
	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	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				
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Study Citation:	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 a sludge landfill. Frontiers of Environmental Science & Engineering 6(6):778-783.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	5618886			
		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			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 environmental risk assessment of phthalate esters (PAEs) in water, suspended particulate matter, and sediment of a typical Yangtze River Delta City, China. Environmental Science and Pollution Research 26(24):24609-24619.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5635050

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Bis-n-butyl phthalate
Confidentiality, Type, Guideline	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
Solvent, Reactivity, Storage, Stability	NR; NR; stored away from light at 4°C; NR
Radiolabel, Source, State, Purity	NR; Sigma-Aldrich (USA); NR; >98% Notes: DBP
Sampling Frequency, Sampling Details, and Number of Replicates	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, Buffer, 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 Organic Carbon, and CEC	Not Reported; Not reported; reported in SI
Bulk Density and Matrix Details	Not reported; natural sediment and SPM
Media, Recovery, and Statistics	natural water; Recoveries for all PAEs tested ranged from 81.7±9.2% to 111.9±6.8% for the spiked water samples, ranged from 85.6±5.1 to 102.3±9.7% for spiked SPM samples, and ranged from 80.5±7.8 to 107.6±10.3% for spiked sediment samples; OriginPro 9.0 software and SPSS 16.0 for data analysis; Independent t-tests $p \leq 0.05$
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not reported; Not reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Kd1: partition coefficient SPM:water; Kd2: partition coefficient sediment:water; Kd1 = 0.87 L/g, Kd2 = 0.34 L/g (average wet season); Kd1 = 0.35 L/g, Kd2 = 0.67 L/g (average dry season); Not reported; Not reported
Desorption Type	Not reported; Not reported
Partition Coefficient Type and Partition Coefficient Results	Not reported; Not reported
Partition Coefficient Phase and Partition Coefficient Results	suspended matter-water; sediment-water
Mass Balance	Not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	High
Domain 2: Test Design			

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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 Science and Pollution Research 26(24):24609-24619.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	5635050			
		EVALUATION		
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 Conditions				
	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 Organisms				
	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 Assessment				
	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: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Sources of variability were addressed and statistical analysis was described
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	Adequate data reporting.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Methods were reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.
Overall Quality Determination		High		

Study Citation:	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 Template:	Adsorption and Desorption
HERO ID:	2510820

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, Type, Guideline	None; Experimental; other: Sorption kinetics and batch equilibrium sorption/desorption experiments
Solvent, Reactivity, Storage, Stability	Methanol; NR; kept in the refrigerator; NR
Radiolabel, Source, State, Purity	NR; Tianjin Siyou Co; 100 mg/L stock solution; $\geq 99\%$ Notes: DBP; stock solution diluted to appropriate test concentrations with sterilized distilled water and addition of 0.02% sodium azide; methanol was less than 2% in tests.
Sampling Frequency, Sampling Details, and Number of Replicates	intervals over 48 hrs; liquid-phase sample concentrations measured; solution added to solids and shaken, liquor phase concentrations measured; Tests performed in triplicate
pH, Test Temperature, Buffer, and Test Details	refuse 1: 7.23, refuse 2: 7.47; 25°C; Not reported; flasks were shaken at 200 r/min for 24hrs (based on initial sorption kinetics) and centrifuged at 10,000 r/min for 10 min.
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; refuse 1: 17.5% moisture, refuse 2: 20.6% moisture; refuse 1: 74.5 cmol/kg, refuse 2: 69.6 cmol/kg
Bulk Density and Matrix Details	Specific surface area - refuse 1: 4.42 m ² /g, refuse 2: 4.16 m ² /g; Two aged refuse samples, refuse 1 (aged 5 years) and refuse 2 (aged 8 years) were collected from Hangzhou Tianziling landfill; Bacteria population: refuse 1: 4.24E10 CFU/g, refuse 2: 3.97E10 CFU/g
Media, Recovery, and Statistics	0.7 $\mu\text{g/g}$ DBP for initial sorption kinetics; 0.05 g refuse and 150 mL of DBP at concentrations of 4.0–40.0 $\mu\text{g/L}$; 84.2–98.7%; Not reported
Transformation Products, Equilibrium	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
Adsorption Details, and Equilibrium Desorption Details	Not reported; Not reported; sorption capacity reached 99.7 and 99.1% of the equilibrium sorption capacity at 0.5 h on refuse 1 and 2, respectively
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported; Freundlich model - refuse 1: 1.11E4, refuse 2: 4.81E3
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	log K _{oc} ; 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
Partition Coefficient Phase and Partition Coefficient Results	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
Mass Balance	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	High	The test substance source and purity were reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Controls were included.

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Study Citation:	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 Template:	Adsorption and Desorption			
HERO ID:	2510820			
		EVALUATION		
Domain	Metric	Rating	Comments	
	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 reported.
	Metric 7:	Testing Consistency	High	Test conditions were consistent.
	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	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 outcomes of interest.
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcomes of interest.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements (models) were considered and accounted for in data evaluation; two-compartment first-order model performed 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 Presentation 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.
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 this study type.

Overall Quality Determination**High**

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 Template:	Adsorption and Desorption
HERO ID:	2914646

EXTRACTION	
Parameter	Data
CASRN and Test Material	Not Reported; dibutyl phthalate
Confidentiality, Type, Guideline	no; experimental; other: batch equilibrium approach
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Tianjin Siyou Co. (Tianjin, China); NR; Reagent grade, >= 99%
Sampling Frequency, Sampling Details, and Number of Replicates	not reported; not reported; 3
pH, Test Temperature, Buffer, and Test Details	7; 25 C; 0.02% sodium azide to inhibit bacterial growth; DBP solutions of 40.0–400.0 µg/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.
Matrix, Clay Silts and Organic Carbon, and CEC	other; not reported; 79.4 ± 1.7 cmol/Kg
Bulk Density and Matrix Details	not reported; methanogenic phase refuse; % moisture = 62.3% ± 0.3; Volatile Suspended Solids = 14.7% ± 0.3; Specific surface area = 4.58 ± 0.78 m ² /g; Biodegradable Materials = 13.4% ± 0.6; population of microorganisms: 7.59% ± 0.07 bacteria lg CFU/g, 6.72% ± 0.10 fungi lg CFU/g, and 5.5% ± 0.09 actinomycetes lg CFU/g; Redox enzyme activities: 434.5 ± 48.6 dehydrogenase (mg TF/g dw, 12 h), 14.2 ± 1.6 hydrogen peroxidase (mL KMnO ₄ /g dw, 1 h), and 4.9 ± 1.2 polyphenol oxidase (mg purple gall pigment/g dw, 2 h)
Media, Recovery, and Statistics	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 liquor phase were measured.; from refuse and the liquid phase were 82.5%–99.1% and 84.2–98.7%, respectively.; r ₂ absorption = 0.9861; r ₂ desorption = 0.9811
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not Reported; Not Reported; Not Reported
Reference Substance, Reference Substance Results, and Percent Adsorption	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, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Koc; Koc = 1.31E+4; free energy change ΔG value: –23.5 kJ/mol. ΔG = -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 ([µg/g]/[µg/L] ⁿ); foc is the organic carbon fraction of the refuse (%). the negative value of ΔG indicates that the adsorption of DBP on refuse is spontaneous. In addition, the ΔG 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 (µg/kg); ce is the equilibrium concentration of DBP in the liquid phase (µg/L); Kf is the Freundlich adsorption coefficient ([µg/kg]/[µg/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 isotherm of DBP has nonlinear characteristics. As refuse contains different organic components with various structures and properties and the adsorption point of organics is not uniform, several mechanisms may exist during adsorption. The nonlinear characteristic adsorption isotherm of DBP was attributed to the organic matter heterogeneity, which has been confirmed as the most important factor in nonlinear adsorption (Jiang et al., 2012). Desorption hysteresis exists in the desorption process because The hysteresis exponent H (H = n-des/n-abs) of DBP was less than 1.; Kf absorption= 1.76E+3 and Kf, desorption = 9.17E+3
Partition Coefficient Type and Partition Coefficient Results	Not Reported; Not Reported

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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 Template:	Adsorption and Desorption			
HERO ID:	2914646			
Domain	Metric	EVALUATION Rating		Comments
Partition Coefficient Phase and Partition Coefficient Results Mass Balance	Not Reported; Not Reported Not Reported			
Domain	Metric	EVALUATION Rating		Comments
Domain 1: Test Substance	Metric 1: Metric 2:	Test Substance Identity Test Substance Purity	High High	The test substance was identified by name. The source or purity of the test substance was reported.
Domain 2: Test Design	Metric 3: Metric 4:	Study Controls Test Substance Stability	High Medium	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 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: Metric 6: Metric 7: Metric 8:	Test Method Suitability Testing Conditions Testing Consistency System Type and Design	High Medium High High	The test method was suitable for the test substance 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. Test conditions were consistent across samples or study groups 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 Organisms	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 Assessment	Metric 11:	Test Substance Identity	Medium	he outcome assessment methodology addressed or reported the intended outcome(s) of interest.
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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 Template:	Adsorption and Desorption			
HERO ID:	2914646			
EVALUATION				
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/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 Presentation and Analysis	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., considering KOW, pKa, vapor pressure, etc.).
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			High	

Study Citation:	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.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	3036175

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, Type, Guideline	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; NR
Radiolabel, Source, State, Purity	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, Buffer, 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±0.01% nitrogen, 53.47±2.54% carbon, 6.90±0.01% hydrogen; HU: 0.14±0.03% nitrogen, 8.98±0.16% carbon, 1.59±0.03% hydrogen; WR: 0.43±0.04% nitrogen, 11.25±0.11% carbon, 2.05±0.01% hydrogen; Not reported
Bulk Density and Matrix Details	Not reported; Refuse sample that had been in the Hangzhou Tianziling landfill for 10 yrs.
Media, Recovery, and Statistics	Not reported; DBP recovery rates = 84.2-98.7%; Not reported
Transformation Products, Equilibrium	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
Adsorption Details, and Equilibrium Desorption Details	HA and whole refuse had reached 88.4 and 97.5% of the equilibrium sorption capacities, respectively; Not reported
Reference Substance, Reference Substance Results, and Percent Adsorption	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 = 0.52 (HA) 0.68 (WR) 0.86 (HU)
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Linear model Kd; 2.812 (HA), 3.054 (WR), 3.275 (HU); Kd at 2.5 ug/L = 10.057 (HA), 12.301 (WR), 15.341 (HU); Kd at 15 ug/L = 45.202 (HA), 50.325 (WR), 56.108 (HU); the difference between initial and equilibrium concentration in the liquid phase was defined as the sorption capacity; HA = 4.421 n = 0.860, WR = 5.543 n = 0.815, HU = 7.443 n = 0.744 ((μg g ⁻¹)/(μg L ⁻¹)^n)
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	Not reported; Not reported
Partition Coefficient Phase and Partition Coefficient Results	Not reported; the difference between the initial and equilibrium concentration in supernatant defined as sorption capacity (isotherm)
Mass Balance	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	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 interpretation of the results.

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Study Citation:	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.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	3036175			
Domain	Metric	EVALUATION		Comments
	Metric 4:	Test Substance Stability	Medium	Minimal details on test substance preparation, storage conditions, and homogeneity 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	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 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	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/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 Presentation 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 Results	High	The results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination			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 Harmonized Template:	Adsorption and Desorption			
HERO ID:	1322128			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutyl phthalate			
Confidentiality, Type, Guideline	None; Experimental; other			
Solvent, Reactivity, Storage, Stability	Not reported; Not reported; Not reported; Not reported			
Radiolabel, Source, State, Purity	Not reported; Not reported; Not reported; Not reported Notes: Not reported			
Sampling Frequency, Sampling Details, and Number of Replicates	24 hours; After 24 hours of mixing, the mixed liquor was filtered through a 0.2 um membrane and residual filtrate was measured for remaining DEHP; Not reported			
pH, Test Temperature, Buffer, and Test Details	Not reported; Ambient temperature; Not reported; 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 prior to the experiments to suppress microbial activity.			
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; Not Reported; Not reported			
Bulk Density and Matrix Details	Not reported; Sludge contained 4.265 g/L of suspended solids and 3.505 g/L of volatile suspended solids.			
Media, Recovery, and Statistics	Activated sludge; Not reported; R^2 for both isotherms were >0.99.			
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not reported; Not reported			
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; 100% at 0.5 to 10.0 mg/L, 80.0 to 58.8% at 50-500 ug/L.			
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Freundlich and Langmuir; Freundlich parameters: k = 174.5, n = 0.9394. Langmuir parameters: Qm (mg/g): 17.6, b: 0.00987.; Not Reported; 174.5			
Partition Coefficient Type and Partition Coefficient Results	Not reported; Not Reported			
Partition Coefficient Phase and Partition Coefficient Results	Not reported; Not Reported			
Mass Balance	Not repoted			
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	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	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.
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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 Harmonized Template:	Adsorption and Desorption			
HERO ID:	1322128			
Domain	Metric	EVALUATION 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	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 concentrations.
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	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/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 Presentation and Analysis				
	Metric 15:	Data Reporting	High	The analytical methods and data reporting were appropriate.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The statistical analysis was appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		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 Research 36(6):1429-1438.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	679518			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; Not Reported			
Confidentiality, Type, Guideline	None; experimental; other			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, 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 Rhineâ€“Westphalia, Rheinlandâ€“ Pfalz, Brandenburg and Berlin); Samples, collected in 2.5L brown glass bottles were preserved with 0.5 g/L1 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, Buffer, and Test Details	Not reported; Not reported; Not applicable (field study); Not Reported			
Matrix, Clay Silts and Organic Carbon, and CEC	other; Not applicable (field study); Not reported			
Bulk Density and Matrix Details	Not reported; Not Reported			
Media, Recovery, and Statistics	Not Reported; 84.3-93.7% water; 102.3-117.2% sediment; Not Reported			
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not applicable (field study); Not applicable (field study)			
Reference Substance, Reference Substance Results, and Percent Adsorption	Not applicable (field study); Not applicable; Not Reported			
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not Reported; Not Reported; Not Reported; Not Reported			
Partition Coefficient Type and Partition Coefficient Results	Kd = sediment concentration/water concentration; average Kd = 900 L/kg (calculated by reviewer from median concentrations)			
Partition Coefficient Phase and Partition Coefficient Results	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).			
Mass Balance	Not applicable			
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 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 unlikely to have affected the results.
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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 Research 36(6):1429-1438.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	679518			
Domain		Metric	EVALUATION 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	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 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	Sampling methods were appropriate and addressed the outcomes of interest.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	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 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	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 Quality Determination			Medium	

Study Citation:	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.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	790306			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, Type, Guideline	None; Experimental; other: Not reported; Field study in the Mississippi Delta and Gulf of Mexico			
Solvent, Reactivity, Storage, Stability	NA; NR; Sediment frozen in glass containers; organisms frozen in glass jars or aluminum foil; NR			
Radiolabel, Source, State, Purity	NA; Samples collected from the Mississippi Delta, Gulf coast, and open gulf; NA; NA			
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; Top 10 cm of sediment collected by metal coring devices; Surface water samples extracted from site through Amberlite XAD-2 resin; Not reported			
pH, Test Temperature, Buffer, 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 Organic Carbon, and CEC	Not Reported; Not reported; Not reported			
Bulk Density and Matrix Details	Not reported; Natural sediment			
Media, Recovery, and Statistics	Natural water; > 90%; Not conducted			
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	NA; NA; NA			
Reference Substance, Reference Substance Results, and Percent Adsorption	Blank; < 0.2 ng/L (water), < 0.1 ng/g (sediment); Not Reported			
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not Reported; Not Reported; Not Reported; Not Reported			
Partition Coefficient Type and Partition Coefficient Results	Kd = concentration in sediment/concentration in water; Mean Kd = 0.14 L/g (Mississippi delta), 0.10 L/g (Gulf coast), 0.04 L/g (Open gulf)			
Partition Coefficient Phase and Partition Coefficient Results	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.: 7.6 ng/gOpen gulf mean water conc.: 93 ng/L; mean sed. conc.: 3.4 ng/g			
Mass Balance	Not Reported			
EVALUATION				
Domain	Metric	Rating	Comments	
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High	The pollutant of interest was identified by name.
	Metric 2:	Test Substance Purity	Medium	The sample source was reported generally, specific sites were not reported.
Domain 2: Test Design	Metric 3:	Study Controls	High	Blanks were included and the results were reported.
	Metric 4:	Test Substance Stability	Medium	Sample storage was reported, sample preparation and extraction was not reported.
Domain 3: Test Conditions	Metric 5:	Test Method Suitability	High	The field study method was appropriate for the chemical of interest.
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Study Citation:	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.			
OECD Harmonized Template:	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 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	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: Confounding/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 Presentation and Analysis				
	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 Results	Uninformative	Partition coefficients were determined by the reviewer based on average site data; site 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.
Overall Quality Determination		Uninformative		

Study Citation:	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.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	1597996

Parameter	Data	EXTRACTION	
CASRN and Test Material	84-74-2; DnBP		
Confidentiality, Type, Guideline	None; Experimental; other: Not reported; distribution of selected pollutants between water and suspended particulate matter (SPM) in lakes		
Solvent, Reactivity, Storage, Stability	NA; NR; Samples stored at -20°C; NR		
Radiolabel, Source, State, Purity	NA; Yuehu Lake and Moshuihu Lake, China; NA; NA Notes: Analytical standards obtained as a mixture from Supelco.		
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, Buffer, 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 Organic Carbon, and CEC	Not Reported; Not reported; Not reported		
Bulk Density and Matrix Details	Not reported; Filtered suspended particulate matter from lake water		
Media, Recovery, and Statistics	Surface lake water; 67-102% (water), 72-97% (SPM); Not reported		
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; NA, field study; NA		
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not Reported		
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Not Reported; Not Reported; Not Reported; Not Reported		
Desorption Type			
Partition Coefficient Type and Partition Coefficient Results	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)		
Partition Coefficient Phase and Partition Coefficient Results	suspended matter-water; Mean Yuehu Lake water: 292.9±69.6 ng/L; Mean Moshuihu Lake water: 728.5±298.2 ng/L Mean Yuehu Lake SPM: 725.1±599.8 ng/g d.w.; Mean Moshuihu Lake SPM: 1798.2±1261.1 ng/g d.w.		
Mass Balance	Not Reported		

Domain	Metric	EVALUATION		Comments
		Rating		
Domain 1: Test Substance				
	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.

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Study Citation:	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.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	1597996			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	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 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	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 Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	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 Quality Determination		High		

Study Citation:	HEW, (2019). The occurrence, composition and partitioning of phthalate esters (PAEs) in the water-suspended particulate matter (SPM) system of Lake Chaohu, China. Science of the Total Environment 661:285-293.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5433399

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, Type, Guideline	None; Experimental; other: Seasonal organic-carbon normalized partition coefficients of DBP in water-SPM system.
Solvent, Reactivity, Storage, Stability	NR; NR; Hexane and Acetone working standards; NR
Radiolabel, Source, State, Purity	NR; Field samples. Standards were obtained from AccuStandard 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 >1m 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, Buffer, and Test Details	Not reported; Not reported; None; 2L of water was filtered through GFF to collected suspended particulate matter.
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; Not reported; Not reported
Bulk Density and Matrix Details	Not reported; Not reported
Media, Recovery, and Statistics	Not Reported; Water: 74.3-102.%; SPM: 70.6-105.6%; Not Reported
Transformation Products, Equilibrium	Not reported; Not reported; Not reported
Adsorption Details, and Equilibrium Desorption Details	Not reported; Not reported; Not Reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Not Reported; Not Reported; Not Reported; Not Reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	Log Koc (Mean±SD); Summer: 2.35±0.42; Autumn: 2.38±0.78; Winter: 2.90±0.31.
Partition Coefficient Phase and Partition Coefficient Results	Not Reported; Koc = [(Conc. In SPM)/(Conc. In water)]/(% Particulate organic carbon)
Mass Balance	Not Reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	High
			The test substance was identified using common nomenclature. The test substance was measured in field samples using appropriate analytical techniques.
Domain 2: Test Design	Metric 3:	Study Controls	High
			Appropriate controls in the analytical method were used.

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Study Citation:	HEW, (2019). The occurrence, composition and partitioning of phthalate esters (PAEs) in the water-suspended particulate matter (SPM) system of Lake Chaohu, China. Science of the Total Environment 661:285-293.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	5433399			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	High	The preparation of the samples containing the test substance was 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 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, allogeic input, and internal PAE release. However, this does not make the study unusable.
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	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/Variable Control				
	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 Presentation and Analysis				
	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 Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
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Study Citation: HEW, (2019). The occurrence, composition and partitioning of phthalate esters (PAEs) in the water-suspended particulate matter (SPM) system of Lake Chaohu, China. Science of the Total Environment 661:285-293.			
OECD Harmonized Template: Adsorption and Desorption			
HERO ID: 5433399			
		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality 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 and Health, Part A: Toxic/Hazardous Substances & Environmental Engineering 40(1):103-115.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	681974

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, Guideline	None; Experimental; other: sorption isotherm determination via the batch equilibrium procedure
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, 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 (≤ 2.0 mg/L) test substance
Matrix, Clay Silts and Organic 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 Details	Not reported; < 2 mm sediment size
Media, Recovery, and Statistics	Native sediment and test substance solution; 97.3%; $\pm 6.7\%$
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not applicable; Not reported; desorption: 8% of adsorbed / 30 d
Reference Substance, Reference Substance Results, and Percent Adsorption	Not applicable; Not applicable; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Not Reported; Not Reported; Not Reported; 0.36
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	nonlinear Freundlich model; $R^2 = 0.92$
Partition Coefficient Phase and Partition Coefficient Results	sediment-water; Not Reported
Mass Balance	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	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				

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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 Template:	Adsorption and Desorption			
HERO ID:	681974			
		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 Exposure	N/A	The metric is not applicable to the study type.
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 Kinetic Calculations	High	Statistical methods were appropriate for 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 study type.
Overall Quality 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 and Health, Part A: Toxic/Hazardous Substances & Environmental Engineering 40(1):103-115.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	681974			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, Type, Guideline	None; Experimental; other: sorption isotherm determination via the batch equilibrium procedure			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; Sigma Company; NR; 99%			
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; 0-15 cm surface sediment samples collected from Ah-Kung-Dian 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 (≤ 2.0 mg/L) test substance			
Matrix, Clay Silts and Organic 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 Details	Not reported; < 2 mm sediment size			
Media, Recovery, and Statistics	Native sediment and test substance solution; 97.3%; ±6.7%			
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not applicable; Not reported; desorption: 12% of adsorbed / 30 d			
Reference Substance, Reference Substance Results, and Percent Adsorption	Not applicable; Not applicable; Not reported			
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not Reported; Not Reported; Not Reported; 1.45			
Partition Coefficient Type and Partition Coefficient Results	nonlinear Freundlich model; R^2 = 0.99			
Partition Coefficient Phase and Partition Coefficient Results	sediment-water; Not Reported			
Mass Balance	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	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	Metric 5:	Test Method Suitability	High	The test method was suitable.
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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 Template:	Adsorption and Desorption			
HERO ID:	681974			
EVALUATION				
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 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 Exposure	N/A	The metric is not applicable to the study type.
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 Kinetic Calculations	High	Statistical methods were appropriate for 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 study type.
Overall Quality 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 and Health, Part A: Toxic/Hazardous Substances & Environmental Engineering 40(1):103-115.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	681974			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, Type, Guideline	None; Experimental; other: sorption isotherm determination via the batch equilibrium procedure			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; Sigma Company; NR; 99%			
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; 0-15 cm surface sediment samples collected from Dian-Bao River in Taiwan using Ekman grab sampler; 3			
pH, Test Temperature, Buffer, and Test Details	7.7; 25°C; Not reported; 5g sediment; 25 mL of various concentrated solutions (≤ 2.0 mg/L) test substance			
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; 85% sand; 9% silt; 6% clay; 5.20 g/kg organic matter; 7.60cmol/kg			
Bulk Density and Matrix Details	Not reported; < 2 mm sediment size			
Media, Recovery, and Statistics	Native sediment and test substance solution; 97.3%; $\pm 6.7\%$			
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not applicable; Not reported; desorption: 6% of adsorbed / 30 d			
Reference Substance, Reference Substance Results, and Percent Adsorption	Not applicable; Not applicable; Not reported			
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not Reported; Not Reported; Not Reported; 0.25			
Partition Coefficient Type and Partition Coefficient Results	nonlinear Freundlich model; $R^2 = 0.97$			
Partition Coefficient Phase and Partition Coefficient Results	sediment-water; Not Reported			
Mass Balance	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	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				
	Metric 5:	Test Method Suitability	High	The test method was suitable.
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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 Template:	Adsorption and Desorption			
HERO ID:	681974			
EVALUATION				
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 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 Exposure	N/A	The metric is not applicable to the study type.
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 Kinetic Calculations	High	Statistical methods were appropriate for 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 study type.
Overall Quality Determination			High	

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 Template:	Adsorption and Desorption
HERO ID:	3859571

Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, Guideline	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, 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; Not reported; Field study
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; Not reported; Not reported
Bulk Density and Matrix Details	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 partitioning had no significant relationship to alkyl chain length or log Kow of the studied PAEs
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	NA; NA; NA
Reference Substance, Reference Substance Results, and Percent Adsorption	Analytical blank; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not Reported; Not Reported; Not Reported; Not Reported
Partition Coefficient Type and Partition Coefficient Results	suspended particulate matter/water; 3240, 1760, 1170 L/kg
Partition Coefficient Phase and Partition Coefficient Results	suspended matter-water; Calculated for wet, normal, and dry seasons Water (wet, normal, dry): 0.67, 0.37, 0.54 ug/L Suspended particulate (wet, normal, dry): 2.17, 0.65, 0.63 mg/kg Sediment (wet, normal, dry): 19.2, 11.5, 20.5 ug/kg
Mass Balance	NA

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			

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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 Template:	Adsorption and Desorption			
HERO ID:	3859571			
Domain	Metric	EVALUATION		Comments
	Metric 3:	Study Controls	High	Analytical blanks were included, the results were assumed to be within 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 Conditions				
	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 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	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/Variable Control				
	Metric 13:	Confounding Variables	High	Variability was addressed between sites and seasons.
	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	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 Results	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.
Overall Quality Determination			High	

Study Citation:	Li, R., Liang, J., Gong, Z., Zhang, N., Duan, H. (2017). Occurrence, spatial distribution, historical trend and ecological risk of phthalate esters in the Jiulong River, Southeast China. Science of the Total Environment 580(Elsevier):388-397.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	3483279

Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, Guideline	None; Experimental; other: Not reported
Solvent, Reactivity, Storage, Stability	NA; NR; Water filtered, stored at 4°C; sediment stored in brown glass jar at 4°C; NR
Radiolabel, Source, State, 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 Organic Carbon, and CEC	Not Reported; Not reported; Not reported
Bulk Density and Matrix Details	Not reported; Natural fluvial and estuarine sediment
Media, Recovery, and Statistics	Natural fluvial and estuarine river; 77.1 - 101.9% (water), 87.0 - 101.7% (sediment); Not reported
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not Reported; Not Reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Method blank; < 0.13 ug/L (water), < 0.045 mg/kg (sediment); Not Reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Not Reported; Not Reported; Not Reported; Not Reported
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	sediment/water partitioning; 97.62 (North River), 82.09 (West River), 38.46 (estuary) L/kg
Partition Coefficient Phase and Partition Coefficient Results	sediment-water; Average water concentrations: 0.42 (North River), 0.67 (West River), and 0.52 (estuary) ug/L Average sediment: 0.041 (North River), 0.055 (West River), and 0.020 (estuary) mg/kg
Mass Balance	NA

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; 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.

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Study Citation:	Li, R., Liang, J., Gong, Z., Zhang, N., Duan, H. (2017). Occurrence, spatial distribution, historical trend and ecological risk of phthalate esters in the Jiulong River, Southeast China. Science of the Total Environment 580(Elsevier):388-397.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	3483279			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	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				
	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	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/Variable Control				
	Metric 13: Confounding Variables	High		Trends in spatial distribution of the pollutants were discussed.
	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	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				
	Metric 17: Verification or Plausibility of 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.
Overall Quality Determination		High		

Study Citation:	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 Delta in China. Water Science and Technology 71(2):183-190.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	2816369

Parameter	Data
CASRN and Test Material	Not Reported; dibutyl phthalate
Confidentiality, Type, Guideline	None; experimental; other: field study
Solvent, Reactivity, Storage, Stability	isooctane; NR; NR; NR
Radiolabel, Source, State, 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, Buffer, and Test Details	not applicable; not applicable; not applicable; Not Reported
Matrix, Clay Silts and Organic Carbon, and CEC	other; not reported; not reported
Bulk Density and Matrix Details	not reported; natural water-natural sediment
Media, Recovery, and Statistics	not applicable; recovery 76.3-106%, RSD 10.7% (all chemicals); not reported
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	not reported; not applicable; not applicable
Reference Substance, Reference Substance Results, and Percent Adsorption	surrogate standard solution DiPhenP, DPhenP and DBenzP; all surrogate recoveries were within acceptable limits; Not Reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Not Reported; Not Reported; Not Reported; not reported
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	sediment/water; using mean measured values; wet season: 0.96; dry season 1.59; overall 1.23
Partition Coefficient Phase and Partition Coefficient Results	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)

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 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.

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Study Citation:	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 Delta in China. Water Science and Technology 71(2):183-190.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	2816369			
		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 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.
	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 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	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				
	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 Presentation 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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Study Citation:	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 Delta in China. Water Science and Technology 71(2):183-190.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	2816369

Domain	Metric	EVALUATION Rating	Comments
Overall Quality 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 risks. Environmental Science and Pollution Research 23(19):19341-19349.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	3350200

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, Guideline	None; Field study; other: Not reported
Solvent, Reactivity, Storage, Stability	NA; NR; Water samples filtered through glass fibers, pH adjusted to 2, stored at 4°C in brown glass bottles with Teflon lids; sediment samples stored at -20°C in aluminum foil envelopes; NR
Radiolabel, Source, State, Purity	NA; Samples collected from Humen, Jiaomen, Hongqimen, Modaomen, Jitimen, and Yamen estuaries in China; NA; NA Notes: Analytical standard mixture including DMP, DEP, DEHP, DnOP, BBP, and DBP in isooctane at 1g/L each, obtained from Dr. Ehrenstorfer GmbH, Germany 2-4 April 2013, 25-27 June 2013, and 10-15 January 2013; Collected during falling tide; Not reported
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; Not reported; NA; Surface sediment samples and water samples collected from 6 sites in the Pearl River Delta, China
pH, Test Temperature, Buffer, and Test Details	Not Reported; Not reported; Not reported
Matrix, Clay Silts and Organic Carbon, and CEC	Not reported; Estuarine natural sediment
Bulk Density and Matrix Details	Estuarine natural water; Not reported; Pearson correlation coefficient values of concentrations in water and sediment: $p < 0.05$, $r \geq 0.779$, significant correlation
Media, Recovery, and Statistics	Not reported; Not reported; NA
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Procedural blank; 0.022 ug/L DBP and 0.042 ug/L DEHP detected; Not Reported
Reference Substance Results, and Percent Adsorption	Not Reported; Not Reported; Not Reported; 0.96, 0.12, 1.59 g d.w./L
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Sediment-water partition coefficient: spring, summer, and winter, respectively.; Calculated based on measured sediment and water concentrations.
Partition Coefficient Type and Partition Coefficient Results	sediment-water; Spring average (range): 0.55 (0.06-2.04) ug/L; 0.53 (0.15-2.50) ug/g dwSummer average (range): 8.49 (0.48-14.8) ug/L; 1.02 (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
Partition Coefficient Phase and Partition Coefficient Results	NA
Mass Balance	

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				
	Metric 3:	Study Controls	High	Procedural blanks were included.

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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 risks. Environmental Science and Pollution Research 23(19):19341-19349.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	3350200			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	High	Sample storage and preparation was reported.
Domain 3: Test Conditions				
	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.
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	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 approaches.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Variability and uncertainty was addressed.
	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	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 Kinetic Calculations	High	Statistical methods were reported and appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

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 Template:	Adsorption and Desorption			
HERO ID:	807140			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; 0			
Confidentiality, Type, Guideline	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, Purity	Not Reported; Not Reported; Not Reported; Not Reported			
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; Not reported; Not reported			
pH, Test Temperature, Buffer, 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 Organic Carbon, and CEC	Not Reported; Not reported; Not reported			
Bulk Density and Matrix Details	Not reported; Not reported			
Media, Recovery, and Statistics	Not reported; Not reported; Not reported			
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not reported; Not reported			
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported			
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not reported; Not reported; Not reported; Not reported			
Partition Coefficient Type and Partition Coefficient Results	Log Koc; 3.97			
Partition Coefficient Phase and Partition Coefficient Results	Not Reported; Not reported			
Mass Balance	Not reported			
EVALUATION				
Domain	Metric	Rating		Comments
Domain 1: Test Substance	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	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:	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 Template:	Adsorption and Desorption			
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.
	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: 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 Exposure	N/A	The metric is not applicable to the study type.
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 Kinetic Calculations	N/A	The metric is not applicable to the study type.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	N/A	The metric is not applicable to the study type.
	Metric 18:	QSAR Models	Uninformative	The QSPR 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. (2006). Sorption of phthalate esters and PCBs in a marine ecosystem. Environmental Science & Technology 40(11):3481-3488.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	2158899

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, Type, Guideline	None; Experimental; other: Sediment sorption in a marine ecosystem
Solvent, Reactivity, Storage, Stability	NR; NR; Water samples were stored at 4 deg. C in dark; sediment samples stored at -20 deg. C in dark; NR
Radiolabel, Source, State, Purity	NR; shallow marine inlet in Vancouver; NR; Analytical standard: HPLC grade
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; 4L water samples collected in amber glass bottles at 4 locations in the shallow inlet; surface sediment samples collected in 250 mL glass jars at 4 locations in False Creek for a total of 17 samples; samples taken in triplicate
pH, Test Temperature, Buffer, and Test Details	Not reported; 11°C; Not reported; measured concentrations in bottom sediments, suspended sediment, and seawater
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; organic carbon: 2.80±0.31% in bottom sediments, 40±0.4% in suspended sediments; Not reported
Bulk Density and Matrix Details	Not reported; Samples collected from False Creek Harbor in Vancouver
Media, Recovery, and Statistics	Not reported; Average recovery based on spiked internal standard: sea water 86±28% spring water 79±36% bottom sediment 89±12%; Standard deviations are reported along with means, unless otherwise specified.
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not reported; Not reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Spring water, used for procedural blanks, was collected from Lynn Headwater Regional Park.; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Not reported; Not reported; Not reported; Not reported
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	Koc; Kbs,oc = 4.52±0.24 (OD), 4.90±0.24 (FD); Kss,oc = 5.93±0.36 (OD), 6.12±0.33 (FD)
Partition Coefficient Phase and Partition Coefficient Results	sediment-water; Kbs,oc: organic carbon normalized bottom-sediment-water; Kss,oc: suspended sediment-water distribution; OD: operationally defined freely dissolved and FD: estimated truly freely dissolved
Mass Balance	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	High	The test substance source of sampling was reported and the purity of the internal standard for analysis was also reported.
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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Study Citation:	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.				
OECD Harmonized Template:	Adsorption and Desorption				
HERO ID:	2158899				
Domain		Metric	EVALUATION Rating		Comments
Domain 3: Test Conditions					
	Metric 5:	Test Method Suitability	High	The test method was suitable.	
	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	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 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/Variable Control					
	Metric 13:	Confounding Variables	N/A	The metric is not applicable to 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 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 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	High	The study results are reasonable.	
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.	
Overall Quality Determination			High		

Study Citation:	Minling, G., Xiaojun, M., Wenhua, S., Yun, Q., Lin, W. (2015). Adsorption mechanism of di-n-butyl phthalate ester on brown soil and red soil. International Journal of Environmental Research 9(2):605-612.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	5621789			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	None; Experimental; OECD Guideline 106 (Adsorption - Desorption Using a Batch Equilibrium Method)			
Solvent, Reactivity, Storage, Stability	standard solution in methanol; NR; stored at 4°C in a refrigerator; NR			
Radiolabel, Source, State, Purity	NR; Lark Technology co., Ltd. (Beijing, China); NR; 96.8% Notes: DBP			
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; samples were taken and centrifuged, the supernatant was filtered and analyzed; 3			
pH, Test Temperature, Buffer, and Test Details	brown soil pH 5.53; red soil pH 5.42; 298K; Not reported; test concentrations added to glass tubes: 0.5, 1, 2, 4, 8, 16 μg/mL			
Matrix, Clay Silts and Organic 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 Details	Not reported; brown soil (main minerals: hydromica and vermiculite) and red soil (main mineral:kaolinite) collected from Agricultural University of Shenyang and Hunan Qiyang red soil experimental station of Chinese Academy of Agricultural Sciences, respectively			
Media, Recovery, and Statistics	aqueous phase; Not reported; Not reported			
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; 24 hrs selected as equilibrium time; Not reported			
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Test tube without soil was used to assess adsorption to glassware; no loss observed; Not reported			
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Kd; Brown soil: 156 (r squared = 0.869); red soil: 169 (r squared = 0.788); adsorbate distribution coefficient of the linear model; Brown soil: logKf 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 nonlinearity index			
Partition Coefficient Type and Partition Coefficient Results	Not reported; Not reported			
Partition Coefficient Phase and Partition Coefficient Results	soil-water; Not reported			
Mass Balance	Not reported			
EVALUATION				
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	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 reported.
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Study Citation:	Minling, G., Xiaojun, M., Wenhua, S., Yun, Q., Lin, W. (2015). Adsorption mechanism of di-n-butyl phthalate ester on brown soil and red soil. International Journal of Environmental Research 9(2):605-612.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	5621789			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	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 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	High	The outcome assessment methodology addressed the outcome of interest.
	Metric 12:	Test Substance Purity	High	The sampling methods were appropriate.
Domain 6: Confounding/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 Presentation 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 Quality Determination		High		

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.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	1316257

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, Guideline	None; Calculation; other: Calculated from test substance concentration in Lake Yssel water and suspended particulate matter
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Polyscience, Niles, IL, USA; NR; ≥98% Notes: Di-n-butyl phthalate
Sampling Frequency, Sampling Details, and Number of Replicates	12 consecutive days; Not applicable; 6 locations
pH, Test Temperature, Buffer, and Test Details	Not applicable; Not applicable; Not applicable; Lake water samples collected and extracted
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; 8.1% organic carbon in SPM; Not reported
Bulk Density and Matrix Details	Not reported; suspended particulate matter from Lake Yssel water
Media, Recovery, and Statistics	Lake Yssel water; 93% for suspended particulate matter and 97% from water; Not reported
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not applicable; Authors theorize that biodegradation disturbs the water spm partitioning equilibrium; Not applicable
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Not applicable; Not applicable; Not applicable; Not applicable
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	log koc; 3.8
Partition Coefficient Phase and Partition Coefficient Results	suspended matter-water; Based on the mean PE concentrations in water and SPMlog Koc (S) = 3.5log Koc (Kow) = 4.0log Koc (mean) = 3.8
Mass Balance	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	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				

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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.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	1316257			
Domain	Metric	EVALUATION		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 reported 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 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	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: Confounding/Variable Control				
	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 Presentation and Analysis				
	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: 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.

Overall Quality Determination**Medium**

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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.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	1316257

		EVALUATION	
Domain	Metric	Rating	Comments

* Related References: Cited in HSDB and ECHA

Study Citation:	Russell, D. J., Mcduffie, B. (1986). Chemodynamic properties of phthalate esters partitioning and soil migration. Chemosphere 15(8):1003-1022.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	1316119			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, Type, Guideline	None; Experimental; other: Shake flask method for soil-water partition coefficients			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; Fisher Scientific, Fairlawn, NJ; NR; NR Notes: NR			
Sampling Frequency, Sampling Details, and Number of Replicates	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 Organic Carbon, and CEC	Not Reported; 1.59% OC; Not reported			
Bulk Density and Matrix Details	NR quantitatively but discussed; Broome County, NY composite soil			
Media, Recovery, and Statistics	aqueous; NR quantitatively but discussed and considered by controls; Limited details			
Transformation Products, Equilibrium	NA; formaldehyde added to inhibit biodegradation; Not applicable; Not applicable			
Adsorption Details, and Equilibrium Desorption Details	Not applicable; Not applicable; Not reported			
Reference Substance, Reference Substance Results, and Percent Adsorption	Kp (partition coefficient); 22; Not applicable; Not reported			
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Koc; 1,386 (calculated from Kp)			
Partition Coefficient Type and Partition Coefficient Results	soil-water; Not applicable			
Partition Coefficient Phase and Partition Coefficient Results	NR quantitatively but discussed and considered by study			
Mass Balance				
EVALUATION				
Domain	Metric	Rating	Comments	
Domain 1: Test Substance	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	A concurrent blank control was reported.
	Metric 4:	Test Substance Stability	High	The test substance stability was considered in this study.
Domain 3: Test Conditions				
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Study Citation:	Russell, D. J., Mcduffie, B. (1986). Chemodynamic properties of phthalate esters partitioning and soil migration. Chemosphere 15(8):1003-1022.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	1316119			
		EVALUATION		
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 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	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/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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Limited details were reported, but this was not likely to have impacted the study results.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	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 Quality Determination		High		

Study Citation:	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.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	1315929

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, Guideline	None; Experimental; other: Soil column study
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Fisher Scientific; NR; NR Notes: Di-n-butyl phthalate
Sampling Frequency, Sampling Details, and Number of Replicates	3 soils; Not Reported; 1
pH, Test Temperature, Buffer, and Test Details	Not reported; Not reported; Not reported; soil packed into 0.8 cm ID glass columns with a 500 ml separatory funnel attached at a constant pressure to keep the flow constant for the duration of the experiment with 1 ppm test substance.
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; 0.77-1.59% organic carbon; Not reported
Bulk Density and Matrix Details	0.9-1.2; Broome County (NY)
Media, Recovery, and Statistics	reported as aqueous; Not reported; average and standard deviation reported
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Reached after 1-hour; Not applicable
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Not reported; Not reported; Not reported; Not reported
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	Kp; 13-33
Partition Coefficient Phase and Partition Coefficient Results	soil-water; calculated from influent and effluent concentrations and number of void volumes
Mass Balance	Not reported

EVALUATION				
Domain	Metric		Rating	Comments
Domain 1: Test Substance	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	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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Study Citation:	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.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	1315929			
Domain	Metric	EVALUATION		Comments
		Rating		
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 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 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	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 analysis.
Domain 6: Confounding/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 Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Some result details were not reported; however, these omissions would not have a substantial 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				
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			High	

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 Template:	Adsorption and Desorption
HERO ID:	3491242

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, Guideline	None; Experimental; other: Model developed to estimated adsorption parameters based on experimental observations
Solvent, Reactivity, Storage, Stability	NA; NR; NR; NR
Radiolabel, Source, State, Purity	NA; Alkaline treated biosolids obtained from N-Vitro Systems Canada Biosolids Facility in Halifax Regional Municipality; Solid; NA
Sampling Frequency, Sampling Details, and Number of Replicates	May - November 2014; Prior to and one week and one month after biosolid application; Composite of 5 soil cores from center cell, diameter 2.5 cm and depth of 0 -15 cm; 3
pH, Test Temperature, Buffer, and Test Details	5.2 (soil), 9.4 (biosolid); Not reported; NA; Lysimeter cells of soil established in 2009 and received alkaline treated biosolids from Halifax biosolids facility applied in 2012 - 2013 at 0, 7, and 28 Mg/ha, cells planted with annual ryegrass, treatment increased in 2014 to 28 and 42 Mg/ha
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; 10.3% clay, 30.9% silt, 58.9% sand, 3.4% organic matter; Not reported
Bulk Density and Matrix Details	1.39 mg/cm ³ ; Ortho-Humic Podzol soil (sandy loam), in Nova Scotia, Canada
Media, Recovery, and Statistics	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 advection-dispersion.
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not Reported; Not Reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Control; Not reported; Not Reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Not Reported; Not Reported; Not Reported; 0.13 cm ³ /ug
Desorption Type	Not Reported; Not Reported
Partition Coefficient Type and Partition Coefficient Results	Not Reported; Not Reported
Partition Coefficient Phase and Partition Coefficient Results	soil-water; Dispersion coefficient: 0.70 cm ² /d; Fraction of sorption sites assumed to be in equilibrium with solution: 0.01; Freundlich exponent: 0.11; First order sorption rate coefficient for non-equilibrium sites: 0.006/day
Mass Balance	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	Medium	Sample source was reported, analytical standard information was not provided.
Domain 2: Test Design	Metric 3: Study Controls	Medium	A control was included but the results of the control were not reported.

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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 Template:	Adsorption and Desorption			
HERO ID:	3491242			
Domain		Metric	EVALUATION Rating	Comments
	Metric 4:	Test Substance Stability	Medium	Biosolid sample application was reported, but not information on storage prior to application or other initial processing.
Domain 3: Test Conditions				
	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 reported.
	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 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	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: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Model parameters (R^2 , mean absolute error, root mean square error) were determined 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 Presentation 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 Results	High	The results were appropriate.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			High	

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 Template:	Adsorption and Desorption
HERO ID:	683003

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, Type, Guideline	None; Field study; other: Partition coefficient between suspended matter and water samples
Solvent, Reactivity, Storage, Stability	Analytical grade Carbon disulfide (CS ₂); NR; NR; NR
Radiolabel, Source, State, Purity	NR; Beijing Chemical Reagents Co.; NR; NR Notes: NR
Sampling Frequency, Sampling Details, and Number of Replicates	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 μ m press filter used for suspended particle samples.; 13 sampling sites: 7 in Yellow river, 6 in tributaries.
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 collection). Particulate phase and sediment precolumn treatment: dried, ground and sieved, dissolved in CS ₂ . After shaking, organic layer was removed (repeated 2x).
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; TOC %: 0.17-0.28; Not reported
Bulk Density and Matrix Details	Not reported; Not Reported
Media, Recovery, and Statistics	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 Details	Not reported; Not reported; Not reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not reported; Not reported; Not reported; $K (L/kg) = 3.8 \times 10^3$
Partition Coefficient Type and Partition Coefficient Results	Not reported; Not reported
Partition Coefficient Phase and Partition Coefficient Results	suspended matter-water; Statistical correlation between TOC or particle size and DBP concertation was not found.
Mass Balance	Not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance			
	Metric 1:	Test Substance Identity	High The test substance was identified by common nomenclature.
	Metric 2:	Test Substance Purity	High The test substances were determined by GC-FID and analyzed in analytical grade solvent.
Domain 2: Test Design			

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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 Template:	Adsorption and Desorption			
HERO ID:	683003			
		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 3:	Study Controls	Medium	Blank controls were not reported but the omission is unlikely to have a substantial impact on the study results.
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported and appropriate.
Domain 3: Test Conditions				
	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 Organisms				
	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 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 not reported.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Uncertainty was reported in the study.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	The data reporting was appropriate.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Sufficient statistical analysis was reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			High	

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 Template:	Adsorption and Desorption
HERO ID:	1599751

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, Guideline	None; Experimental; other: Not reported; distribution of selected pollutants between river catchment water and sediment
Solvent, Reactivity, Storage, Stability	NA; NR; Water stored in bottles with 5 mL concentrated sulfuric acid at 4°C; sediment samples stored in glass bottles at -18°C; NR
Radiolabel, Source, State, Purity	NA; 7 sites in the Jukskei River catchment area, South Africa: Hartbeespoort Dam, before and after Johannesburg Water Works, Sandton/Kyalami, Marlboro, Alexandra, and Bruma Lake; NA; NA Notes: Analytical standard obtained from Supelco, Bellefonte, PA, 99.0 to 99.5% purity
Sampling Frequency, Sampling Details, and Number of Replicates	2005 winter and summer; Water samples collected in bottles 5 cm below surface; sediment samples collected with stainless grab, 0 - 5 cm below the surface; 3 (water); sediment NR
pH, Test Temperature, Buffer, 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 River catchment area, South Africa: Hartbeespoort Dam, before and after Johannesburg Water Works, Sandton/Kyalami, Marlboro, Alexandra, and Bruma Lake
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; Not reported; Not reported
Bulk Density and Matrix Details	Not reported; Sediment from river catchment
Media, Recovery, and Statistics	River catchment water; 108±0.88% (water); 117±4.80% (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, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; NA; field study; NA; field study
Reference Substance, Reference Substance Results, and Percent Adsorption	Rinsed sample bottles; 0.01±0.10 to 0.09±0.02 ng/mL retained by sample bottle; Not Reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not Reported; Not Reported; Not Reported; Not Reported
Partition Coefficient Type and Partition Coefficient Results	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)
Partition Coefficient Phase and Partition Coefficient Results	sediment-water; Ranges for sitesMean 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 water: 0.79±0.12 to 3.65±0.33 ng/mL (summer); 1.15±0.13 to 5.59±0.56 ng/mL (winter)
Mass Balance	Not Reported

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

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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 Template:	Adsorption and Desorption			
HERO ID:	1599751			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 2: Test Design				
	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 Conditions				
	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 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	High		The outcome assessment methodology was appropriate for determining partition coefficients between water and sediment.
	Metric 12: Test Substance Purity	High		Sampling methods were appropriate and frequency addressed seasonal variation.
Domain 6: Confounding/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 Exposure	N/A		The metric is not applicable to this study type.
Domain 7: Data Presentation 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 Kinetic Calculations	High		Statistical methods were described and applied appropriately.
Domain 8: Other				
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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 Template:	Adsorption and Desorption
HERO ID:	1599751

		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 17:	Verification or Plausibility of Results	Low	No sample characteristics (ex. Sediment organic carbon) were reported so the values could not be normalized. Additionally, no relationship between sediment and water 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**

Study Citation:	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.		
OECD Harmonized Template:	Adsorption and Desorption		
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, Stability	Acetone; NR; NR; NR		
Radiolabel, Source, State, Purity	14-C DBP; NR; NR; NR Notes: NR		
Sampling Frequency, Sampling Details, and Number of Replicates	Adsorption was measured once per sample, desorption was measured 1-3 times.; Sediment was added to test tube with 2mL of unspiked seawater. After several hours, 10mL spiked seawater added (including for blanks without adsorbent). 10mL unspiked seawater added to adsorbent tubes for background level DBP measurement.; 5-11 sample replicates and 2 blanks per experiment.		
pH, Test Temperature, Buffer, and Test Details	8.10; 25°C; None; 12h equilibrium period used. Samples were centrifuged and extracted with isooctane. Adsorbent was then used for desorption experiments which involved addition of 10mL unspiked seawater addition, 12h equilibration, and extraction.		
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; The sediment samples contained: 43.7% sand/25.8% silt/30.4% clay/<1% organic matter. All adsorbents were solvent extracted to remove organics prior to experiments.; Not reported		
Bulk Density and Matrix Details	Not reported; Seawater salinity was 36.0+/-0.5%. Organics were removed with column containing Amberlite XAD-2 and charcoal.		
Media, Recovery, and Statistics	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, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not reported; Not reported		
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported		
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	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+/-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 Coefficient Results	Concentration in sorbent (ng/mg)/concentration in seawater (ng/mL); Desorption of unlabeled DBP: montmorillonite: 0.078+/-0.021; kaolinite: 0.131+/-0.052.		
Partition Coefficient Phase and Partition Coefficient Results	Not Reported; Desorption of radiolabeled DBP: montmorillonite: 0.040+/-0.010; kaolinite: 0.105+/-0.016; calcite: 0.029+/-0.009; calcium montmorillonite: 0.058+/-0.020; sediment: 0.198+/-0.023		
Mass Balance	Not reported		
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	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.
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Study Citation:	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.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	1333237			
Domain	Metric	EVALUATION		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 Conditions				
	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 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	High	The outcome assessment methodology addressed the intended outcome of interest.
	Metric 12:	Test Substance Purity	High	Sampling 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 Presentation and Analysis				
	Metric 15:	Data Reporting	High	The data reporting was sufficient to explain the fate of the target chemical in the system.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The statistical analysis reported in the study was appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination			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 and Toxicology 54(2):171-176.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	680414

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, Guideline	None; Field study; other: Calculated partition coefficients from river water and sediment samples
Solvent, Reactivity, Storage, Stability	Test substance extracted from river water in dichloromethane; test substance extracted from sediment samples in petroleum ether followed by 20% diethyl ether in petroleum ether; NR; Water and sediment samples stored in amber bottles; NA
Radiolabel, Source, State, Purity	NA; Klang River water and sediment; NR; NA Notes: Standard for extraction recovery obtained from Theta Kit, Theta Corp, Pennsylvania, USA
Sampling Frequency, Sampling Details, and Number of Replicates	Every three months from January 1992 to February 1993; Surface sediment excavated 0 to 10 cm deep; Surface water collected from the middle of the river 0.5 to 10 m deep with the grab sample technique; 2 sample replicates; 3 replicate analyses
pH, Test Temperature, Buffer, and Test Details	Not reported; Not reported; Not reported; Partition coefficient calculated from test substance concentrations measured in field samples from the Klang River, in Malaysia
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; Not reported; Not reported
Bulk Density and Matrix Details	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, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not applicable; Not applicable; Not applicable
Reference Substance, Reference Substance Results, and Percent Adsorption	Not applicable; Not applicable; Not applicable
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not applicable; Not applicable; Not applicable; Calculated at 7 different stations. Kf = 331.7, 51.7, 318.5, 55.8, 142.5, 48.1, 213.7
Partition Coefficient Type and Partition Coefficient Results	Calculated from [river sediment] / [river water]; Sediment concentrations = 398, 248, 637, 67, 114, 101, and 406 ng/g; water concentrations = 1.2, 4.8, 2, 1.2, 0.8, 2.1, and 1.9 ug/L
Partition Coefficient Phase and Partition Coefficient Results	sediment-water; Calculated
Mass Balance	Not applicable

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	High	The test substance measured in environmental samples against reliable analytical standards.
Domain 2: Test Design				
	Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.

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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.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	680414			
Domain	Metric	EVALUATION		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 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 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 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 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) and no notable uncertainties or limitations were expected to influence results.
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 Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	Analytical methods used were suitable for detection and quantification of the target chemical, extraction efficiency and target chemical concentrations 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 Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

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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.		
OECD Harmonized Template:	Adsorption and Desorption		
HERO ID:	680414		
Domain	Metric	EVALUATION 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 Template:	Adsorption and Desorption
HERO ID:	680447

Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, Guideline	None; Field study; other: Partition coefficient estimated from concentrations measured in field sediment and water samples
Solvent, Reactivity, Storage, Stability	isooctane; NR; Water samples collected in glass bottles and stored in the dark; NR
Radiolabel, Source, State, Purity	NA; Water and sediment samples: Velino, Turano, and Salto Rivers; Salto, Scandarello, and Ventina lakes; Ratto River (tributary of Velino), Italy; NR; NA Notes: Phthalate analytical standards, >99% purity, were obtained from PolyScience Corporation, Alltech, IL
Sampling Frequency, Sampling Details, and Number of Replicates	3 series of sampling: June-July 1994, August 1995, and September-October 1994; Water samples collected 0-20 cm deep in glass bottles; sediment samples collected by stainless steel corer 10 cm deep; collected from 22 stations in the Velino River; 3 replicate analyses
pH, Test Temperature, Buffer, and Test Details	Not reported; Not reported; Not reported; Not Reported
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; Not reported; Not reported
Bulk Density and Matrix Details	Not reported; river or lake water and sediment
Media, Recovery, and Statistics	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, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not applicable; Not applicable
Reference Substance, Reference Substance Results, and Percent Adsorption	Not applicable; Not applicable; Not applicable
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Not applicable; Not applicable; Not applicable; Calculated for 22 stations = 6.35, 20.6, 9.3, ND, ND, 0.099, ND, ND, ND, ND, ND, 2.1, ND, ND, ND, 9.3, ND, ND, ND, 3.7, 56.6, 12.7
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	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, ND, 9.3, ND, ND, 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; sediment-water; Not Reported
Partition Coefficient Phase and Partition Coefficient Results	
Mass Balance	Not reported

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	High	The test substances were determined by GC-FID and analyzed in analytical grade solvent.
Domain 2: Test Design			
Metric 3:	Study Controls	Medium	Blank controls were not reported but the omission is unlikely to have a substantial impact on the study results.

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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 Template:	Adsorption and Desorption			
HERO ID:	680447			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported and appropriate.
Domain 3: Test Conditions				
	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 Organisms				
	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 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 not reported.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Uncertainty was reported in the study.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	The data reporting was appropriate.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Sufficient statistical analysis was reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

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 154(1-3):317-324.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	698246

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, Type, Guideline	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, Purity	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, Sampling Details, and Number of Replicates	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, Buffer, 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 Organic 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 Details	Not reported; Not reported
Media, Recovery, and Statistics	River and lake water and sediment samples; Water: 85.3 - 105.8% Sediment: 80.9 - 99.4%; Not reported
Transformation Products, Equilibrium	Not applicable; Not Reported; Not Reported
Adsorption Details, and Equilibrium Desorption Details	
Reference Substance, Reference Substance Results, and Percent Adsorption	Not applicable; Not applicable; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	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); 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 (ratio of test substance to TOC).; Not Reported
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	Not Reported; Not Reported
Partition Coefficient Phase and Partition Coefficient Results	sediment-water; Not Reported
Mass Balance	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	High	The field sample source was reported, in addition to the source and purity of the analytical standards used.
Domain 2: Test Design	Metric 3:	Study Controls	N/A	Field studies do not require negative controls.

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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 154(1-3):317-324.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	698246			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	High	The field sample 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	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 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 appropriate sampling methods. Number of sample replicates was not reported but is not expected to have a significant impact on study results.
Domain 6: Confounding/Variable Control				
	Metric 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 Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	Target chemical concentrations and extraction efficiency were reported. Analytical limits of detection were not reported but this is not expected to have a significant impact on study results.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were appropriate for the datasets.
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.
Overall Quality Determination		High		

Study Citation:	Wang, H., Li, H., Song, Q., Gao, L., Wang, N. (2017). Adsorption of Phthalates on Municipal Activated Sludge. Journal of Chemistry 2017:1-7.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	5666279			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutyl phthalate			
Confidentiality, Type, Guideline	None; Experimental; other: Adsorption of Phthalates on Municipal Activated Sludge			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; Sigma-Aldrich, USA; NR; NR Notes: DBP			
Sampling Frequency, Sampling Details, and Number of Replicates	0, 0.25, 0.5, 1, 2, 4, and 8 hours; Not reported; 3			
pH, Test Temperature, Buffer, 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 Organic Carbon, and CEC	Not Reported; Not reported; Not reported			
Bulk Density and Matrix Details	Not reported; activated sludge taken from a secondary sediment tank of Jinan water treatment factory			
Media, Recovery, and Statistics	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, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; adsorption equilibrium was reached in ca. 2hrs; Not reported			
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported			
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	rate constant; half-life; 1.599/hr; 0.433 hours; first-order kinetics; Not reported			
Partition Coefficient Type and Partition Coefficient Results	Not reported; Not reported			
Partition Coefficient Phase and Partition Coefficient Results	solids-water in activated sewage sludge; Not reported			
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 Substance	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.
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Study Citation:	Wang, H., Li, H., Song, Q., Gao, L., Wang, N. (2017). Adsorption of Phthalates on Municipal Activated Sludge. Journal of Chemistry 2017:1-7.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	5666279			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	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 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	High	The outcome assessment methodology was appropriate.
	Metric 12:	Test Substance Purity	Medium	Limited detail regarding this metric.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Limited detail regarding this metric; mass balance loss not fully discussed.
	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 detail was minimal.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Calculations were appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information on loss and lack of control, 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 Determination		Medium		

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.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	1333189

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, Type, Guideline	None; Experimental; other
Solvent, Reactivity, Storage, Stability	Methanol; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Beijing Chemical Plant; NR; Analytical grade Notes: NR
Sampling Frequency, Sampling Details, and Number of Replicates	One time sampling.; Not Reported; Not reported
pH, Test Temperature, Buffer, and Test Details	7.2; 25°C; Not reported; Shaken at 120 rev/min.
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; Organic carbon: 1.14%; Not reported
Bulk Density and Matrix Details	Not reported; Total N: 0.058%; Total P, K, Mg: 9, 30.2, 52.3 mg/kg soil, respectively.
Media, Recovery, and Statistics	Not reported; Not reported; r = 0.96
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not reported; Not reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not reported; Not reported; Not reported; DBP adsorption conformed to Freundlich equation: $X/M = KC^{(1/n)}$ where x/M = amount of DBP adsorbed by g of soil, C is the equilibrium concentration, and K and 1/n are constants that depend on temperature and soil.
Partition Coefficient Type and Partition Coefficient Results	Freundlich solid-water distribution coefficient; In the study, K and n were determined to be 17.46 and 0.94, respectively.
Partition Coefficient Phase and Partition Coefficient Results	Not Reported; Not reported
Mass Balance	Not reported

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 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				

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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.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	1333189			
		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 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 Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The metric is not applicable to the study type.
	Metric 10:	Sampling Methods	High	The inoculum type was described and 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	High	The sampling methods were reported and appropriate.
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 Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	The data reporting was appropriate and the analytical method was suitable.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis was reported and appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		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.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	4829396

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, Type, Guideline	None; Experimental; other: adsorption of dibutyl phthalate in soil
Solvent, Reactivity, Storage, Stability	stock solutions prepared in HPLC grade methanol; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Dr. Ehrenstorfer GmbH (Augsburg, Germany); NR; $\geq 99.4\%$
Sampling Frequency, Sampling Details, and Number of Replicates	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); $25 \pm 1^\circ\text{C}$; 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 Organic Carbon, and CEC	Not Reported; data in SI (not publicly available); data in SI (not publicly available)
Bulk Density and Matrix Details	Not reported; RS: red soil from Yingtan, Jiangxi classified as ferralsols; BS: black soil from Harbin, Heilongjiang classified as chernozems
Media, Recovery, and Statistics	ultrapure water; Not reported; Not reported
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; kinetic experiment indicated 48 hr was sufficient for equilibrium; Not applicable
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Elovich model rate constants (mg/h) in RS = 116.06 ± 3.09 , RS w/50 DOM = 154.27 ± 2.39 , RS w/100 DOM = 142.23 ± 1.12 , BS = 153.54 ± 2.58 , BS w/50 DOM = 184.88 ± 1.40 , BS w/100 DOM = 160.73 ± 1.64
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	adsorption kinetics; First-order rate constants (/h) in RS = 31.12 ± 12.13 , RS w/50 DOM = 31.37 ± 11.78 , RS w/100 DOM = 32.51 ± 10.68 , BS = 23.96 ± 4.19 , BS w/50 DOM = 28.48 ± 8.42 , BS w/100 DOM = 30.27 ± 10.33 ; Second-order rate constants (mg/h) in RS = 0.44 ± 0.01 , RS w/50 DOM = 0.34 ± 0.02 , RS w/100 DOM = 0.40 ± 0.02 , BS = 0.27 ± 0.00 , BS w/50 DOM = 0.25 ± 0.01 , BS w/100 DOM = 0.31 ± 0.01 ; Freundlich adsorption coefficient ((mg/kg)/(mg/L)) in RS = 39.56 ± 1.47 , RS w/50 DOM = 50.19 ± 1.03 , RS w/100 DOM = 36.50 ± 1.68 , BS = 66.32 ± 1.54 , BS w/50 DOM = 79.57 ± 3.32 , BS w/100 DOM = 67.20 ± 5.96
Partition Coefficient Type and Partition Coefficient Results	Results from adsorption isotherms using the Henry, Langmuir, and Freundlich models; Henry model adsorption coefficient (L/mg) in RS = 29.88 ± 0.34 , RS w/50 DOM = 44.41 ± 1.11 , RS w/100 DOM = 33.97 ± 0.68 , BS = 49.59 ± 2.25 , BS w/50 DOM = 70.91 ± 1.81 , BS w/100 DOM = 65.95 ± 3.07
Partition Coefficient Phase and Partition Coefficient Results	soil-water; Langmuir constant (L/mg) in RS = 0.07 ± 0.03 , RS w/50 DOM = 0.05 ± 0.01 , RS w/100 DOM = 0.01 ± 0.02 , BS = 0.14 ± 0.04 , BS w/50 DOM = 0.04 ± 0.04 , BS w/100 DOM = 0.03 ± 0.04
Mass Balance	Not reported

EVALUATION				
Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
	Metric 2:	Test Substance Purity	High	Source and purity were reported.
Domain 2: Test Design				

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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.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	4829396			
Domain		Metric	EVALUATION 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 Conditions				
	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: 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	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/Variable Control				
	Metric 13:	Confounding Variables	N/A	No confounding variables were identified.
	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	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				
	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	

Study Citation:	Wu, Y., Si, Y., Zhou, D., Gao, J. (2015). Adsorption of diethyl phthalate ester to clay minerals. Chemosphere 119:690-696.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	2804040			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate ester			
Confidentiality, Type, Guideline	None; Experimental; other: Batch sorption experiments to assess adsorption kinetics of DnBP to K- and Ca-mont clay minerals			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; Sigma–Aldrich Chemical (St Louis, MO); NR; >99% Notes: DnBP			
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; Not reported; Not reported			
pH, Test Temperature, Buffer, and Test Details	6; 20°C; Not reported; DnBP test concentration 0.01 mM in glass tubes			
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; Not reported; 73.6 cmol/kg			
Bulk Density and Matrix Details	Specific surface area = 324.5 m2/g; Montmorillonite clay was purchased from Fenghong Company, Zhejiang Province, China			
Media, Recovery, and Statistics	Not reported; Not reported; Not reported			
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not reported; Not reported			
Reference Substance, Reference Substance Results, and Percent Adsorption	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 reported			
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	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 were not well fitted with the Langmuir model and they were in “S” shape; Not reported			
Desorption Type				
Partition Coefficient Type and Partition Coefficient Results	Not reported; Not reported			
Partition Coefficient Phase and Partition Coefficient Results	Not Reported; Not reported			
Mass Balance	Not reported			
EVALUATION				
Domain	Metric	Rating		Comments
Domain 1: Test Substance				
	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 included and appropriate.
	Metric 4:	Test Substance Stability	Medium	Minimal details on test substance preparation, storage conditions, and homogeneity were reported.
Domain 3: Test Conditions				
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Study Citation:	Wu, Y., Si, Y., Zhou, D., Gao, J. (2015). Adsorption of diethyl phthalate ester to clay minerals. Chemosphere 119:690-696.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	2804040			
		EVALUATION		
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); 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	High	Equilibrium was established. The system type and design were capable of appropriately maintaining 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	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) 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: Confounding/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 Presentation 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, 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 Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination**High**

Study Citation:	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 Desorption
HERO ID:	5433498

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, Type, Guideline	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, Purity	NR; Aladdin Industrial Corporation (Shanghai, China); NR; 98% Notes: DBP
Sampling Frequency, Sampling Details, and Number of Replicates	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	3.8±0.1; 15, 25 and 35C; CaCl ₂ 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; NaN ₃ was used as a bioinhibitor
Matrix, Clay Silts and Organic 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 Details	BET surface area 33.4±2.8 m ² /g; paddy soil (0-20cm) from Guangzhou, China was fractionated by particle size
Media, Recovery, and Statistics	DBP sorption isotherms evaluated at 1, 2, 4, 6, 8, and 12 mg/L; Not reported; results reported±SD
Transformation Products, Equilibrium	Not reported; equilibrium reached at 192h based on preliminary experiments; Not reported
Adsorption Details, and Equilibrium Desorption Details	
Reference Substance, Reference Substance Results, and Percent Adsorption	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 Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Kd at 1, 2, 4, 6, 8, and 12 mg/L (25C); 143.0±5.0, 98.0±2.6, 67.3±1.2, 53.8±0.7, 46.1±0.4 and 37.0±0.2; Kd: single-point sorption partition coefficient; Kf (at 25C): Freundlich sorption affinity coefficient = 0.14±0.01; Kf for original paddy soil without fractionation by particle size = 0.030±0.002 (mg/g)(mg/L)
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	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 Coefficient Results	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
	Metric 2:	Test Substance Purity	High
Domain 2: Test Design	Metric 3:	Study Controls	High
	Metric 4:	Test Substance Stability	High

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Study Citation:	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 Desorption			
HERO ID:	5433498			
Domain	Metric	EVALUATION		Comments
		Rating		
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 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 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	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				
	Metric 13:	Confounding Variables	High	Uncertainty was unlikely to have an 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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	The analytical method details were limited.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The calculations were appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		High		

Study Citation:	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 Desorption			
HERO ID:	5433498			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	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, Purity	NR; Aladdin Industrial Corporation (Shanghai, China); NR; 98% Notes: DBP			
Sampling Frequency, Sampling Details, and Number of Replicates	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	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 Statistics	DBP sorption isotherms evaluated at 1, 2, 4, 6, 8, and 12 mg/L; Not reported; results reported±SD			
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; equilibrium reached at 192h based on preliminary experiments; Not reported			
Reference Substance, Reference Substance Results, and Percent Adsorption	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 Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	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-point sorption partition coefficient; Kf (at 25C): Freundlich sorption affinity coefficient = 0.15±0.01; Kf for original paddy soil without fractionation by particle size = 0.030±0.002 (mg/g)(mg/L)			
Desorption Type				
Partition Coefficient Type and Partition Coefficient Results	log Koc at 1, 2, 4, 6, 8, and 12 mg/L (25C); 3.82±0.02, 3.63±0.02, 3.45±0.02, 3.34±0.02, 3.27±0.02, and 3.16±0.02			
Partition Coefficient Phase and Partition Coefficient Results	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.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
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Study Citation: 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 Desorption				
HERO ID: 5433498				
EVALUATION				
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 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	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				
	Metric 13:	Confounding Variables	High	Uncertainty was unlikely to have an 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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	The analytical method details were limited.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The calculations were appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination			High	

Study Citation:	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 Desorption			
HERO ID:	5433498			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	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, Purity	NR; Aladdin Industrial Corporation (Shanghai, China); NR; 98% Notes: DBP			
Sampling Frequency, Sampling Details, and Number of Replicates	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	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 Organic 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 Details	BET surface area 1.6±0.2 m2/g; paddy soil (0-20cm) from Guangzhou, China was fractionated by particle size			
Media, Recovery, and Statistics	DBP sorption isotherms evaluated at 1, 2, 4, 6, 8, and 12 mg/L; Not reported; results reported±SD			
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; equilibrium reached at 192h based on preliminary experiments; Not reported			
Reference Substance, Reference Substance Results, and Percent Adsorption	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 Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Kd at 1, 2, 4, 6, 8, and 12 mg/L (25C); 46.0±2.0, 33.2±1.3, 24.0±0.8, 19.8±0.6, 17.3±0.4 and 14.3±0.3; Kd: single-point sorption partition coefficient; Kf (at 25C): Freundlich sorption affinity coefficient = 0.05±0.00; Kf for original paddy soil without fractionation by particle size = 0.030±0.002 (mg/g)(mg/L)			
Desorption Type				
Partition Coefficient Type and Partition Coefficient Results	log Koc at 1, 2, 4, 6, 8, and 12 mg/L (25C); 4.19±0.02, 4.05±0.02, 3.91±0.01, 3.83±0.01, 3.77±0.01, and 3.69±0.01			
Partition Coefficient Phase and Partition Coefficient Results	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.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
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Study Citation:		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 Desorption		
HERO ID:		5433498		
		EVALUATION		
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 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	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				
	Metric 13:	Confounding Variables	High	Uncertainty was unlikely to have an 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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	The analytical method details were limited.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The calculations were appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		High		

Study Citation:	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 Desorption			
HERO ID:	5433498			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	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, Purity	NR; Aladdin Industrial Corporation (Shanghai, China); NR; 98% Notes: DBP			
Sampling Frequency, Sampling Details, and Number of Replicates	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	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 DBP methanol solution; NaN3 was sued as a bioinhibitor			
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; fine sand: size 27-445 um (mean 135), 11.7±1.0 g/kg organic matter; 34.3±2.0 cmol/kg			
Bulk Density and Matrix Details	BET surface area 3.9±0.2 m2/g; paddy soil (0-20cm) from Guangzhou, China was fractionated by particle size			
Media, Recovery, and Statistics	DBP sorption isotherms evaluated at 1, 2, 4, 6, 8, and 12 mg/L; Not reported; results reported±SD			
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; equilibrium reached at 192h based on preliminary experiments; Not reported			
Reference Substance, Reference Substance Results, and Percent Adsorption	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 Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Kd at 1, 2, 4, 6, 8, and 12 mg/L (25C); 49.0±4.4, 41.0±3.3, 34.0±2.5, 30.5±2.1, 28.3±1.9 and 25.3±1.6; Kd: single-point sorption partition coefficient; Kf (at 25C): Freundlich sorption affinity coefficient = 0.05±0.00; Kf for original paddy soil without fractionation by particle size = 0.030±0.002 (mg/g)(mg/L)			
Desorption Type				
Partition Coefficient Type and Partition Coefficient Results	log Koc at 1, 2, 4, 6, 8, and 12 mg/L (25C); 3.86±0.04, 3.78±0.04, 3.70±0.03, 3.65±0.03, 3.62±0.03, and 3.557±0.03			
Partition Coefficient Phase and Partition Coefficient Results	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.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
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Study Citation:	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 Desorption			
HERO ID:	5433498			
		EVALUATION		
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 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	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				
	Metric 13:	Confounding Variables	High	Uncertainty was unlikely to have an 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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	The analytical method details were limited.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The calculations were appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The method is not applicable to the study type.
Overall Quality Determination		High		

Study Citation:	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 Desorption			
HERO ID:	5433498			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	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, Purity	NR; Aladdin Industrial Corporation (Shanghai, China); NR; 98% Notes: DBP			
Sampling Frequency, Sampling Details, and Number of Replicates	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 Organic 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 Statistics	DBP sorption isotherms evaluated at 1, 2, 4, 6, 8, and 12 mg/L; Not reported; results reported±SD			
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; equilibrium reached at 192h based on preliminary experiments; Not reported			
Reference Substance, Reference Substance Results, and Percent Adsorption	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 Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Kd at 1, 2, 4, 6, 8, and 12 mg/L (25C); 90.0±3.5, 67.5±3.3, 50.5±2.9, 42.5±2.7, 37.6±2.5 and 31.8±2.3; Kd: single-point sorption partition coefficient; Kf (at 25C): Freundlich sorption affinity coefficient = 0.09±0.00; Kf for original paddy soil without fractionation by particle size = 0.030±0.002 (mg/g)(mg/L)			
Desorption Type				
Partition Coefficient Type and Partition Coefficient Results	log Koc at 1, 2, 4, 6, 8, and 12 mg/L (25C); 3.72±0.02, 3.60±0.02, 3.47±0.03, 3.40±0.03, 3.34±0.03, and 3.27±0.03			
Partition Coefficient Phase and Partition Coefficient Results	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.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
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Study Citation:	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 Desorption			
HERO ID:	5433498			
		EVALUATION		
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 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	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				
	Metric 13:	Confounding Variables	High	Uncertainty was unlikely to have an 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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	The analytical method details were limited.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The calculations were appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		High		

Study Citation:	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 Desorption
HERO ID:	5433498

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, Type, Guideline	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, Purity	NR; Aladdin Industrial Corporation (Shanghai, China); NR; 98% Notes: DBP
Sampling Frequency, Sampling Details, and Number of Replicates	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	6.9±0.2; 15, 25 and 35C; CaCl ₂ 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; NaN ₃ was used as a bioinhibitor
Matrix, Clay Silts and Organic 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 Details	BET surface area 20.5±2.5 m ² /g; paddy soil (0-20cm) from Guangzhou, China was fractionated by particle size
Media, Recovery, and Statistics	DBP sorption isotherms evaluated at 1, 2, 4, 6, 8, and 12 mg/L; Not reported; results reported±SD
Transformation Products, Equilibrium	Not reported; equilibrium reached at 192h based on preliminary experiments; Not reported
Adsorption Details, and Equilibrium Desorption Details	
Reference Substance, Reference Substance Results, and Percent Adsorption	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 Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Kd at 1, 2, 4, 6, 8, and 12 mg/L (25C); 100.0±12.5, 74.2±7.4, 55.1±4.1, 46.3±2.8, 40.9±2.1 and 34.4±1.3; Kd: single-point sorption partition coefficient; Kf (at 25C): Freundlich sorption affinity coefficient = 0.10±0.00; Kf for original paddy soil without fractionation by particle size = 0.030±0.002 (mg/g)(mg/L)
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	log Koc at 1, 2, 4, 6, 8, and 12 mg/L (25C); 4.09±0.05, 3.96±0.04, 3.83±0.03, 3.76±0.03, 3.71±0.02, and 3.63±0.02
Partition Coefficient Phase and Partition Coefficient Results	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.
Domain 3: Test Conditions	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.

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Study Citation:		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 Desorption		
HERO ID:		5433498		
		EVALUATION		
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 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	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				
	Metric 13:	Confounding Variables	High	Uncertainty was unlikely to have an 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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	The analytical method details were limited.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The calculations were appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		High		

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 Template:	Adsorption and Desorption
HERO ID:	1332828

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, Type, Guideline	None; Experimental; other: Sorption experiment
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	Nr; Sigma Chemical Company; NR; NR Notes: NR
Sampling Frequency, Sampling Details, and Number of Replicates	One time sampling; 24 hours was determined to be an appropriate equilibration time.; 6
pH, Test Temperature, Buffer, and Test Details	7; Room temperature; Phosphate buffer; 13mL centrifuge tubes sealed with Teflon stoppers and minimized headspace. Ionic strength of 0.02 M.
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; Humic acid (Aldrich and Suwannee River); Fulvic acid (Suwannee River and Nordic); Alginic Acid; Dextran; Tannic Acid; Not reported
Bulk Density and Matrix Details	Not reported; Initial concentration: approx. 700µg/L. Aqueous solution of organic colloids and DBP.
Media, Recovery, and Statistics	Not Reported; Not reported; Not reported
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not reported; Not reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Not reported; Not reported; Not reported; Not reported
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	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: 0.0138; dextran: 0.00124; Tannic acid: 6.97
Partition Coefficient Phase and Partition Coefficient Results	Not Reported; Standard deviations (x 10 ⁴ L/kg): Aldrich HA: 0.51; Suwanee river HA: 0.66; Suwannee River FA: 0.82; Nordic FA: 0.72; Alginic acid: 0.0025; Dextran: 0.00012; Tannic acid: 0.83
Mass Balance	Not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	Medium
			The test substance was identified using common nomenclature.
			The test substance purity was not 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.

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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 Template:	Adsorption and Desorption			
HERO ID:	1332828			
Domain	Metric	EVALUATION		Comments
	Metric 4:	Test Substance Stability	High	The test substance preparation, storage conditions, and homogeneity were reported and appropriate.
Domain 3: Test Conditions				
	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: 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	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/Variable Control				
	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 Presentation 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				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination			High	

Study Citation:	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 Template:	Adsorption and Desorption
HERO ID:	1332827

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutylphthalate
Confidentiality, Type, Guideline	None; Experimental; other: Equilibrium sorption of DBP by several dissolved organic matter surrogates.
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Sigma Chemical Co., St. Louis, MO; NR; 98% Notes: NR
Sampling Frequency, Sampling Details, and Number of Replicates	After a 24h equilibration period, samples were analyzed.; Samples were prepared at four different DOM concentrations and without DOM.; One sample at each DOM concentration and duplicate blanks without DOM.
pH, Test Temperature, Buffer, and Test Details	7; 22; Phosphate buffer; Fluorescence quenching technique was used for humic 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 Details	Not reported; Not reported
Media, Recovery, and Statistics	Not reported; Not reported; Standard deviations reported with Log Koc.
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not reported; Not reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Not reported; Not reported; Not reported; Not reported
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	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: 4.75+/-0.05; alginic acid: 4.11+/-0.07; tannic acid: 4.84+/-0.05.
Partition Coefficient Phase and Partition Coefficient Results	Not Reported; Koc determined from slope of best fit for the following line: $F_o/F = 1 + Koc[DOM (kg C/L)]$, where F is the corrected total fluorescence and F_o is the fluorescence without DOM surrogates.
Mass Balance	Not reported

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 purity was reported and appropriate.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Appropriate controls were used.
	Metric 4:	Test Substance Stability	High	The test substance preparation, storage conditions, and homogeneity were reported and appropriate.

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Study Citation:	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 Template:	Adsorption and Desorption			
HERO ID:	1332827			
Domain		Metric	EVALUATION	
			Rating	Comments
Domain 3: Test Conditions				
	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 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	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 unlikely to have a substantial impact on the study results.
Domain 6: Confounding/Variable Control				
	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 Presentation 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				
	Metric 17:	Verification or Plausibility of Results	High	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 Quality Determination**High**

Study Citation:	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.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5766216

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, Type, Guideline	None; Experimental; other: sorption coefficients measured by batch equilibrium method
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, 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 0.45µm-microporous filter membrane; Not reported
pH, Test Temperature, Buffer, and Test Details	8.12; 20±2°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 Xiaqinghe River Beijing
Media, Recovery, and Statistics	distilled water; Not reported; standard deviation reported
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	1 0/00 NaN ₃ (used to inhibit biodegradation loss of tested compounds); reached in hours; Not reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	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-1 (flow water conditions); sorption coefficient = 132; Not reported
Partition Coefficient Type and Partition Coefficient Results	Not reported; Not reported
Partition Coefficient Phase and Partition Coefficient Results	sediment-water; Not reported
Mass Balance	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	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 unlikely to have affected the results.

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Study Citation:	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.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	5766216			
Domain	Metric	EVALUATION		Comments
		Rating		
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 for the method.
	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 reported but without supporting details.
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	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: Confounding/Variable Control				
	Metric 13: Confounding Variables	Medium		Sources of variability and uncertainty in the measurements and statistical techniques were considered with minor omissions and 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 Presentation and Analysis				
	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.
Domain 8: Other				
	Metric 17: Verification or Plausibility of Results	High		The 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 Quality Determination**High**

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 of the Total Environment 476-477:107-113.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	2241688			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, Type, Guideline	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, Purity	NR; Ehrenstorfer, Augsburg, Germany; NR; NR			
Sampling Frequency, Sampling Details, and Number of Replicates	Water collected from April to May, 2012; Sediment collected 5 cm from the surface; 19 replicates in total			
pH, Test Temperature, Buffer, 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 Adsorption Details, and Equilibrium Desorption Details	Not reported; Not applicable, monitoring study; Not applicable			
Reference Substance, Reference Substance Results, 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 Desorption Type	Not applicable; Not applicable; Not applicable; Not applicable			
Partition Coefficient Type and Partition Coefficient Results	Not applicable; Not applicable			
Partition Coefficient Phase and Partition Coefficient Results	Not applicable; Not applicable			
Mass Balance	Not applicable, monitoring study			
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	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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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 of the Total Environment 476-477:107-113.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	2241688			
		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 Conditions				
	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 reported.
	Metric 8:	System Type and Design	High	The system was appropriate for this type of study.
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	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/Variable Control				
	Metric 13:	Confounding Variables	Medium	Variation from multiple monitoring spots noted but quantitative results were not reported.
	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	Medium	Variation from multiple monitoring spots noted but quantitative results were not 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	Reasonable and consistent with properties of test substance.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

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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 of the Total Environment 476-477:107-113.		
OECD Harmonized Template:	Adsorption and Desorption		
HERO ID:	2241688		
Domain		EVALUATION	Comments
Metric		Rating	
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.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	675535

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Not Reported
Confidentiality, Type, Guideline	No; Partitioning between soluble and insoluble sludge fractions; Not Reported
Solvent, Reactivity, Storage, Stability	NA; NA; WWTP samples stored in glass containers at 4 deg C; NR
Radiolabel, Source, State, Purity	NA; Not Reported; Sludge samples from 4 WWTPs in Shanghai, China; NA
Sampling Frequency, Sampling Details, and Number of Replicates	NR; NR; NR
pH, Test Temperature, Buffer, and Test Details	NR; NR; NR; Field samples collected from two municipal sewage treatment plants, one WWTP receiving domestic and industrial wastewaters, and one industrial WWTP
Matrix, Clay Silts and Organic Carbon, and CEC	other; 45 - 61% organic matter (soluble fractions); NR
Bulk Density and Matrix Details	NR; Sludge samples were mixed with CaCl ₂ solution and filtered through 0.7 µm glass microfiber filter to separate soluble and insoluble fractions.
Media, Recovery, and Statistics	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, Equilibrium Adsorption Details, and Equilibrium Desorption Details	NR; Field study; assumed to be at equilibrium.; Field study; assumed to be at equilibrium.
Reference Substance, Reference Substance Results, and Percent Adsorption	NR; NR; Not Reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Not Reported; Not Reported; Not Reported; Not Reported
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	Kd (solid sludge fraction / soluble sludge fraction); WWTP 1 Kd = 49WWTP 2 Kd = 30WWTP 3 Kd = 47WWTP 4 Kd = 7.1
Partition Coefficient Phase and Partition Coefficient Results	Insoluble - 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)WWTP 3: 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 Balance	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	Medium	The sludge sample sources were reported generally, purity is not required for this study type.
Domain 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. Environmental Technology 29(3):343-350.			
OECD Harmonized Template:	Adsorption and Desorption			
HERO ID:	675535			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	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 Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	Not applicable.
	Metric 10:	Sampling Methods	N/A	Not applicable.
Domain 5: Outcome Assessment				
	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: Confounding/Variable Control				
	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 Presentation and Analysis				
	Metric 15:	Data Reporting	High	The analytical method was appropriate; limits of detection and quantification and percent recovery were reported. Raw data was reported. Partition coefficients were calculated 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.
Overall Quality Determination		High		

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 Template:	Adsorption and Desorption
HERO ID:	1333300

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, Type, Guideline	None; Experimental; other: Study of adsorption/desorption isotherms and rate constants for DBP with soil.
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	14-C dibutyl phthalate; NR; NR; NR Notes: NR
Sampling Frequency, Sampling Details, and Number of Replicates	All adsorption and desorption points were measured in triplicate.; Six 15 mL solutions with 14-C DBP in 0.01 M CaCl ₂ 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.
pH, Test Temperature, Buffer, and Test Details	Soil pH = 3.2; Not reported; Not reported; Initial solution concentrations were 16-1040 µg/L for the adsorption/desorption isotherm experiments; kinetic studies were performed with an initial concentration of 140µg/L.
Matrix, Clay Silts and Organic 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 CaCl ₂ solution without DBP for the desorption experiments. NaN ₃ was added to prevent microbiological degradation.
Media, Recovery, and Statistics	Soil; Not reported; Standard errors were reported for the rate constants and partition coefficient.
Transformation Products, Equilibrium	Not reported; Not reported; Not reported
Adsorption Details, and Equilibrium Desorption Details	
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not Reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	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. β = reversible sorption = 0.67+/-0.01; Kp: distribution coefficient (mL/g)
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	Not reported; 1.49+/-0.02
Partition Coefficient Phase and Partition Coefficient Results	Not reported; Not reported
Mass Balance	Not Reported

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 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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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 Template:	Adsorption and Desorption			
HERO ID:	1333300			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported and appropriate.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method and target chemical concentrations were appropriate.
	Metric 6:	Testing Conditions	High	Test 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	High	The system type was appropriate and equilibrium was 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	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: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Standard errors were reported and were not likely 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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	The target chemical concentrations were not directly reported but the omission is unlikely to have substantial impact on the study results.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetic calculations and statistical methods were clearly reported and appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are similar to other published data.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		High		

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 Template:	Miscellaneous
HERO ID:	698293

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, Guideline	None; Field study; Field study
Solvent, Reactivity, Storage, Stability	extracted with hexane; NR; sealed brown glass bottles; bottled prewashed 2x with acetone and dichloromethane; NR
Radiolabel, Source, State, Purity	NA; 5 facilities treating leachate from municipal solid waste landfills; Liquid; NA Notes: source and purity of analytical standards not reported
Test Method Details, Test Condition Details, and Test Consistency Details	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; Landfill wastes were typically ash, incombustible, bulky wastes; some facilities also treated business, industrial, and household waste; Samples 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 (site 4)
Sampling Frequency and Sampling 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	Influent: 16, 22, 18, 16, and 15°C 1st aeration: 20, 23, 19, 17, and 15°C biological treatment: NA, 22, 19, 17, and 15°C CCS treatment: 15, 22, 19, 17, and 15°C CACA treatment: NA, NA, NA, 18, and NA°C
Results Details	Influent (max): 9.9 µg/L 1st aeration (max): 7.2 µg/L biological treatment (max): 6.8 µg/L CS treatment (max): 7.6 µg/L ACA treatment (max): 5.7 µg/L
Analytical Method and Analytical Details	GC-MS; Detection limit: 0.2 µg/L
Transformation Products, Statistics, and Kinetics	Not reported; Influent (median): 5.5 ug/L 1st aeration (median): 5.2 ug/L biological treatment (median): 4.6 ug/L CS treatment (median): 4.1 ug/L ACA treatment (median): 5.7 ug/L; Not reported
Reference Substance and Reference Substance Results	Not applicable; Not applicable

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	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 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.

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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 Template:	Miscellaneous			
HERO ID:	698293			
		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	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 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 Exposure	N/A	The metric is not applicable to this study type.
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 Kinetic Calculations	High	Statistical methods applied to the datasets 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.
Overall Quality Determination			High	

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.			
OECD Harmonized Template:	Miscellaneous			
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; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR			
Test Method Details, Test Condition Details, and Test Consistency Details	Distilled and seawater were spiked with test substance, mass-transfer constants determined by monitoring volatilization of substance from stirred solution; procedure similar to Mackay et al.; Solution equilibrated for 24-48 hours.; not reported			
System Type Design	not reported			
Sampling Frequency and Sampling Details	not reported; Total mass-transfer coefficient $Kl^x/Kl^{O2} = 0.0083$ 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 = 0.0001).			
Analytical Method and Analytical Details	not reported; not reported			
Transformation Products, Statistics, and Kinetics	not reported; not reported; Kl = total mass-transfer coefficient; overall mass transfer coefficient, Kl obtained from: $\ln(Ct/Co) = -(Kl/L)t$			
Reference Substance and Reference Substance Results	not reported; not reported			
EVALUATION				
Domain	Metric	Rating		Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
	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	Uninformative	No controls were included.
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported.
Domain 3: Test Conditions	Metric 5:	Test Method Suitability	Medium	Limited details regarding the methodology.
	Metric 6:	Testing Conditions	Medium	Limited details regarding test conditions.
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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.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5763561			
Domain		Metric	EVALUATION 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: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Low	Sources of variability and uncertainty in the measurements were not fully addressed.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Uninformative	No analytical methodology detail was reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Calculations were 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 the study type.
Overall Quality Determination			Uninformative	

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 Template:	Miscellaneous
HERO ID:	1322111

EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, Type, Guideline	None; Experimental; Experimental			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; Panreac; NR; analytical grade			
Test Method Details, Test Condition Details, and Test Consistency Details	Test substance monitoring to evaluate removal from papermill wastewaters by advanced oxidation processes (AOPs); Two pilot plants running in parallel with wastewaters from a mill 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, Statistics, 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 Substance	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 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	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.

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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 Template:	Miscellaneous			
HERO ID:	1322111			
Domain		EVALUATION		Comments
		Metric	Rating	
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:	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 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 Kinetic Calculations	Medium	Details were omitted; however, the lack of data is not likely to hinder the interpretation of the results.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

Study Citation:	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 Template:	Miscellaneous
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; NR
Radiolabel, Source, State, Purity	NR; 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 Sampling 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 Reference Substance Results	not applicable; not applicable

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	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 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.
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.

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Study Citation:	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 Template:	Miscellaneous			
HERO ID:	3350322			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source were reported.
	Metric 10:	Sampling Methods	High	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	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				
	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 Presentation 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 Quality Determination		High		

Study Citation:	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 Template:	Miscellaneous			
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; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR			
Test Method Details, Test Condition Details, and Test Consistency	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.			
System Type Design	Solid retention time was varied (90 d, 15 d, 5 d)			
Sampling Frequency and Sampling 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, Statistics, 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 Reference Substance Results	not applicable; not applicable			
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	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 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.
	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.
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Study Citation:	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 Template:	Miscellaneous			
HERO ID:	3350322			
		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 10:	Sampling Methods	High	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	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				
	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 Presentation 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 Quality Determination			High	

Study Citation:	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 Template:	Miscellaneous			
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; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR			
Test Method Details, Test Condition Details, and Test Consistency	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.			
System Type Design	Solid retention time was varied (90 d, 15 d, 5 d)			
Sampling Frequency and Sampling 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, Statistics, 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			
Reference Substance and Reference Substance Results	not applicable; not applicable			
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	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 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.
	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.
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Study Citation:	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 Template:	Miscellaneous			
HERO ID:	3350322			
		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 10:	Sampling Methods	High	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	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				
	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 Presentation 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 Quality Determination			High	

Study Citation:	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 Template:	Miscellaneous			
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; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR			
Test Method Details, Test Condition Details, and Test Consistency	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.			
Details	Solid retention time was varied (90 d, 15 d, 5 d)			
System Type Design	regularly monitored; appropriate			
Sampling Frequency and Sampling Details	room temperature			
Test Temperature	biodegradation rate constant: 0.059/h, 0.035/h, 0.016/h for SRT 90 d, 15 d, 5 d, respectively			
Results Details	solid phase extraction technique (SPE) followed by their analyses using GC and GC/MS.; Analytical details are referenced			
Analytical Method and Analytical Details	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			
Transformation Products, Statistics, and Kinetics	not applicable; not applicable			
Reference Substance and Reference Substance Results				
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	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 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.
	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.
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Study Citation:	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 Template:	Miscellaneous			
HERO ID:	3350322			
		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 10:	Sampling Methods	High	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	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				
	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 Presentation 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 Quality Determination			High	

Study Citation:	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 Template:	Miscellaneous			
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; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR			
Test Method Details, Test Condition Details, and Test Consistency	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.			
Details	Solid retention time was varied (90 d, 15 d, 5 d)			
System Type Design	regularly monitored; appropriate			
Sampling Frequency and Sampling Details	room temperature			
Test Temperature	biodegradation rate constant: 0.064/h, 0.041/h, 0.025/h for SRT 90 d, 15 d, 5 d, respectively			
Results Details	solid phase extraction technique (SPE) followed by their analyses using GC and GC/MS.; Analytical details are referenced			
Analytical Method and Analytical Details	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			
Transformation Products, Statistics, and Kinetics	not applicable; not applicable			
Reference Substance and Reference Substance Results				
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	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 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.
	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.
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Study Citation:	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 Template:	Miscellaneous			
HERO ID:	3350322			
Domain	Metric	EVALUATION		Comments
		Rating		
	Metric 10:	Sampling Methods	High	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	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				
	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 Presentation 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 Quality Determination			High	

Study Citation:	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 Template:	Miscellaneous			
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; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR			
Test Method Details, Test Condition Details, and Test Consistency	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 bacteria.; pH of 7.5 and dissolved oxygen in reactor of 5 mg/L or more.			
Details	Solid retention time was varied (90 d, 15 d, 5 d)			
System Type Design	regularly monitored; appropriate			
Sampling Frequency and Sampling Details	room temperature			
Test Temperature	biodegradation rate constant: 0.016/h, 0.009/h, 0.006/h for SRT 90 d, 15 d, 5 d, respectively			
Results Details	solid phase extraction technique (SPE) followed by their analyses using GC and GC/MS.; Analytical details are referenced			
Analytical Method and Analytical Details	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 from 0.006/h to 0.016/h			
Transformation Products, Statistics, and Kinetics	not applicable; not applicable			
Reference Substance and Reference Substance Results				
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	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 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.
	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.
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Study Citation:	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 Template:	Miscellaneous			
HERO ID:	3350322			
		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 10:	Sampling Methods	High	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	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				
	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 Presentation 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 Quality Determination			High	

Study Citation:	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 Template:	Miscellaneous
HERO ID:	5494471

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-butyl-phthalate
Confidentiality, Type, Guideline	None; Experimental; Experimental
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Test Method Details, Test Condition Details, and Test Consistency Details	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
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, Statistics, 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 Reference Substance Results	Not Reported; Not Reported

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	Medium	The test substance purity was not reported but the omission is unlikely to have a substantial 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 containing the test substance were not reported; however, the omissions are unlikely to have a substantial impact on the study results.

Domain 3: Test Conditions

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Study Citation:	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 Template:	Miscellaneous			
HERO ID:	5494471			
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 testing conditions were reported and appropriate.
	Metric 7:	Testing Consistency	High	Besides the hydraulic retention time, there were no reported differences in the test conditions across study groups.
	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	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 Assessment				
	Metric 11:	Test Substance Identity	Medium	The outcome assessment methodology was not clearly described; however, this is unlikely 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/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 Presentation and Analysis				
	Metric 15:	Data Reporting	High	The data reporting was appropriate and the analytical method was suitable.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The statistical analysis was described and appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, the reasonableness of the study results was not possible.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination			High	

Study 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 Template:	Miscellaneous			
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; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR			
Test Method Details, Test Condition Details, and Test Consistency Details	Membrane bioreactor containing acclimated (60 d) sludge was fed mixed leachate. 120 d study duration.; Mixed leachate: Carbon/nitrogen ratio 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 oxygen in reactor of 5 mg/L			
System Type Design	hydraulic retention time was varied (24 h, 12 h, 6 h)			
Sampling Frequency and Sampling Details	not reported; Not Reported			
Test Temperature	room temperature			
Results Details	98.5, 97.9, 73.9% 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, Statistics, and Kinetics	not reported; Degradation rate constant were 0.060, 0.069, 0.036/h with ammonia oxidizing bacteria (AOB) and 0.052, 0.062, 0.030/h without AOB at HRT of 24, 12, 6 hours, respectively.; DBP initial concentrations of 1,064 ug/L were reduced to 16 and 278 ug/L under HRT times of 24 and 6 hours, respectively.			
Reference Substance and Reference Substance Results	not applicable; not applicable			
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 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 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.
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Study 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 Template:	Miscellaneous			
HERO ID:	3466805			
		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	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				
	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 Presentation 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 Quality Determination		High		

Study 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 Template:	Miscellaneous			
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; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR			
Test Method Details, Test Condition Details, and Test Consistency Details	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±0.2 and dissolved oxygen in reactor of 5 mg/L			
System Type Design	hydraulic retention time was varied (24 h, 12 h, 6 h)			
Sampling Frequency and Sampling Details	not reported; Not Reported			
Test Temperature	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, Statistics, 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 Reference Substance Results	not applicable; not applicable			
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 by name and CASRN. The test substance source was not reported.
Domain 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.
Domain 3: Test Conditions	Metric 5: Metric 6: Metric 7: Metric 8:	Test Method Suitability Testing Conditions Testing Consistency System Type and Design	High High High N/A	The test method was suitable for the test substance. Testing conditions were monitored, reported, and appropriate for the method. Test conditions were consistent. The metric is not applicable to this study type.
Domain 4: Test Organisms				
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Study 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 Template:	Miscellaneous			
HERO ID:	3466805			
		EVALUATION		
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 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				
	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 Presentation 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 Quality Determination			High	

Study Citation:	Bove, J. L., Dalven, P. (1984). Pyrolysis of phthalic-acid esters: Their fate. Science of the Total Environment 36(JUN):313-318.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	1333380			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, Type, Guideline	None; Experimental; Experimental			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; Aldrich Chemical Company; NR; NR Notes: NR			
Test Method Details, Test Condition Details, and Test Consistency Details	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			
System Type Design	pyrolysis of 80 mg DBP			
Sampling Frequency and Sampling Details	1 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 Reference Substance Results	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 chemical name.
	Metric 2:	Test Substance Purity	High	The source of the test substance 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 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	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				
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Study Citation:	Bove, J. L., Dalven, P. (1984). Pyrolysis of phthalic-acid esters: Their fate. Science of the Total Environment 36(JUN):313-318.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	1333380			
		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 Assessment				
	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/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 Presentation 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 Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		Medium		

Study Citation:	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-Beijing, China. Journal of Geochemical Exploration 155:56-61.
OECD Harmonized Template:	Miscellaneous
HERO ID:	3022721

EXTRACTION	
Parameter	Data
CASRN and Test Material	NR; dibutyl phthalate
Confidentiality, Type, Guideline	None; Experimental - monitoring; Calculation - volatilization (not reported); Experimental - monitoring; Calculation - volatilization (not reported)
Solvent, Reactivity, Storage, Stability	NA; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Soil from Beijing, China; NR; NA
Test Method Details, Test Condition Details, and Test Consistency Details	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 Sampling Details	1 sample time; Not Reported
Test Temperature	NA
Results Details	0.09 ±0.12 mg/kg in surface soil (mean) and 0.04 ±0.07 mg/kg in deep soil; volatility calculated but not reported
Analytical Method and Analytical Details	GC-FID; confirmation of the compounds by GC-MSD-EI-SIM
Transformation Products, Statistics, 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)

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	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 Conditions	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.

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Study Citation:	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-Beijing, China. Journal of Geochemical Exploration 155:56-61.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	3022721			
Domain	Metric	EVALUATION		Comments
		Rating		
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	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/Variable Control				
	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 impact on the results.
	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	There was insufficient evidence 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 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 Quality Determination		Low		

Study Citation:	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.
OECD Harmonized Template:	Miscellaneous
HERO ID:	4728634

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, Type, Guideline	None; Experimental; Experimental
Solvent, Reactivity, Storage, Stability	NA; NA; NA; NA
Radiolabel, Source, State, Purity	NA; NA; NA; NA Notes: DBP
Test Method Details, Test Condition Details, and Test Consistency Details	Fish and sediment samples collected from 6 mariculture sites in Hong Kong and China; Surface sediment (0-5 cm; mariculture and non-mariculture) and farmed fish species collected: Red snapper (<i>Lutjanus campechanus</i>) (n = 26), orange spotted grouper (<i>Epinephelus coioides</i>) (n = 26), and snubnose pompano (<i>Trachinotus blochii</i>) (n = 17); Not applicable
System Type Design	Field study
Sampling Frequency and Sampling Details	Not applicable; sampling dates not provided; Sediment samples were collected via a stainless steel grab sampler; fish samples were collected, 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 (NS), 0.28 orange-spotted grouper), 0.06 (red snapper); Site H4: 1 (MS), 3 (NS), 0.90 (snubnose pompano), 0.80 (orange-spotted grouper), 0.91 (red snapper)
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	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 Reference Substance Results	Not applicable; Not applicable

EVALUATION				
Domain	Metric		Rating	Comments
Domain 1: Test Substance	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 Conditions				
	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. 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.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	4728634			
Domain		Metric	EVALUATION 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 Organisms				
	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 Assessment				
	Metric 11:	Test Substance Identity	Low	The outcome assessment did not quantify accumulation or report numerical concentrations 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: 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 Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	The analytical method was not reported, detail in SI which was not available.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were described.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	The results were reasonable however BCF values were not reported.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			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 139:211-237.
OECD Harmonized Template:	Miscellaneous
HERO ID:	1322127

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, Type, Guideline	None; Experimental; Experimental
Solvent, Reactivity, Storage, 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 upwind of ships emissions to reduce contamination. If wind speeds were below 3 m/s, sampling was paused.
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 ² /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 ³ ; average particle phase conc.: 0.53 ng/m ³ ; Flux = Kol(Cw-Ca/H'), where Kol is the mass transfer coefficient, Cw is the dissolved concentration, Ca is the vapor phase concentration, and H' is the dimensionless Henry's law constant.
Reference Substance and Reference Substance Results	Not reported; Not reported

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	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 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	Test conditions were reported and appropriate.

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Study Citation:	Ebinghaus, R., Xie, Z. (2006). Occurrence and air/sea-exchange of novel organic pollutants in the marine environment. Journal de Physique IV 139:211-237.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	1322127			
		EVALUATION		
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: 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	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/Variable Control				
	Metric 13:	Confounding Variables	High	Uncertainty was accounted for in 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 Presentation and Analysis				
	Metric 15:	Data Reporting	High	The data reporting was appropriate for the study type.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were clearly described and appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The results are reasonable based on the results of other cited studies.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		High		

Study Citation:	ECHA, (2009). Data on manufacture, import, export, uses and releases of dibutyl phthalate (DBP) as well as information on potential alternatives to its use.
OECD Harmonized Template:	Miscellaneous
HERO ID:	6316858

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; dibutyl phthalate
Confidentiality, Type, Guideline	no; experimental; experimental
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Test Method Details, Test Condition Details, and Test Consistency Details	Field samples; wastewater from a large mixed urban area, an industrial area and a mostly residential area; NR
System Type Design	NR
Sampling Frequency and Sampling Details	NR; NR
Test Temperature	NR
Results Details	67-98% reduction; effluent concentrations 0.0-0.4 ug/L; sludge concentrations of 0.03-1.2 mg/kg sludge
Analytical Method and Analytical Details	NR; NR
Transformation Products, Statistics, and Kinetics	NR; calculated average 84% reduction; NR
Reference Substance and Reference Substance Results	NR; 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	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.
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.
Domain 3: Test Conditions				
	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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Study Citation:	ECHA, (2009). Data on manufacture, import, export, uses and releases of dibutyl phthalate (DBP) as well as information on potential alternatives to its use.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	6316858			
		EVALUATION		
Domain	Metric	Rating	Comments	
	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	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/Variable Control				
	Metric 13:	Confounding Variables	Medium	Details regarding this metric were not reported in the secondary source.
	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	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.
Overall Quality Determination		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:	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 Template:	Miscellaneous
HERO ID:	2914646

EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; dibutyl phthalate			
Confidentiality, Type, Guideline	no; experimental; experimental			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; Tianjin Siyou Co. (Tianjin, China); NR; Reagent grade, >/= 99%			
Test Method Details, Test Condition Details, and Test Consistency Details	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% ±0.3; Volatile Suspended Solids = 14.7% ±0.3; Specific surface area = 4.58 ± 0.78 m^2/g; Biodegradable Materials = 13.4% ±0.6; population of microorganisms: 7.59% ±0.07 bacteria lg CFU/g, 6.72% ±0.10 fungi lg CFU/g, and 5.5% ±0.09 actinomycetes lg CFU/g; Redox enzyme activities: 434.5 ±48.6 dehydrogenase (mg TF/g dw, 12 h), 14.2 ±1.6 hydrogen peroxidase (mL KMnO4/g dw, 1 h), and 4.9 ±1.2 polyphenol oxidase (mg purple gall pigment/g dw, 2 h); not reported			
System Type Design	not reported			
Sampling Frequency and Sampling 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 Analytical Details	not reported; Not Reported			
Transformation Products, Statistics, 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 Reference Substance Results	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 Substance	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.

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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 Template:	Miscellaneous			
HERO ID:	2914646			
		EVALUATION		
Domain	Metric	Rating	Comments	
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability Testing Conditions	Medium	The test method was suitable for the test substance with minor deviations
	Metric 6:		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 discrepancies 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 Organisms				
	Metric 9:	Outcome Assessment Methodology Sampling Methods	Low	Inoculum source are not routinely used for similar study types.
	Metric 10:		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	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	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 Presentation and Analysis				
	Metric 15:	Data Reporting	Low	There was insufficient evidence presented to confirm that parent compound disappearance 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				
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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 Template:	Miscellaneous			
HERO ID:	2914646			
Domain		Metric	EVALUATION	
			Rating	Comments
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			Medium	

Study Citation:	Fausser, P., Vikelsee, 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.
OECD Harmonized Template:	Miscellaneous
HERO ID:	679494

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; NR
Radiolabel, Source, State, Purity	NR; WWTP in Roskilde municipality, Denmark; NR; NR
Test Method Details, Test Condition Details, and Test Consistency Details	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 Substance	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			

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Study Citation:	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.			
OECD Harmonized Template:	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 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: Confounding/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 Presentation and Analysis				
	Metric 15:	Data Reporting	High	The mass balances were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods and kinetic calculations were reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable based on reported results from other studies.
	Metric 18:	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 countries and small communities. Science of the Total Environment 569-570:661-671.
OECD Harmonized Template:	Miscellaneous
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 Details	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
System Type Design	Up flow anaerobic sludge blanket, post treatment by polishing pond: grit chamber, UASB (sludge sump, sludge drying bed), polishing pond, final 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: approx. -58% to 100%November - March Pond percentage removal: approx. -18% 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, Statistics, 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 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, 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.

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Study Citation:	Gani, K. M., Kazmi, A. A. (2016). Comparative assessment of phthalate removal and risk in biological wastewater treatment systems of developing countries and small communities. Science of the Total Environment 569-570:661-671.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	3350189			
		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	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/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 Presentation 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 Results	High	The results were reasonable and trends were comparable to previous studies.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		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 receiving waters along the Songhua River in China. Chemosphere 95:24-32.
OECD Harmonized Template:	Miscellaneous
HERO ID:	1987643

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; 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 primary 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 hydraulic 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 Sampling Details	Not reported; Aqueous samples extracted via standard liquid phase extraction method 8061, U.S. EPA; Sediment/sludge samples dried and extracted 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, Statistics, and Kinetics	Not reported; Not reported; Occurrence WWTPs: Influent 8.73-24.46, mean = 14.34 ng/mL; Effluent: 3.47-4.13 , mean = 3.79 ng/mL; Sludge: 537.37-1935.12, mean = 1026.78 ng/g; occurrence receiving surface water: 1.69-11.81, mean = 5.12 ng/L, sediment 58.14-881.18, mean 268.56 ng/g
Reference Substance and Reference Substance Results	Not reported; Not reported

EVALUATION				
Domain	Metric	Rating	Comments	
Domain 1: Test Substance	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 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	N/A	The metric is not applicable to this study type.

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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 receiving waters along the Songhua River in China. Chemosphere 95:24-32.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	1987643			
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 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	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:	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	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 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 Quality Determination		High		

Study Citation:	Huang, R., Wang, Z., Liu, G., Luo, Q. (2013). Removal efficiency of environmental endocrine disrupting chemicals pollutants-phthalate esters in northern WWTP. Advanced Materials Research 807-809:694-698.
OECD Harmonized Template:	Miscellaneous
HERO ID:	2347150

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; NR
Radiolabel, Source, State, Purity	NR; WWTP influent; NR; NR Notes: standard stock solutions for analytical methods prepared from purchased standard material as certified solutions.
Test Method Details, Test Condition Details, and Test Consistency Details	WWTP operating conventional activated sludge processes; Influent concentration of DBP = 21.01 $\mu\text{g/L}$; Not reported
System Type Design	WWTP in China
Sampling Frequency and Sampling 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, Statistics, and Kinetics	Not reported; Not reported; DBP effluent concentration after aerated grit chamber = 15.65 $\mu\text{g/L}$; effluent concentration after A/O aerobic tank = 2.08 $\mu\text{g/L}$
Reference Substance and Reference Substance Results	Not reported; Not reported

EVALUATION				
Domain	Metric		Rating	Comments
Domain 1: Test Substance	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 Conditions	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, Z., Liu, G., Luo, Q. (2013). Removal efficiency of environmental endocrine disrupting chemicals pollutants-phthalate esters in northern WWTP. Advanced Materials Research 807-809:694-698.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	2347150			
		EVALUATION		
Domain		Metric	Rating	Comments
Domain 4: Test Organisms				
	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 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	This metric met the criteria for high confidence as expected for this type of study.
Domain 6: Confounding/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 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 Kinetic Calculations	N/A	This metric does not apply to this study type.
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	This metric does not apply to this study type.
Overall Quality Determination			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 Template:	Miscellaneous
HERO ID:	5432997

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; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Test Method Details, Test Condition Details, and Test Consistency Details	Surface flow wetland system was used to treat industrial wastewater and domestic sewage.; not reported; not reported
System Type Design	17.3 hm2, containing 2 stabilization ponds, 8 grade series SFWs and 1 water storage pond.
Sampling Frequency and Sampling 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, Statistics, 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 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	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 Conditions	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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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 Template:	Miscellaneous			
HERO ID:	5432997			
Domain	Metric	EVALUATION		Comments
		Rating		
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	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				
	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 Presentation and Analysis				
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery 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 Quality Determination		High		

Study Citation:	Jacobs, L. W., Zabik, M. J. (1983). Importance of sludge-borne organic chemicals for land application programs. :418.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5490434			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; di-n-butylphthalate			
Confidentiality, Type, Guideline	None; experimental; experimental			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	None; NR; NR; NR			
Test Method Details, Test Condition Details, and Test Consistency	Sewage sludge samples were collected form 204 municipal wastewater treatment plants in Michigan.; not applicable; not applicable			
Details				
System Type Design	not applicable			
Sampling Frequency and Sampling Details	June - December 1980; 2 samples collected from each treatment plant			
Test Temperature	not applicable			
Results Details	detected in 106 of 237 samples at 0.0776-3210 mg/kg dry weight			
Analytical Method and Analytical Details	GC; extracted with methylene chloride			
Transformation Products, Statistics, and Kinetics	not applicable; mean 104 mg/kg dry weight; median 17.3 mg/kg dry weight; not applicable			
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	Medium	The test substance source or purity 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	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	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:	Jacobs, L. W., Zabik, M. J. (1983). Importance of sludge-borne organic chemicals for land application programs. :418.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5490434			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 4: Test Organisms				
	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 Assessment				
	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: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	Not applicable (monitoring study).
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.
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 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.
Overall Quality Determination		Uninformative		

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 and phthalic acid esters in water and surface sediment from the Three Gorges Reservoir. Journal of Environmental Sciences 69:271-280.
OECD Harmonized Template:	Miscellaneous
HERO ID:	5576760

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, Type, Guideline	None; Experimental; Experimental
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	No; Environmental samples from Yangtze River; AccuStandard Inc. (USA); NR; 99% Notes: Standard mixed solution of 6 target PAEs: DMP, DEP, DBP, BBP, DEHP, DNOP
Test Method Details, Test Condition Details, and Test Consistency	Surface water and surface sediment samples collected from tributaries of the Yangtze River in June 6–13 (water drawdown period) and December 14–21 (water impoundment period) in 2015; Not applicable; Not applicable
Details	
System Type Design	Not applicable
Sampling Frequency and Sampling 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 Analytical Details	GC-MS; Recoveries for water sample 86.9%-110.1%, sediment samples
Transformation Products, Statistics, and Kinetics	Not applicable; Not applicable; Not applicable
Reference Substance and Reference	Not applicable; Not applicable
Substance Results	

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	This metric met the criteria for high confidence as expected for this type of study.
Domain 2: Test Design	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 Conditions	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 and phthalic acid esters in water and surface sediment from the Three Gorges Reservoir. Journal of Environmental Sciences 69:271-280.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5576760			
		EVALUATION		
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 Assessment				
	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/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 Presentation 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 environmental partitioning.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.
Overall Quality Determination		Low		

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 Template:	Miscellaneous			
HERO ID:	5433350			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; di-n-butyl phthalate			
Confidentiality, Type, Guideline	None; experimental; experimental			
Solvent, Reactivity, Storage, 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 Test Consistency Details	leachate treatment process.; raw leachate pH 5.92; DBP 250.5 ug/L initial concentration; BIO: Up-flow Anaerobic Sludge Blanket (UASB)- 7 day hydraulic retention time; Membrane Bioreactor (MBR)- 3 day hydraulic retention time; Not Reported			
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 Sampling 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, Statistics, and Kinetics	not reported; 3 samples/sampling point; COD, BOD5, SS removal efficiencies 94.7%, 95.6%, 8.3%, respectively.			
Reference Substance and Reference Substance Results	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.
	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 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.
	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.
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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 Template:		Miscellaneous		
HERO ID:		5433350		
Domain	Metric	EVALUATION		Comments
	Metric 8:	System Type and Design	Rating 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 Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation 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(s).
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination**NEED TO FIX**

Study 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 greenhouses of suburb Nanjing, China and the potential human health risk. Environmental Science and Pollution Research 22(16):12018-12028.
OECD Harmonized Template:	Miscellaneous
HERO ID:	3016266

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, Type, Guideline	None; Experimental; Experimental
Solvent, Reactivity, Storage, Stability	NR; NR; Soil and vegetable samples stored at -20°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 (DnBP), bis(2-ethylhexyl) phthalate (DEHP), and DnOP
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 potassium were 9.68, 1.44, and 10.28 g/kg, respectively; Not applicable
System Type Design	sample processing cited to another source.
Sampling Frequency and Sampling 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 (µg/kg) Soil1: 456±2 Chinese cabbage/leafy: 1403±6 Soil2: 514±2 Garlic bolt/leafy: 877±15 Soil3: 496±2 Asparagus lettuce/stem: 1387±29 Soil4: 486±2 Crown daisy chrysanthemum/leafy: 1183±12 Soil5: 420±2 Pakchoi/leafy: 210.8±10 Soil6: 399±1 Bovine heart shaped cabbage/leafy: 277±0 Soil7: 329±1 Ternip/root: 140±21 Soil8: 334±1 Pakchoi/leafy: 573±12 Soil9: 414±1 Celery/leafy: 460±29 Soil10: 488±2 Spinach/leafy: 537±6 Soil11: 496±2 Asparagus lettuce/stem: 900±21 Soil12: 436±2 Cayenne/solanaceous: 527±0 Soil13: 466±2 Pakchoi/leafy: 173±10 Soil14: 452±2 Florists chrysanthemum leaf/leafy: 630±31 Soil15: 524±2 Pakchoi/leafy: 553±23 Soil16: 543±2 Chinese cabbage/leafy: 277±10 Soil17: 512±2 Garlic bolt/leafy: 797±21 Soil18: 494±2 Chinese cabbage/leafy: 53±10 Soil19: 463±38 Pakchoi/leafy: 163±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 ±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 Substance	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.

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Study 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 greenhouses of suburb Nanjing, China and the potential human health risk. Environmental Science and Pollution Research 22(16):12018-12028.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	3016266			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	High	Sample storage conditions and processing were reported and appropriate.
Domain 3: Test Conditions				
	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 Organisms				
	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 Assessment				
	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.
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 Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Analytical detection limits were not specified.
	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	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

Study Citation:	(1982). Fate of Priority Pollutants in Publicly Owned Treatment Works, Volume I.
OECD Harmonized Template:	Miscellaneous
HERO ID:	1265686

EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; di-n-butyl phthalate			
Confidentiality, Type, Guideline	None; experimental; experimental			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	No; NR; 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); not reported			
System Type Design	not reported			
Sampling Frequency and Sampling Details	influent, effluent, sludge; in general: six consecutive days; 24 hour samples; more detail are available.			
Test Temperature	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±38%			
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 concentrations: 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 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 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 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 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:		(1982). Fate of Priority Pollutants in Publicly Owned Treatment Works, Volume I.		
OECD Harmonized Template:		Miscellaneous		
HERO ID:		1265686		
Domain	Metric	EVALUATION		Comments
		Rating		
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	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				
	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 Presentation 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 expected.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination			High	

Study Citation:	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 SORBENTS. Analytical Chemistry 58(9):2041-2048.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	1316097			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	not reported; Not Reported			
Confidentiality, Type, Guideline	No; experimental; experimental			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR			
Test Method Details, Test Condition Details, and Test Consistency Details	Marine sediment samples (shipping channel -SC, Kings Slough - KS, deep disposal DD) and marine -animal tissue samples were spiked with 2.5 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 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	not applicable			
Sampling Frequency and Sampling Details	not applicable; not applicable			
Test Temperature	not reported			
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; not reported			
Reference Substance and Reference Substance Results	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	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 Conditions	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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Study Citation:	Ozretich, R. J., Schroeder, W. P. (1986). DETERMINATION OF SELECTED NEUTRAL PRIORITY ORGANIC POLLUTANTS IN MARINE SEDIMENT TISSUE AND REFERENCE MATERIALS UTILIZING BONDED-PHASE SORBENTS. Analytical Chemistry 58(9):2041-2048.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	1316097			
Domain	Metric	EVALUATION Rating		Comments
Domain 4: Test Organisms				
	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 Assessment				
	Metric 11:	Test Substance Identity	Low	The study is focused on demonstrating extraction methods from sediments and animal 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.
Domain 6: Confounding/Variable Control				
	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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Limited analytical details focused on extraction method development rather than monitoring data.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Reported methods were appropriate for the data.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	No fate results were reported.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study.
Overall Quality Determination		Uninformative		

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.
OECD Harmonized Template:	Miscellaneous
HERO ID:	5348332

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; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Test Method Details, Test Condition Details, and Test Consistency Details	3 year study (1989-1991); Goteborg (Sweden) Regional Sewage Works; Not Reported
System Type Design	Not Reported
Sampling Frequency and Sampling Details	Not Reported; Not Reported
Test Temperature	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; Not Reported
Transformation Products, Statistics, and Kinetics	Not Reported; The contribution of biodegradation to the total removal cannot be evaluated from these data.; Not Reported
Reference Substance and Reference Substance Results	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				
	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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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.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5348332			
		EVALUATION		
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 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 Exposure	N/A	The metric is not applicable to the study type.
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 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 Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		Low		

* Related References: Cited: Paxéus N, Robinson P, Balmer P (1992) Water Sci Technol 25:249 (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 3Q:85-124.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5348332			
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; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR			
Test Method Details, Test Condition Details, and Test Consistency Details	2 g/L mixed liquid suspended solids; Not Reported; Not Reported			
System Type Design	Not Reported			
Sampling Frequency and Sampling Details	Not Reported; Not Reported			
Test Temperature	Not Reported			
Results Details	81% removal; 27% biodegradation removal			
Analytical Method and Analytical Details	Not Reported; Not Reported			
Transformation Products, Statistics, and Kinetics	Not Reported; 0.083 L/g suspended solids/day; half-life 100 hours; Not Reported			
Reference Substance and Reference Substance Results	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	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	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.
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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.		
OECD Harmonized Template:	Miscellaneous		
HERO ID:	5348332		
Domain	Metric	EVALUATION Rating	Comments
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 Exposure	N/A	The metric is not applicable to the study type.
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 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 Results	Medium	The study results were reasonable.
Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		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., Staples, C. A. (2003). Degradation of phthalate esters in the environment. The Handbook of Environmental Chemistry book series HEC 3Q:85-124.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5348332			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; DBP			
Confidentiality, Type, Guideline	no; experimental; experimental			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; WWTP; NR; NR Notes: NR			
Test Method Details, Test Condition Details, and Test Consistency	Analyzed influent and effluent concentrations from two WWTPs, one treating domestic sewage and the other industrial sewage.; present in concentration ranges of 1-10 ug/L in the influent of both plants.; NR			
System Type Design	NR			
Sampling Frequency and Sampling Details	NR; NR			
Test Temperature	NR			
Results Details	BBP and DIBP were r DBP was removed by 93% in the domestic plant and 95% in the industrial plant.			
Analytical Method and Analytical Details	NR; NR			
Transformation Products, Statistics, and Kinetics	NR; NR; NR			
Reference Substance and Reference Substance Results	NR; NR			
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	Not reported in this secondary source; more details may be in the source cited.
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Not reported in this secondary source; more details may be in the source cited.
	Metric 4:	Test Substance Stability	Medium	Not reported in this secondary source; more details may be in the source cited.
Domain 3: Test Conditions	Metric 5:	Test Method Suitability	Medium	Not reported in this secondary source; more details may be in the source cited.
	Metric 6:	Testing Conditions	Medium	Not reported in this secondary source; more details may be in the source cited.
	Metric 7:	Testing Consistency	Medium	Not reported in this secondary source; more details may be in the source cited.
	Metric 8:	System Type and Design	Medium	Not reported in this secondary source; more details may be in the source cited.
Domain 4: Test Organisms	Metric 9:	Outcome Assessment Methodology	Medium	Not reported in this secondary source; more details may be in the source cited.
	Metric 10:	Sampling Methods	N/A	This metric does not apply to this study type.
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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.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5348332			
Domain		Metric	EVALUATION Rating	Comments
Domain 5: Outcome Assessment				
	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 Presentation and Analysis				
	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 Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	This metric does not apply to this study type.

Overall Quality Determination**NEED TO FIX**

* Related References: Cited from 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 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.
OECD Harmonized Template:	Miscellaneous
HERO ID:	675406

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, Guideline	None; experimental; experimental
Solvent, Reactivity, Storage, Stability	NR; 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 and anoxic 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 to 2–4 g VSS/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 5–6000 kg SS/day.; Not Reported
System Type Design	Aalborg East municipal WWTP, Aalborg, Denmark
Sampling Frequency and Sampling 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±4.74 ug/L Effluent concentration: 2.38±1.17 ug/L Dewatered sludge concentration: 1.19±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 solvent extraction of the solid
Transformation Products, Statistics, and Kinetics	not reported; standard deviations reported with mass balance; Not Reported
Reference Substance and Reference Substance Results	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	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.

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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.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	675406			
		EVALUATION		
Domain	Metric	Rating	Comments	
	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.
	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 Organisms				
	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 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 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 (e.g., sampling equipment, sample storage conditions) and no notable uncertainties or limitations were expected to influence results.
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 Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	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 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	N/A	Statistical methods or kinetic calculations were not reported.
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.
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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.
OECD Harmonized Template:	Miscellaneous
HERO ID:	675406

Domain

Metric

EVALUATION
Rating

Comments

Overall Quality 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 dibutyl phthalate in ASP- and SBR-based wastewater treatment plants. Environmental Monitoring and Assessment 188(11):609.
OECD Harmonized Template:	Miscellaneous
HERO ID:	3469369

Parameter		EXTRACTION		
CASRN and Test Material	84-74-2; DBP			
Confidentiality, Type, Guideline	None; Experimental; Experimental			
Solvent, Reactivity, Storage, Stability	NA; NR; 4°C; NR			
Radiolabel, Source, State, 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 Condition Details, and Test Consistency	Influent, effluent, and sludge samples collected from SSTPs in India to determine pollutant removal efficiency and distribution.; Not reported; BOD (influent, effluent): 212±31, 37±24 mg/LTotal coliform (TC): 1.0E7 ± 9.6E6, 1.0E6±1.4E6 MPN/100 mL			
System Type Design	Activated sludge process			
Sampling Frequency and Sampling 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 Analytical 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 volatilization/condensation device			
Transformation Products, Statistics, and Kinetics	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 Substance Results	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.
	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 Conditions	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 reported.
	Metric 7:	Testing Consistency	High	Samples were collected, processed, and analyzed consistently.

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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 dibutyl phthalate in ASP- and SBR-based wastewater treatment plants. Environmental Monitoring and Assessment 188(11):609.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	3469369			
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	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/Variable Control				
	Metric 13:	Confounding Variables	High	Variation in removal efficiency was discussed.
	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	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				
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality 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 dibutyl phthalate in ASP- and SBR-based wastewater treatment plants. Environmental Monitoring and Assessment 188(11):609.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	3469369			
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; NR			
Radiolabel, Source, State, 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 Condition Details, and Test Consistency	Influent, effluent, and sludge samples collected from SSTPs in India to determine pollutant removal efficiency and distribution.; Not reported; COD (influent, effluent): 217±97, 25±12 mg/LTotal suspended solids (TSS) (influent, effluent): 158±73, 18.4±11 mg/LTotal coliform (TC): 1.1E8 ± 1.4E8, 1.0E7±1.4E7 MPN/100 mL			
System Type Design	Sequencing batch reactor			
Sampling Frequency and Sampling 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 Analytical 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 volatilization/condensation device			
Transformation Products, Statistics, 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 Reference Substance Results	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.
	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 Conditions				
	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 reported.
	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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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 dibutyl phthalate in ASP- and SBR-based wastewater treatment plants. Environmental Monitoring and Assessment 188(11):609.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	3469369			
Domain	Metric	EVALUATION		Comments
		Rating		
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	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/Variable Control				
	Metric 13:	Confounding Variables	High	Variation in removal efficiency was discussed.
	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	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				
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

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 bodies in the Eastern Cape, South Africa. Chemosphere 203(Elsevier):336-344.
OECD Harmonized Template:	Miscellaneous
HERO ID:	4728386

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, Type, Guideline	None; Experimental; Experimental
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Accu Standard, Inc USA; NR; 99.9% Notes: DEHP
Test Method Details, Test Condition Details, and Test Consistency Details	removal efficiency calculated as the ratio of the difference between the total influent and total effluent concentration to the total influent concentrations multiplied by 100; 3 micro or small WWTPs investigated: Adelais, Alice, and Seymour; Not applicable
System Type Design	WWTP processes included: Screening; Grit removal; Sedimentation; Activated Sludge; Secondary Clarifier; Chlorination
Sampling Frequency and Sampling Details	Composite samples of each of influent, secondary effluent and final effluents from all the selected WWTP 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% (Adelais), 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 Analytical Details	GC-MS; LOD = 0.85 µg/L for DBP; LOQ ranged from 1.75-3.99 µg/L for all analytes; analytical blanks included
Transformation Products, Statistics, 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 Reference Substance Results	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 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	N/A	The metric is not applicable to the study type.

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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 bodies in the Eastern Cape, South Africa. Chemosphere 203(Elsevier):336-344.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	4728386			
		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 Organisms	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 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: Confounding/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 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 Kinetic Calculations	High	Statistical methods and kinetic calculations were reported.
Domain 8: Other	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable based on reported results from other studies.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

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

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; NR
Radiolabel, Source, State, Purity	NR; AccuStandard, Inc.; NR; 96.8%
Test Method Details, Test Condition Details, and Test Consistency Details	The removal capacity of different wastewater treatment plants (WWTP) Eastern Cape, South Africa; A standard working mixture of 100 μgmL−1 in methanol was prepared from the stock solution and stored under 4°C in amber bottles.; Not Reported
System Type Design	Bedford WWTP used oxidation pond, 0.5-2 ML/d, Influent TDS 342.37 ±70.2 mg/L, Effluent TDS 188.59 ±4.1 mg/L, Influent turbidity 637.67 ±13.9 NTU, Effluent turbidity 119.12 ±18.9 NTU, Influent TSS 184.87 ±18.8 mg/L, Effluent TSS 57.4 ±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 ≤2 with 50% HCl.
Test Temperature	Storage temperature 4°C; Extraction temperature 60°C
Results Details	Mean Influent: 594.9 ±282 μg/L, Mean Final Effluent: 9.84 ±2.89 μg/L, Mean Sludge: 592.9 ±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 (μg/L−1) of PAEs in WWTP at Bedford

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 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 substance 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.

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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 consistent and variations were reported.
	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	Some of the details regarding the wastewater properties 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 Assessment				
	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/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 Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation 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 Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		High		

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			
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; NR			
Radiolabel, Source, State, Purity	NR; AccuStandard, Inc.; NR; 96.8%			
Test Method Details, Test Condition Details, and Test Consistency Details	The removal capacity of different wastewater treatment plants (WWTP) Eastern Cape, South Africa; A standard working mixture of 100 μgmL—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 ±12.3 mg/L, Effluent TDS 147.19 ±5.1 mg/L, Influent turbidity 547.67 ±136.2 NTU, Effluent turbidity 17.82 ±6.9 NTU, Influent TSS 179.87 ±36.5 mg/L, Effluent TSS 6.76-3 ±2.6 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 ≤2 with 50% HCl.			
Test Temperature	Storage temperature 4°C; Extraction temperature 60°C			
Results Details	Mean Influent: 1100 ± 429 μg/L, Mean Final Effluent: 6.47 ±3.60 μg/L, Mean Sludge: 1094 ± 89.3 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%.; Not Reported			
Reference Substance and Reference Substance Results	External calibration; Not Reported			
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 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 substance 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.
	Metric 7:	Testing Consistency	High	Testing was done across winter, autumn, and summer but sampling methods were consistent 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., 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			
Domain	Metric	EVALUATION Rating		Comments
Domain 4: Test Organisms	Metric 9:	Outcome Assessment Methodology	Medium	Some of the details regarding the wastewater properties 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 Assessment	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/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 Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation 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 Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination			High	

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			
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; NR			
Radiolabel, Source, State, Purity	NR; AccuStandard, Inc.; NR; 96.8%			
Test Method Details, Test Condition Details, and Test Consistency Details	The removal capacity of different wastewater treatment plants (WWTP) Eastern Cape, South Africa; A standard working mixture of 100 μgmL—1 in methanol was prepared from the stock solution and stored under 4°C in amber bottles.; Not Reported			
System Type Design	Berlin WWTP used biofilters, anaerobic digestion, and sludge drying bed.			
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 ≤2 with 50% HCl.			
Test Temperature	4°C			
Results Details	Mean Influent: 180.69 ±129 μg/L, Mean Final Effluent: 4.18 ±0.85 μg/L, Mean Sludge: 399.45 ±151.6 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 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 Reference Substance Results	Not Reported; External calibration			
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 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 substance 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.
	Metric 7:	Testing Consistency	High	Testing was done across winter, autumn, and summer but sampling methods were consistent 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., 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			
Domain	Metric	EVALUATION Rating		Comments
Domain 4: Test Organisms	Metric 9:	Outcome Assessment Methodology	Medium	Some of the details regarding the wastewater properties 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 Assessment	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/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 Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation 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 Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination			High	

Study Citation:	Shao, X. L., Ma, J. (2009). Fate and mass balance of 13 kinds of endocrine disrupting chemicals in a sewage treatment plant. :5342-5345.
OECD Harmonized Template:	Miscellaneous
HERO ID:	1336562

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; NR
Radiolabel, Source, State, Purity	NR; Beijing Chemical Plant; NR; >99%
Test Method Details, Test Condition Details, and Test Consistency Details	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
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 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 Analytical 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 Reference Substance Results	Not reported; Not reported

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 purity was reported and appropriate.
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	High	The test substance homogeneity in the collected samples and the storage conditions of the samples are 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 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.

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Study Citation:	Shao, X. L., Ma, J. (2009). Fate and mass balance of 13 kinds of endocrine disrupting chemicals in a sewage treatment plant. :5342-5345.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	1336562			
		EVALUATION		
Domain	Metric	Rating	Comments	
	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	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 Assessment	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/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 Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation 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 Results	Low	Due to limited information, the plausibility of the study results could not be evaluated.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
Overall Quality Determination		High		

Study Citation:	Soler-Llavina, S. M., Ortiz-Zayas, J. R. (2017). Emergent contaminants in the wastewater effluents of two highly populated tropical cities. Journal of Water and Health 15(6):873-884.			
OECD Harmonized Template:	Miscellaneous			
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; NR			
Radiolabel, Source, State, Purity	NR; waste water; NR; NR Notes: DNBP			
Test Method Details, Test Condition Details, and Test Consistency Details	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	-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			
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			
Transformation Products, Statistics, and Kinetics	Not applicable; paired t-tests; ANOVA; p value <0.05; Not applicable			
Reference Substance and Reference Substance Results	Not applicable; Not applicable			
EVALUATION				
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	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 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	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.
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Study Citation:	Soler-Llavina, S. M., Ortiz-Zayas, J. R. (2017). Emergent contaminants in the wastewater effluents of two highly populated tropical cities. Journal of Water and Health 15(6):873-884.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	4728707			
		EVALUATION		
Domain	Metric	Rating	Comments	
Domain 4: Test Organisms				
	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 Assessment				
	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/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 Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	Limited analytical detail reported.
	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	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		Medium		

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.
OECD Harmonized Template:	Miscellaneous
HERO ID:	5692000

EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Dibutyl phthalate			
Confidentiality, Type, Guideline	None; WWTP waste sludge treatment removal efficiency; WWTP waste sludge treatment removal efficiency			
Solvent, Reactivity, Storage, 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 Test Consistency Details	Waste sludge from WWTP in Italy further treated by semi-continuous mesophilic and aerobic reactors in order to determine removal efficiency of pollutants of interest.; Sludge origin: WWTP "Roma-Nord" in Rome, ItalyTotal solids = 39.71 g/LVolatile solids = 27.44 g/LCOD = 39.87 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 (aerobic reactor)DO (aerobic reactor): ~ 3 mg/L; Not Reported			
System Type Design	Two 7.4 L digesters operated in semi-continuous mode; waste sludge fed to the mesophilic anaerobic reactor, a fraction of which was then fed to 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 Reference Substance Results	NA; 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	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 Conditions	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., 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.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5692000			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	Not applicable.
	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 removal efficiency and removal efficiency was reported by the study authors.
	Metric 12:	Test Substance Purity	High	Sampling methods and frequency were appropriate.
Domain 6: Confounding/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 Presentation 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 Quality Determination		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. Influence of hydroclimatic conditions. Chemosphere 119C:43-51.
OECD Harmonized Template:	Miscellaneous
HERO ID:	2519056

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, Type, Guideline	None; Experimental; Experimental
Solvent, Reactivity, Storage, 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 Condition Details, and Test Consistency Details	DnBP concentrations in WWTP inputs = 4.1 ± 1.6 ug/L, output = 0.14 ± 0.10 ug/L; removal efficiencies estimated by differences between WWTP input and output concentrations.; Wastewater fluxes entering ranged from 270 to 532 m3/d during 2010–2011; transit time inside was ca. 17 hours.; 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 ≤ 10 ng); limits of quantification (LOQ) corresponded to average blank values. When they were below IDLs, the MDLs were considered.
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 Substance	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 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	N/A	The metric is not applicable to this study type.

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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. Influence of hydroclimatic conditions. Chemosphere 119C:43-51.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	2519056			
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 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	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:	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	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 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 Quality Determination		High		

Study Citation:	U.S. EPA, (1974). Pesticides in the Illinois waters of Lake Michigan.
OECD Harmonized Template:	Miscellaneous
HERO ID:	1333424

EXTRACTION	
Parameter	Data
CASRN and Test Material	not reported; Not Reported
Confidentiality, Type, Guideline	No; experimental; experimental
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR
Test Method Details, Test Condition Details, and Test Consistency Details	Monitoring study of Lake Michigan sediments (approx 40-80 yards offshore, tributary streams and ravine sediments in Illinois (approx 50 yards offshore), and sewage treatment plants (1-3 miles offshore). Edible portions of fish were sampled from lake Michigan (yellow perch, chub, carp, Coho salmon, alewife); NR; NR
System Type Design	NR
Sampling Frequency and Sampling 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 Analytical 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, Statistics, and Kinetics	NR; NR; NR
Reference Substance and Reference Substance Results	NR; NR

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	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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Study Citation:	U.S. EPA, (1974). Pesticides in the Illinois waters of Lake Michigan.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	1333424			
Domain	Metric	EVALUATION		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 Organisms	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 Assessment	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: Confounding/Variable Control	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 Presentation 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 Quality Determination		Medium		

Study Citation:	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 Template:	Miscellaneous			
HERO ID:	1482384			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; Dibutyl phthalate			
Confidentiality, Type, Guideline	no; experimental; experimental			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; wastewater; NR; NR Notes: NR			
Test Method Details, Test Condition Details, and Test Consistency Details	Pilot plant for removal of micropollutants using integrated wastewater treatment/water reclamation system; Treatment: modified lime flotation 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 Sampling 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 Analytical Details	GC with FID and ECD using internal standards; not reported			
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 Substance				
	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 Conditions				
	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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Study Citation:	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 Template:	Miscellaneous			
HERO ID:	1482384			
Domain		Metric	EVALUATION Rating	Comments
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.
Domain 5: Outcome Assessment				
	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: 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 Exposure	N/A	This metric is not applicable to this type of study.
Domain 7: Data Presentation and Analysis				
	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 Results	Uninformative	Removal efficiency was not reported.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.
Overall Quality Determination			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 reclaimed water treatment processes. Science of the Total Environment 737:140219.
OECD Harmonized Template:	Miscellaneous
HERO ID:	6968279

EXTRACTION	
Parameter	Data
CASRN and Test Material	not reported; dibutyl phthalate
Confidentiality, Type, Guideline	No; Monitoring study; Monitoring study
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Wastewater; NR; NA Notes: Analytical standard DBP was from Dr. Ehrenstorfer (Germany) company and made as a stock solution in n-hexane
Test Method Details, Test Condition Details, and Test Consistency Details	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 discharged into an urban river or lake, the other effluent portion was further treated 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: high-efficiency clarification, sand filtration and chlorination.; 4 WWTPs/RWTPs with different sequential treatments evaluated
System Type Design	Major treatment process included: Multi-unit Anoxic/Oxic, Oxidation ditch-Anaerobic/Anoxic/Oxic, and DE oxidation ditch + multi-unit Anoxic/Oxic
Sampling Frequency and Sampling Details	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 Analytical Details	SPE of water samples followed by GC-MS; MDLs in supporting document
Transformation Products, Statistics, and Kinetics	not reported; not reported; Removal rate for each RWTP unit = $(C_i - C_e)/C$ and removal mass = $(C_i - C_e) \times V$; C_i : analyte concentration in influent of one unit, C_e : 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 Reference Substance Results	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	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.

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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.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	6968279			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	Metric 5:	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 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.
	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.
	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.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		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 Letters 13(6):557-560.
OECD Harmonized Template:	Miscellaneous
HERO ID:	5518156

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; monitoring study; standard obtained from Jinan Chemical Works; NR; analytical grade standard Notes: DBP			
Test Method Details, Test Condition Details, and Test Consistency Details	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 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 Sampling Details	air, plant, and soil samples collected in December 2000; 6 samples from each media were collected			
Test Temperature	Not reported			
Results Details	Concentration in air: 1910±480 ng/m3, in soil inside (depth): 2.6±0.5 (5cm), 3.6±1.1 (10cm), 3.2±0.9 (15cm), 2.5±0.8 (25cm), in soil outside (depth): 1.5±0.6 (5cm), 1.4±0.7 (10cm), 1.2±0.7 (15cm), 0.9±0.4 (25cm); Concentration in plants: 1.7±1.1 mg/kg (Chinese cabbage), 0.9±0.5 mg/kg (cucumber), 1.3±0.7 mg/kg (summer squash)			
Analytical Method and Analytical 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, Statistics, and Kinetics	Not applicable; Not reported; Not applicable			
Reference Substance and Reference Substance Results	Not applicable; Not applicable			
		EVALUATION		
Domain	Metric	Rating	Comments	
Domain 1: Test Substance	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 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	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 Organisms				

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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 Letters 13(6):557-560.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5518156			
		EVALUATION		
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 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:	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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Some analytical details were omitted.
	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 Results	Medium	The results are reasonable.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.
Overall Quality Determination		High		

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, China. Analytical and Bioanalytical Chemistry 383(5):857-863.
OECD Harmonized Template:	Miscellaneous
HERO ID:	533749

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, Type, Guideline	None; Experimental; Experimental
Solvent, Reactivity, Storage, 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 Test Consistency Details	Analyte sampling at various points in a reclaimed water treatment process using coagulation, continuous micro-membrane filtration (CMF), and ozonation in that order.; Coagulation-flocculation treatment: polyaluminum chloride (PAC) as coagulant (15 mg/L); continuous micro membrane filtration (CMF) treatment (0.2 μ m pore size); ozonation treatment (dosage: 5–6 mg/L); Not applicable.
System Type Design	Monitoring of WWTP samples
Sampling Frequency and 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 μ 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 Reference Substance Results	Not applicable.; Not applicable.

EVALUATION				
Domain	Metric		Rating	Comments
Domain 1: Test Substance	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 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	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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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, China. Analytical and Bioanalytical Chemistry 383(5):857-863.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	533749			
		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 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:	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 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 Kinetic Calculations	N/A	The metric is not applicable to this study type.
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 Quality Determination		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, China. Human and Ecological Risk Assessment 25(6):1547-1563.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5442818			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	None; Experimental; Experimental			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; Standard solution of 16 PAEs purchased from O2SI, Inc (USA); Standard solution; NR Notes: DnBP			
Test Method Details, Test Condition Details, and Test Consistency Details	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 every10 samples for quality control and quality assurance (QC/QA).			
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 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 gas chromatography-mass spectrometry (GC-MS).			
Test Temperature	column initial temperature of 80°C maintainedfor 1.0 min, increased to 180C at a rate of 20C/min with 10 min holding time, andincreased to 300C at 2C/min and maintained for 10 min			
Results Details	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 Reference Substance Results	Not reported; Not reported			
EVALUATION				
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	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 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	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.
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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, China. Human and Ecological Risk Assessment 25(6):1547-1563.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5442818			
Domain	Metric	EVALUATION Rating		Comments
Domain 4: Test Organisms				
	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 Assessment				
	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.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	No confounding variables were noted or identified.
	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	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 is not applicable to this type of study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

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 ethoxylates, bisphenol A and phthalates in municipal sewage treatment systems. Journal of Environmental Sciences 61(Elsevier):49-58.
OECD Harmonized Template:	Miscellaneous
HERO ID:	4728656

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Di-n-butyl phthalate
Confidentiality, Type, Guideline	None; Experimental; Experimental
Solvent, Reactivity, Storage, Stability	NR; 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-μm glass fiber filters and stored at 4°C for next day analysis.
Test Temperature	Not applicable
Results Details	Removal efficiency: PS: ca. -50%; CEPT: ca. -100%; 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 Reference Substance Results	Not applicable; Not applicable

EVALUATION				
Domain	Metric		Rating	Comments
Domain 1: Test Substance	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 Design	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 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; 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.

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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 ethoxylates, bisphenol A and phthalates in municipal sewage treatment systems. Journal of Environmental Sciences 61(Elsevier):49-58.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	4728656			
Domain	Metric	EVALUATION		Comments
		Rating		
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	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/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 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 Kinetic Calculations	High	Statistical methods and kinetic calculations were reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		High		

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.
OECD Harmonized Template:	Miscellaneous
HERO ID:	4728507

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; NR
Radiolabel, Source, State, Purity	NR; Aladdin Chemistry Co. (Shanghai, China); NR; 98.7% analytical grade Notes: DBP
Test Method Details, Test Condition Details, and Test Consistency Details	two rice cultivars, Peizataifeng and Fenyousimiao, were grown in leaching columns packed with contaminated paddy soil collected from Guangzhou, China; DBP Concentrations in pore water of Peizataifeng at 0-10, 10-20, 20-30, 30-40, 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; experimental design are illustrated in Supplementary Data; soil: 27.1 g/kg OM, 1.40 g/kg total nitrogen, 1.76 g/kg total 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 Fenyousimiao 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 Analytical 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, Statistics, 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 Reference Substance Results	Non-spiked and sterile controls included; Not Reported

EVALUATION				
Domain	Metric		Rating	Comments
Domain 1: Test Substance	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:	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.

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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.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	4728507			
Domain		Metric	EVALUATION 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	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 illustrated in Supplementary Documents, not publicly available.
Domain 4: Test Organisms				
	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.
Domain 5: Outcome Assessment				
	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 Exposure	N/A	This metric is not applicable to this study type.
Domain 7: Data Presentation 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 Quality Determination			Low	

Study Citation:	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.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5433502			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; di-n-butyl phthalate			
Confidentiality, Type, Guideline	None; Monitoring; Monitoring			
Solvent, Reactivity, Storage, Stability	hexane; NR; 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 Test Consistency Details	soil and vegetation samples were collected at 21 sites downwind of a plastic market in Yuyao City, Zhejiang Province, China.; Sample locations are indicated on map; not applicable (field samples)			
System Type Design	not applicable (field samples)			
Sampling Frequency and Sampling Details	collected in May 2017.; sampling method referenced; field and procedural blanks included			
Test Temperature	not applicable (field samples)			
Results Details	soil concentrations: 340–771 ng/g; mean 500 ng/g (specific sample site concentrations reported in supplemental material); vegetation concentrations: reported in supplemental material			
Analytical Method and Analytical Details	GC-MSD; average recovery for surrogate DnBP-D4 78±18% (soil), 97±17% (vegetation); method detection limit 0.08-4.5 and 0.46-18 ng/g for 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 Reference Substance Results	not applicable; The recoveries of PAEs spiked soil samples were 60.46%–121.77% and spiked vegetable samples were 69.30%–114.36%			
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 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 Conditions	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.
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Study Citation:	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.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5433502			
Domain		EVALUATION		Comments
Metric		Rating		
	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	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	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: Confounding/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 Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	There was insufficient evidence presented to confirm the process for chemical deposition.
	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	The metric is not applicable to this study type.
Overall Quality Determination		Uninformative		

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 Template:	Miscellaneous
HERO ID:	3072185

EXTRACTION	
Parameter	Data
CASRN and Test Material	83-73-2; Di-n-butyl phthalate
Confidentiality, Type, Guideline	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 Details	Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration 9.2±1.5 ug/L; pH 7.0±0.2; dissolved oxygen 1.5±0.2 mg/L; chemical oxygen demand 207.2±18.5 mg/L; suspended solids 39.9±13.9 mg/L; ammonium nitrogen 21.4±2.2 mg/L; total phosphate 2.9±0.1; parameters were measured and recorded.
System Type Design	vertical subsurface-flow; gravel substrate (10-20 mm, porosity of 50%); Thalia dealbata 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	54% DBP removal; effluent parameters (% removal): temp 28.9±3°C; pH 6.9±0.1; dissolved oxygen 2.8±0.1 mg/L; chemical oxygen demand 55.6±19.1 (73%) mg/L; suspended solids 10.2±2.6 (74%) mg/L; ammonium nitrogen 7.6±1.9 (65%) mg/L; total phosphate 1.6±0.1 (45%)
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; ±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, hydraulic load rates, respectively.
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 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.

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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 Template:	Miscellaneous			
HERO ID:	3072185			
Domain		Metric	EVALUATION	
			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 Organisms				
	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 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				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements 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 Presentation 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 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 Template:	Miscellaneous			
HERO ID:	3072185			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	83-73-2; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	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 Details	Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration 9.2±1.5 ug/L; pH 7.0±0.2; dissolved oxygen 1.5±0.2 mg/L; chemical oxygen demand 207.2±18.5 mg/L; suspended solids 39.9±13.9 mg/L; ammonium nitrogen 21.4±2.2 mg/L; total phosphate 2.9±0.1; 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°C before analysis (within 48 h).			
Test Temperature	29.2±3.3°C			
Results Details	59% DBP removal; effluent parameters (% removal): temp 28.2±2.3°C; pH 7.1±0.1; dissolved oxygen 3.5±0.2 mg/L; chemical oxygen demand 58.9±24.0 (72%) mg/L; suspended solids 8.2±1.0 (79%) mg/L; ammonium nitrogen 5.3±2.2 (75%) mg/L; total phosphate 1.8±0.2 (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; ±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 Substance	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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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 Template:	Miscellaneous			
HERO ID:	3072185			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 4: Test Organisms				
	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 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				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements 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 Presentation 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 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 Template:	Miscellaneous			
HERO ID:	3072185			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	83-73-2; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	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 Details	Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration 9.2±1.5 ug/L; pH 7.0±0.2; dissolved oxygen 1.5±0.2 mg/L; chemical oxygen demand 207.2±18.5 mg/L; suspended solids 39.9±13.9 mg/L; ammonium nitrogen 21.4±2.2 mg/L; total phosphate 2.9±0.1; parameters were measured and recorded.			
System Type Design	vertical subsurface-flow; zeolite (20–40 mm, porosity of 58%); Arundo donax var. versicolor 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	66% DBP removal; effluent parameters (% removal): temp 27.9±1.9°C; pH 7.0±0.1; dissolved oxygen 3.9±0.2 mg/L; chemical oxygen demand 43.4±17.6 (79%) mg/L; suspended solids 7.4±5.5 (82%) mg/L; ammonium nitrogen 3.6±1.2 (83%) mg/L; total phosphate 1.6±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; ±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 Substance	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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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 Template:	Miscellaneous			
HERO ID:	3072185			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 4: Test Organisms				
	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 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				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements 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 Presentation 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 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 Template:	Miscellaneous			
HERO ID:	3072185			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	83-73-2; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	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 Details	Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration 9.2±1.5 ug/L; pH 7.0±0.2; dissolved oxygen 1.5±0.2 mg/L; chemical oxygen demand 207.2±18.5 mg/L; suspended solids 39.9±13.9 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; 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±2.4°C; pH 6.9±0.2; dissolved oxygen 1.3±0.2 mg/L; chemical oxygen demand 64.1±5.8 (69%) mg/L; suspended solids 10.1±1.8 (75%) mg/L; ammonium nitrogen 17.8±2.0 (17%) mg/L; total phosphate 2.6±0.2 (14%)			
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; ±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 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 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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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 Template:	Miscellaneous			
HERO ID:	3072185			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 4: Test Organisms				
	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 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				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements 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 Presentation 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 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 Template:	Miscellaneous			
HERO ID:	3072185			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	83-73-2; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	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 Details	Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration 9.2±1.5 ug/L; pH 7.0±0.2; dissolved oxygen 1.5±0.2 mg/L; chemical oxygen demand 207.2±18.5 mg/L; suspended solids 39.9±13.9 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°C before analysis (within 48 h).			
Test Temperature	29.2±3.3°C			
Results Details	39% DBP removal; effluent parameters (% removal): temp 28.1±3.2°C; pH 6.9±0.3; dissolved oxygen 0.9±0.2 mg/L; chemical oxygen demand 58.8±17.4 (72%) mg/L; suspended solids 13.6±2.8 (66%) mg/L; ammonium nitrogen 12.3±2.3 (42%) mg/L; total phosphate 1.9±0.5 (36%)			
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; ±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 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 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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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 Template:	Miscellaneous			
HERO ID:	3072185			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 4: Test Organisms				
	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 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				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements 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 Presentation 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 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 Template:	Miscellaneous			
HERO ID:	3072185			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	83-73-2; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	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 Details	Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration 9.2±1.5 ug/L; pH 7.0±0.2; dissolved oxygen 1.5±0.2 mg/L; chemical oxygen demand 207.2±18.5 mg/L; suspended solids 39.9±13.9 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; zeolite (20–40 mm, porosity of 58%); 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	23% DBP removal; effluent parameters (% removal): temp 28.1±2.8°C; pH 6.8±0.4; dissolved oxygen 1.2±0.2 mg/L; chemical oxygen demand 82.1±12.9 (60%) mg/L; suspended solids 11.1±1.4 (72%) mg/L; ammonium nitrogen 7.1±0.4 (67%) mg/L; total phosphate 1.7±0.2 (45%)			
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; ±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 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 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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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 Template:	Miscellaneous			
HERO ID:	3072185			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 4: Test Organisms				
	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 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				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements 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 Presentation 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 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 Template:	Miscellaneous			
HERO ID:	3072185			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	83-73-2; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	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 Details	Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration 9.2±1.5 ug/L; pH 7.0±0.2; dissolved oxygen 1.5±0.2 mg/L; chemical oxygen demand 207.2±18.5 mg/L; suspended solids 39.9±13.9 mg/L; ammonium nitrogen 21.4±2.2 mg/L; total phosphate 2.9±0.1; parameters were measured and recorded.			
System Type Design	surface-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	42% DBP removal; effluent parameters (% removal): temp 27.7±2.6°C; pH 7.1±0.2; dissolved oxygen 0.7±0.1 mg/L; chemical oxygen demand 69.2±23.6 (67%) mg/L; suspended solids 8.3±0.3 (79%) mg/L; ammonium nitrogen 18.9±2.7 (11%) mg/L; total phosphate 2.3±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%; 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) 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 Substance	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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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 Template:	Miscellaneous			
HERO ID:	3072185			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 4: Test Organisms				
	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 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				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements 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 Presentation 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 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 Template:	Miscellaneous			
HERO ID:	3072185			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	83-73-2; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	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 Details	Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration 9.2±1.5 ug/L; pH 7.0±0.2; dissolved oxygen 1.5±0.2 mg/L; chemical oxygen demand 207.2±18.5 mg/L; suspended solids 39.9±13.9 mg/L; ammonium nitrogen 21.4±2.2 mg/L; total phosphate 2.9±0.1; 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±2.3°C; pH 7.0±0.3; dissolved oxygen 0.9±0.2 mg/L; chemical oxygen demand 67.6±11.2 (67%) mg/L; suspended solids 8.7±1.2 (78%) mg/L; ammonium nitrogen 13.5±0.9 (37%) mg/L; total phosphate 1.7±0.2 (44%)			
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; ±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 Substance	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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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 Template:	Miscellaneous			
HERO ID:	3072185			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 4: Test Organisms				
	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 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				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements 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 Presentation 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 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 Template:	Miscellaneous			
HERO ID:	3072185			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	83-73-2; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	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 Details	Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration 9.2±1.5 ug/L; pH 7.0±0.2; dissolved oxygen 1.5±0.2 mg/L; chemical oxygen demand 207.2±18.5 mg/L; suspended solids 39.9±13.9 mg/L; ammonium nitrogen 21.4±2.2 mg/L; total phosphate 2.9±0.1; parameters were measured and recorded.			
System Type Design	surface-flow; vesuvianite (25–45 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±2.9°C; pH 7.1±0.3; dissolved oxygen 0.8±0.2 mg/L; chemical oxygen demand 81.9±13.0 (60%) mg/L; suspended solids 9.2±0.8 (77%) mg/L; ammonium nitrogen 9.6±2.3 (55%) mg/L; total phosphate 2.4±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 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) 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 Substance				
	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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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 Template:	Miscellaneous			
HERO ID:	3072185			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 4: Test Organisms				
	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 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				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements 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 Presentation 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 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 Template:	Miscellaneous			
HERO ID:	3072185			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	83-73-2; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	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±1.5 ug/L; pH 7.0±0.2; dissolved oxygen 1.5±0.2 mg/L; chemical oxygen demand 207.2±18.5 mg/L; suspended solids 39.9±13.9 mg/L; ammonium nitrogen 21.4±2.2 mg/L; total phosphate 2.9±0.1; 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±3.8°C; pH 7.2±0.2; dissolved oxygen 0.3±0.2 mg/L; chemical oxygen demand 68.2±13.1 (67%) mg/L; suspended solids 8.6±0.5 (78%) mg/L; ammonium nitrogen 15.8±1.8 (26%) mg/L; total phosphate 1.7±0.2 (45%)			
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; ±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 Substance	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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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 Template:	Miscellaneous			
HERO ID:	3072185			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 4: Test Organisms				
	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 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				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements 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 Presentation 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 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 Template:	Miscellaneous			
HERO ID:	3072185			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	83-73-2; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	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 Details	Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration 9.2±1.5 ug/L; pH 7.0±0.2; dissolved oxygen 1.5±0.2 mg/L; chemical oxygen demand 207.2±18.5 mg/L; suspended solids 39.9±13.9 mg/L; ammonium nitrogen 21.4±2.2 mg/L; total phosphate 2.9±0.1; parameters were measured and recorded.			
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 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	43% DBP removal; effluent parameters (% removal): temp 28.7±2.7°C; pH 6.9±0.2; dissolved oxygen 0.5±0.1 mg/L; chemical oxygen demand 50.2±16.4 (76%) mg/L; suspended solids 7.9±1.0 (80%) mg/L; ammonium nitrogen 13.2±3.3 (38%) mg/L; total phosphate 2.5±0.4 (15%)			
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; ±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 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 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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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 Template:	Miscellaneous			
HERO ID:	3072185			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 4: Test Organisms				
	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 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				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements 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 Presentation 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 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 Template:	Miscellaneous			
HERO ID:	3072185			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	83-73-2; Di-n-butyl phthalate			
Confidentiality, Type, Guideline	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 Details	Constructed wetlands testing water flow type, substrate, plant type and hydraulic loading rate. 19 month stabilization period.; Initial DBP concentration 9.2±1.5 ug/L; pH 7.0±0.2; dissolved oxygen 1.5±0.2 mg/L; chemical oxygen demand 207.2±18.5 mg/L; suspended solids 39.9±13.9 mg/L; ammonium nitrogen 21.4±2.2 mg/L; total phosphate 2.9±0.1; parameters were measured and recorded.			
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±2.6°C; pH 6.8±0.2; dissolved oxygen 0.4±0.2 mg/L; chemical oxygen demand 62.1±14.3 (70%) mg/L; suspended solids 9.1±0.1 (77%) mg/L; ammonium nitrogen 17.8±1.7 (17%) mg/L; total phosphate 1.4±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; ±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 Substance	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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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 Template:	Miscellaneous			
HERO ID:	3072185			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 4: Test Organisms				
	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 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				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements 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 Presentation 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 Quality Determination		High		

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 Bight). Atmospheric Environment 39(18):3209-3219.
OECD Harmonized Template:	Miscellaneous
HERO ID:	102787

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; Dibutyl phthalate
Confidentiality, Type, Guideline	None; Calculation; Calculation
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Augsburg, Germany; NR; NR
Test Method Details, Test Condition Details, and Test Consistency Details	Two-film resistance model based upon relative air-sea concentrations; Detection limit = 3.4 ng/m ³ ; Matrix spikes, breakthrough check, field blanks, method detection limits applied
System Type Design	Water samples from 4.5 m depth; air samples at 9 m above sea surface
Sampling Frequency and 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/m ³ (vapor) with 0.05 to 0.06 ng/m ³ particulate; salinity: 27.8-34.9‰; 3.8-6.3°C; Particle-associated fraction: 46%
Reference Substance and Reference Substance Results	Not reported; Not applicable

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.
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 Conditions	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.

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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 Bight). Atmospheric Environment 39(18):3209-3219.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	102787			
Domain	Metric	EVALUATION		Comments
		Rating		
	Metric 8:	System Type and Design	High	The system type and design were not capable of appropriately maintaining 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	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 and no notable uncertainties or limitations were expected to influence results.
Domain 6: Confounding/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 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 Presentation and Analysis				
	Metric 15:	Data Reporting	High	The target chemical concentration, extraction efficiency, percent recovery, or mass balance were reported and analytical methods used were suitable for detection and quantification 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 Results	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.
Overall Quality Determination			High	

Study Citation:	Yang, C., Wang, C. C., Chen, C. H. (2013). Di-n-butyl phthalate removal using mixed cultures in batch reactors. International Biodeterioration & Biodegradation 85:587-591.
OECD Harmonized Template:	Miscellaneous
HERO ID:	2219896

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; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Test Method Details, Test Condition Details, and Test Consistency Details	Actual wastewater from the influent of an industrial WWTP in Taiwan; artificial wastewater: phosphate buffered medium; 200-1000 mg/L DBP shaken in serum bottles with an acclimated mixed culture originating from activated sludge (20 ml) and agricultural soils (5g); Final volume of each serum bottle was 10 ml after adding 200-1000 mg/L DBP; tubes were sealed and shaken at 180 rpm in the dark
System Type Design	50 ml serum bottles
Sampling Frequency and Sampling Details	pH, OD600, ammonia, and DBP concentrations were measured periodically.; Not reported
Test Temperature	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 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. 185h, 1000 mg/L = ca. 85% after ca. 220h
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, Statistics, 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 mg/L*h (0.0480/h), 400 mg/L = 4.4 mg/L*h (0.0311/h), 600 mg/L = 5.4 mg/L*h (0.0276/h), 800 mg/L = 5.2 mg/L*h (0.0151/h), 1000 mg/L = 6.6 mg/L*h (0.0120/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)

EVALUATION				
Domain	Metric	Rating	Comments	
Domain 1: Test Substance	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:	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 Conditions	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.

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Study Citation:	Yang, C., Wang, C. C., Chen, C. H. (2013). Di-n-butyl phthalate removal using mixed cultures in batch reactors. International Biodeterioration & Biodegradation 85:587-591.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	2219896			
		EVALUATION		
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 4: Test Organisms				
	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.
Domain 5: Outcome Assessment				
	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/Variable Control				
	Metric 13:	Confounding Variables	N/A	No confounding variables noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this type of study.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	Data reporting was appropriate for this type of study.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods and kinetic calculations were appropriate for this type of study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this type of study.
Overall Quality Determination		High		

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 Template:	Miscellaneous
HERO ID:	1249569

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; NR
Radiolabel, Source, State, Purity	NR; Chem Service (West Chester, PA, USA); NR; 99.0% Notes: DBP
Test Method Details, Test Condition Details, and Test Consistency Details	Biodegradation using sewage sludge from Neihu municipal sewage treatment plant in Taipei in a bioreactor (sludge concentrations of DBP and DEHP = 0.11 and 0.29 mg/kg, respectively; bacterial count = 4.5×10^7 CFU/g); autoclaved sterile control included.; Aerobic conditions in the 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	bioreactor aerated with stone diffusers at the bottom of the reactor with 12-gauge galvanized wire
Sampling Frequency and Sampling Details	approx. every 2 days; Air dried sludge samples were dispersed in double deionized water and filtered.
Test Temperature	30°C
Results Details	0% remaining test substance after 10 days (not detected).
Analytical Method and Analytical Details	GC-ECD; extraction recovery 96%; detection limit = 1.0 µg/L
Transformation Products, Statistics, and Kinetics	not reported; $r=0.94-0.98$; $k_1=0.43-2.3$ days ⁻¹ (first-order kinetics); $t_{1/2}=0.3-1.6$ days in sludge
Reference Substance and Reference Substance Results	sterile sludge; 92.1-97.5% remaining test substance after 10 days, DBP concentrations of 50, 100, and 250 mg/kg

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	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	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 Organisms				

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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 Template:	Miscellaneous			
HERO ID:	1249569			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 9:	Outcome Assessment Methodology	Medium	The test inoculum source was reported and the test inoculum is routinely used for similar 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 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:	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 Presentation 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 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 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 Quality Determination		High		

Study Citation:	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.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5433212			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; di-n-butyl phthalate			
Confidentiality, Type, Guideline	None; monitoring study; monitoring study			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; environmental; NR; NR Notes: DnBP/DBP			
Test Method Details, Test Condition Details, and Test Consistency Details	seawater and sediment samples were collected from the Bohai Sea (BS) and the Yellow Sea (YS); Not Reported; Not Reported			
System Type Design	not applicable			
Sampling Frequency and Sampling 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, Statistics, 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 Reference Substance Results	not applicable; not applicable			
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	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 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, information may be available in supplemental documentation.
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to this study type.
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Study Citation:	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.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5433212			
Domain	Metric	EVALUATION		Comments
		Rating		
	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	Uninformative	Not enough 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 analyzed.
Domain 6: Confounding/Variable Control	Metric 13:	Confounding Variables	Medium	the differences in the measurements and statistical techniques were considered or accounted 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 Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis	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 Kinetic Calculations	Medium	kinetic calculations were not clearly described.
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 Quality Determination**NEED TO FIX**

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 laboratory study. Journal of Hazardous Materials 149(3):657-665.
OECD Harmonized Template:	Miscellaneous
HERO ID:	6821981

EXTRACTION	
Parameter	Data
CASRN and Test Material	84-74-2; DBP
Confidentiality, Type, Guideline	None; Experimental; Experimental
Solvent, Reactivity, Storage, Stability	Wastewater; NR; NR; NA
Radiolabel, Source, State, Purity	NA; Combined domestic wastewater from toilets, restaurants, and wastewater from a gas station; Liquid; NA
Test Method Details, Test Condition Details, and Test Consistency Details	Combined wastewater collected from domestic sources and a gas station was treated by shallow soil infiltration system to determine removal efficiency of selected substances. Eight runs were conducted between February to August 2006.; Trench characteristics: % soil; % coal slag; % dewatered sludge; % packing material; hydraulic conductivity (cm/s)T1: 70%; 20%; 10%; NA; 0.059 ; T2, 3, 4: 60%; 20%; 10%; 10% wood chips, anthracite, or zeolite; 1.023, 0.445, or 0.099; Wastewater characteristicsCOD: 53 - 180 mg/LpH 7.06 - 7.18Suspended solids: 34 - 65 mg/LTotal nitrogen: 8.5 - 21.4 mg/LAmmonia nitrogen: 4.9 - 14.0 mg/LTotal phosphorus: 0 - 7.7 mg/LBOD5/COD (5-d average): 0.6
System Type Design	Influent, pre-aeration tank, sedimentation tank, 4 parallel infiltration trenches (15 m ² in area, 0.5 m total depth and 0.3 m effective depth) with different solids, effluent
Sampling Frequency and Sampling 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 Analytical Details	GC/MS, VF-5ms capillary column (30 m x 0.25 mm, 0.25 µm); Samples extracted 3x with methylene dichloride
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 Substance	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 Conditions	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.

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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 laboratory study. Journal of Hazardous Materials 149(3):657-665.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	6821981			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 8:	System Type and Design	N/A	Not applicable.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	Not applicable.
	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 removal efficiency.
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and were samples were collected at an appropriate frequency.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	The results from all runs were not reported. The two reported runs may not be representative.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Not applicable.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	The analytical method was appropriate; limits of detection and recovery were not reported. Raw data was 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	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.
Overall Quality Determination		High		

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 Environmental Science 34(4):1357-1362.			
OECD Harmonized Template:	Miscellaneous			
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; NR			
Radiolabel, Source, State, Purity	None; NR; NR; NR Notes: DBP			
Test Method Details, Test Condition Details, and Test Consistency Details	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 Sampling Details	not decipherable; not decipherable			
Test Temperature	not decipherable			
Results Details	74.7-95.0% removal			
Analytical Method and Analytical Details	GC/MS; not decipherable			
Transformation Products, Statistics, and Kinetics	not applicable; not decipherable; removal mechanism should be biodegradation and volatilization.			
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	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	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 Conditions	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.
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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 Environmental Science 34(4):1357-1362.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	1936015			
Domain	Metric	EVALUATION		Comments
		Rating		
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	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 limited English translation., and could have a substantial impact on study results
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Low	Can not decipher if confounding variables were addressed due to limited English translation.
	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	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 Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination		Low		

Study Citation:	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 (<i>Oryza sativa</i> L.) and crude enzyme extracts. Science of the Total Environment 668:1117-1127.
OECD Harmonized Template:	Miscellaneous
HERO ID:	5166465

EXTRACTION	
Parameter	Data
CASRN and Test Material	Not Reported; di-n-butyl phthalate
Confidentiality, Type, Guideline	No; experimental; experimental
Solvent, Reactivity, Storage, Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, 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	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)
System Type Design	Hydroponic experiments run in a greenhouse located at Jinan University in Guangzhou, South China
Sampling Frequency and Sampling 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 rinsed with methanol to remove DBP adsorption on root surface; samples freeze dried and ground.
Test Temperature	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 Fengyousimiao.
Analytical Method and Analytical 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, 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 Reference Substance Results	not reported; not reported

EVALUATION			
Domain	Metric	Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High
	Metric 2:	Test Substance Purity	High
			The test substance was identified definitively. The source and purity of the test substance were reported.
Domain 2: Test Design	Metric 3:	Study Controls	High
			Appropriate controls were reported.

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Study Citation:	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.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5166465			
EVALUATION				
Domain		Metric	Rating	Comments
	Metric 4:	Test Substance Stability	Medium	The test substance preparation was reported; further details were omitted.
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 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.
Domain 4: Test Organisms				
	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.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	the outcome assessment methodology addressed or reported the intended outcomes of interest.
	Metric 12:	Test Substance Purity	High	Sampling methods addressed the outcome of interest.
Domain 6: Confounding/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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Some details were reported in supplemental data, not readily available.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods 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.
Overall Quality Determination			High	

Study Citation:	Zhu, T. K., Du, P. P., Zeng, L. J., Zhao, H. M., Li, Y. W., Mo, C. H., Cai, Q. Y., Lü, H. (2019). Variation in metabolism and degradation of di-n-butyl phthalate (DBP) by high- and low-DBP accumulating cultivars of rice (<i>Oryza sativa</i> L.) and crude enzyme extracts. Science of the Total Environment 668:1117-1127.
OECD Harmonized Template:	Miscellaneous
HERO ID:	5164627

EXTRACTION	
Parameter	Data
CASRN and Test Material	Not Reported; di-n-butyl phthalate
Confidentiality, Type, Guideline	No; experimental; experimental
Solvent, Reactivity, Storage, Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, 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	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)
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Transformation Products, 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 Reference Substance Results	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	High	The source and purity of the test substance were reported.
Domain 2: Test Design	Metric 3:	Study Controls	High	Appropriate controls were reported.

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Study Citation:	Zhu, T. K., Du, P. P., Zeng, L. J., Zhao, H. M., Li, Y. W., Mo, C. H., Cai, Q. Y., Lü, H. (2019). Variation in metabolism and degradation of di-n-butyl phthalate (DBP) by high- and low-DBP accumulating cultivars of rice (<i>Oryza sativa</i> L.) and crude enzyme extracts. Science of the Total Environment 668:1117-1127.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	5164627			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	Medium	The test substance preparation was reported; further details were omitted.
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 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.
Domain 4: Test Organisms				
	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.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	the outcome assessment methodology addressed or reported the intended outcomes of interest.
	Metric 12:	Test Substance Purity	High	Sampling methods addressed the outcome of interest.
Domain 6: Confounding/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 Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Some details were reported in supplemental data, not readily available.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods 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.
Overall Quality Determination		High		

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):1535-1541.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	1599853			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; dibutyl phthalate			
Confidentiality, Type, Guideline	None; monitoring; monitoring			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR			
Test Method Details, Test Condition Details, and Test Consistency Details	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 areas in northeastern China.			
Test Temperature	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	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 Conditions	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.
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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):1535-1541.			
OECD Harmonized Template:	Miscellaneous			
HERO ID:	1599853			
Domain		Metric	EVALUATION Rating	Comments
	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	Foreign language so details are not extractable.
	Metric 12:	Test Substance Purity	Uninformative	Foreign language so details are not extractable.
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	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 Quality Determination			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
C	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 _{oa}	Octanol-Air partition coefficient
K _{oc}	Organic carbon-water partition coefficient
K _{ow}	Octanol-Water partition coefficient
L/d	Liters per day
LOD	Limit of Detection
LOQ	Limit of Quantification
lw	Lipid weight
M	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 ³	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

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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	Quantitative 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
µg/L or µg/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