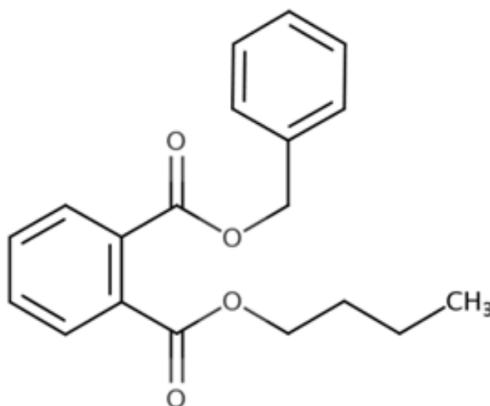


**Data Quality Evaluation and Data Extraction Information for  
Environmental Fate and Transport for  
Butyl benzyl phthalate (BBP)  
(1,2-Benzenedicarboxylic acid, 1-butyl 2-(phenylmethyl) ester)**

**Systematic Review Support Document for the Risk Evaluation**

**CASRN: 85-68-7**



*December 2025*

---

This supplemental file contains information regarding the data extraction and evaluation results for data sources that were considered for the *Risk Evaluation for Butyl Benzyl Phthalate (BBP)* 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* (also referred to as the '2021 Draft Systematic Review Protocol'). The systematic review steps are further described in the *Risk Evaluation for Butyl Benzyl Phthalate (BBP) – Systematic Review Protocol*. 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.

# Table of Contents

HERO ID	Reference	Page
<b>Photolysis in Air</b>		
2325052	Lovato, M. E., Gilliard, M. B., Cassano, A. E., Martín, C. A. (2015). Kinetics of the degradation of n-butyl benzyl phthalate using O <sub>3</sub> /UV, direct photolysis, direct ozonation and UV effects. <i>Environmental Science and Pollution Research</i> 22(2):909-917.	10
5348332	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. <i>The Handbook of Environmental Chemistry book series HEC</i> 3Q:85-124.	12
<b>Hydrolysis</b>		
680048	Lertsirisopon, R., Soda, S., Sei, K., Ike, M. (2009). Abiotic degradation of four phthalic acid esters in aqueous phase under natural sunlight irradiation. <i>Journal of Environmental Sciences</i> 21(3):285-290.	14
<b>Photolysis in Water</b>		
1359273	Indus Bio Test Labs Inc, (1983). Sunlight photodegradation screening of aqueous solutions of selected organic chemicals.	16
680048	Lertsirisopon, R., Soda, S., Sei, K., Ike, M. (2009). Abiotic degradation of four phthalic acid esters in aqueous phase under natural sunlight irradiation. <i>Journal of Environmental Sciences</i> 21(3):285-290.	18
1359278	Monsanto, (1983). Sunlight photolysis screening of selected chemicals.	20
5348405	Monsanto, (1979). Sunlight photodegradation screening of aqueous solutions of selected organic chemicals.	22
5348332	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. <i>The Handbook of Environmental Chemistry book series HEC</i> 3Q:85-124.	26
193726	Xu, X. R., Li, S. X., Li, X. Y., Gu, J. D., Chen, F., Li, X. Z., Li, H. B. (2009). Degradation of n-butyl benzyl phthalate using TiO <sub>2</sub> /UV. <i>Journal of Hazardous Materials</i> 164(2-3):527-532.	28
1936008	Zeng, Y., Wu, Q., Fan, H., Lv, S. (2012). Degradation of low concentration Benzyl butyl phthalate (μg.L <sup>-1</sup> range) in the tail water of municipal sewage plant by UV/H <sub>2</sub> O <sub>2</sub> . <i>Advanced Materials Research</i> 518-523:3131-3137.	31
<b>Photolysis in Soil</b>		
<b>Biodegradation in Water</b>		
5353168	Adams, W. J., Renaudette, W. J., Doi, J. D., Stepro, M. G., Tucker, M. W., Kimerle, R. A., Franklin, B. B., Nabholz, J. V. (1988). Experimental freshwater microcosm biodegradability study of butyl benzyl phthalate. 11:19-40.	33
1359380	Adams, W. J., Saeger, V. W. (1993). Utility of laboratory microcosms for predicting the environmental fate of chemicals: A comparison of two microcosm designs with butyl benzyl phthalate. <i>ASTM (American Society for Testing and Materials) Special Technical Publications</i> , 1216 2:103-119.	35
679312	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. <i>Environmental Toxicology and Chemistry</i> 20(8):1798-1804.	42
2816600	Desai, S., Govind, R., Tabak, H. (1990). Determination of monod kinetics of toxic compounds by respirometry for structure biodegradability relationships. <i>ACS Symposium Series</i> 422:142-156.	45
3688160	EC/HC, (2015). State of the science report: Phthalate substance grouping: Medium-chain phthalate esters: Chemical Abstracts Service Registry Numbers: 84-61-7; 84-64-0; 84-69-5; 523-31-9; 5334-09-8; 16883-83-3; 27215-22-1; 27987-25-3; 68515-40-2; 71888-89-6.	48
2121719	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).	64

<b>5490395</b>	Fujita, M., Ike, M., Ishigaki, T., Sei, K., Jeong, J. S., Makihiro, N., Lertsirisopon, R. (2005). Biodegradation of Three Phthalic Acid Esters by Microorganisms from Aquatic Environment. <i>Nihon Mizushori Seibutsu Gakkaishi</i> 41(4):193-201.	<b>76</b>
<b>789568</b>	Jonsson, S., Ejlerstsson, J., Svensson, B. H. (2003). Transformation of phthalates in young landfill cells. <i>Waste Management</i> 23(7):641-651.	<b>80</b>
<b>6320824</b>	Michigan State University, (1981). Development of test for determining anaerobic biodegradation potential.	<b>82</b>
<b>1359186</b>	Monsanto, (1986). Experimental freshwater microcosm biodegradability study on benzyl butyl phthalate with attachments and cover letter dated 030288.	<b>84</b>
<b>1359190</b>	Monsanto, (1987). Letter from Monsanto Company to USEPA regarding information on the primary and ultimate biodegradation rates for benzyl butyl phthalate with attachment.	<b>86</b>
<b>1359201</b>	Monsanto, (1983). Study on Related Parameters in the Shake Flask Co2 Evolution Biodegradation Test (es-82-ss-89).	<b>90</b>
<b>1359214</b>	Monsanto, (1986). Experimental freshwater microcosm biodegradability study of butyl benzyl phthalate.	<b>94</b>
<b>1359241</b>	Monsanto, (1983). Study of selected parameters in the CO2 evolution biodegradation screening test with cover letters.	<b>96</b>
<b>1359249</b>	Monsanto, (1983). Santicizer 160 (S-160) natural water die-away toxicity test with <i>Daphnia magna</i> .	<b>98</b>
<b>1359270</b>	Monsanto, (1979). Evaluation of activated sludge oxygen and river die-away tests as routine biodegradation screening tests.	<b>101</b>
<b>1359271</b>	Monsanto, (1983). The environmental fate of Santicizer 160 (butyl benzyl phthalate) in lake water-sediment microcosms.	<b>105</b>
<b>1359272</b>	Monsanto, (1983). Santicizer 160 river die-away biodegradation rate study.	<b>107</b>
<b>1359282</b>	Monsanto, (1978). Anaerobic biodegradation procedure.	<b>109</b>
<b>790484</b>	Monsanto, (1976). Biodegradability of plasticizers.	<b>111</b>
<b>5492430</b>	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. <i>Environmental Technology</i> 11(11):1015.	<b>117</b>
<b>5348332</b>	Peterson, D. R., Staples, C. A. (2003). Degradation of phthalate esters in the environment. <i>The Handbook of Environmental Chemistry book series HEC</i> 3Q:85-124.	<b>121</b>
<b>1316257</b>	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. <i>Chemosphere</i> 18(11-12):2161-2176.	<b>131</b>
<b>5490812</b>	Shelton, Boyd, S. A., Tledje, J. M. (1984). Anaerobic biodegradation of phthalic acid esters in sludge. <i>Environmental Science &amp; Technology</i> 18(2):93-97.	<b>134</b>
<b>1316198</b>	SRC, (1983). Exhibit I shake flask biodegradation of 14 commercial phthalate esters.	<b>136</b>
<b>9861</b>	Tabak, H. H., Quave, S. A., Mashni, C. I., Barth, E. F. (1981). Biodegradability studies with organic priority pollutant compounds. <i>Journal of Water Pollution Control Federation</i> 53(10):1503-1518.	<b>140</b>
<b>789301</b>	Taylor, B. F., Curry, R. W., Corcoran, E. F. (1981). Potential for biodegradation of phthalic Acid esters in marine regions. <i>Applied and Environmental Microbiology</i> 42(4):590-595.	<b>142</b>
<b>1316130</b>	Ziougou, K., Kirk P, W. W., Lester, J. N. (1989). Behavior of phthalic acid esters during batch anaerobic digestion of sludge. <i>Water Research</i> 23(6):743-748.	<b>144</b>
<b>Biodegradation in Sediment</b>		
<b>1322110</b>	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. <i>Fresenius Environmental Bulletin</i> 20(1):93-100.	<b>146</b>
<b>675049</b>	Chang, B. V., Wang, T. H., Yuan, S. Y. (2007). Biodegradation of four phthalate esters in sludge. <i>Chemosphere</i> 69(7):1116-1123.	<b>148</b>

<b>2121719</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).	<b>150</b>
<b>1315944</b>	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.	<b>154</b>
<b>1339546</b>	Kickham, P., Otton, S. V., Moore, M. M., Ikonou, M. G., Gobas, F. A. P., C (2012). Relationship between biodegradation and sorption of phthalate esters and their metabolites in natural sediments. <i>Environmental Toxicology and Chemistry</i> 31(8):1730-1737.	<b>156</b>
<b>675274</b>	Lertsrisopon, 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.	<b>158</b>
<b>1316233</b>	Michigan State University, (1981). Final report to Battelle Columbus Laboratories and EPA-OTS, subcontract no. T-6419 (7197)-033, 100179 - 093081. Development of test for determining anaerobic biodegradation potential.	<b>164</b>
<b>1359192</b>	Monsanto, (1986). Letter from Monsanto Company to USEPA concerning the concentration of benzyl butyl phthalate in the sediment samples of the microcosm report with attachments.	<b>166</b>
<b>5492430</b>	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. <i>Environmental Technology</i> 11(11):1015.	<b>169</b>
<b>1316112</b>	Parker, W. J., Monteith, H. D., Melcer, H. (1994). Estimation of anaerobic biodegradation rates for toxic organic compounds in municipal sludge digestion. <i>Water Research</i> 28(8):1779-1789.	<b>173</b>
<b>1316084</b>	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. <i>Journal of Water Pollution Control Federation</i> 55(10):1286-1296.	<b>175</b>
<b>675442</b>	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. <i>Chemosphere</i> 69(4):644-654.	<b>177</b>
<b>675522</b>	Xu, X. R., Li, H. B., Gu, J. D. (2006). Elucidation of n-butyl benzyl phthalate biodegradation using high-performance liquid chromatography and gas chromatography-mass spectrometry. <i>Analytical and Bioanalytical Chemistry</i> 386(2):370-375.	<b>179</b>
<b>5541359</b>	Yuan, S. Y., Liu, C., Liao, C. S., Chang, B. V. (2002). Occurrence and microbial degradation of phthalate esters in Taiwan river sediments. <i>Chemosphere</i> 49(10):1295-1299.	<b>181</b>
<b>Biodegradation in Soil</b>		
<b>2121719</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).	<b>185</b>
<b>Aquatic Bioconcentration</b>		
<b>18050</b>	Barrows, M. E., Petrocelli, S. R., Macek, K. J., Carroll, J. J. (1980). Bioconcentration and elimination of selected water pollutants by bluegill sunfish ( <i>Lepomis macrochirus</i> ). :379-392.	<b>189</b>
<b>1359448</b>	Carr, K. H., Coyle, G. T., Kimerle, R. A. (1997). Bioconcentration of (14C)butyl benzyl phthalate in bluegill sunfish ( <i>Lepomis macrochirus</i> ). <i>Environmental Toxicology and Chemistry</i> 16(10):2200-2203.	<b>191</b>
<b>7325943</b>	Chemical Manufacturers Association, (1984). Phthalate esters panel: Summary report: Environmental studies - Phase I. Generation of environmental fate and effects data base on 14 phthalate esters.	<b>195</b>
<b>657957</b>	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. <i>Journal of Toxicology and Environmental Health</i> 39(1):121-141.	<b>197</b>
<b>1333728</b>	EC/HC, (2000). Canadian environmental protection act priority substances list assessment report: Butylbenzylphthalate.	<b>199</b>
<b>5353181</b>	EC/HC, (2017). Draft screening assessment: Phthalate substance grouping.	<b>201</b>
<b>3661424</b>	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.	<b>203</b>

<b>2121719</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).	<b>205</b>
<b>675207</b>	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. <i>Chemosphere</i> 73(4):539-544.	<b>209</b>
<b>3350326</b>	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. <i>Science of the Total Environment</i> 551-552:438-451.	<b>211</b>
<b>5043593</b>	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. <i>Environment International</i> 126:635-643.	<b>213</b>
<b>789501</b>	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 &amp; Technology</i> 38(7):2011-2020.	<b>215</b>
<b>1359250</b>	Monsanto, (1983). Bioconcentration, distribution and elimination of 14C-labeled santicizer 160 by bluegill ( <i>Lepomis macrochirus</i> ).	<b>218</b>
<b>1249662</b>	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). <i>Archives of Environmental Contamination and Toxicology</i> 63(1):101-113.	<b>220</b>
<b>Terrestrial Bioconcentration</b>		
<b>5041214</b>	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. <i>Water</i> 10(8):999.	<b>222</b>
<b>3350219</b>	LUA, (2016). Phthalate esters in soil, plastic film, and vegetable from greenhouse vegetable production bases in Beijing, China: Concentrations, sources, and risk assessment. <i>Science of the Total Environment</i> 568:1037-1043.	<b>226</b>
<b>1597686</b>	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. <i>Environmental Geochemistry and Health</i> 35(4):465-476.	<b>228</b>
<b>5522239</b>	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. <i>European Journal of Soil Biology</i> 50:76-82.	<b>230</b>
<b>2149497</b>	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. <i>Archives of Environmental Contamination and Toxicology</i> 66(1):41-57.	<b>232</b>
<b>Adsorption and Desorption</b>		
<b>698293</b>	Asakura, H., Matsuto, T., Tanaka, N. (2007). Analytical study of endocrine-disrupting chemicals in leachate treatment process of municipal solid waste (MSW) landfill sites. <i>Environmental Sciences</i> 14(2):79-87.	<b>234</b>
<b>1333362</b>	Bauer, M. J., Herrmann, R. (1998). Dissolved organic carbon as the main carrier of phthalic acid esters in municipal landfill leachates. <i>Waste Management &amp; Research</i> 16(5):446-454.	<b>236</b>
<b>3661424</b>	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.	<b>238</b>
<b>5433399</b>	HEW, (2019). The occurrence, composition and partitioning of phthalate esters (PAEs) in the water-suspended particulate matter (SPM) system of Lake Chaohu, China. <i>Science of the Total Environment</i> 661:285-293.	<b>241</b>
<b>2816369</b>	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. <i>Water Science and Technology</i> 71(2):183-190.	<b>244</b>
<b>3350200</b>	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. <i>Environmental Science and Pollution Research</i> 23(19):19341-19349.	<b>247</b>
<b>807140</b>	Lu, C. (2009). Prediction of environmental properties in water-soil-air systems for phthalates. <i>Bulletin of Environmental Contamination and Toxicology</i> 83(2):168-173.	<b>249</b>

<b>2158899</b>	Mackintosh, C. E., Maldonado, J. A., Ikonomou, M. G., Gobas, F. A. (2006). Sorption of phthalate esters and PCBs in a marine ecosystem. <i>Environmental Science &amp; Technology</i> 40(11):3481-3488.	<b>251</b>
<b>1359277</b>	Monsanto, (1983). Determining soil adsorption coefficients.	<b>253</b>
<b>1316257</b>	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. <i>Chemosphere</i> 18(11-12):2161-2176.	<b>255</b>
<b>1316119</b>	Russell, D. J., McDuffie, B. (1986). Chemodynamic properties of phthalate esters partitioning and soil migration. <i>Chemosphere</i> 15(8):1003-1022.	<b>258</b>
<b>3491242</b>	Sayyad, G., Price, G. W., Sharifi, M., Khosravi, K. (2017). Fate and transport modeling of phthalate esters from biosolid amended soil under corn cultivation. <i>Journal of Hazardous Materials</i> 323(Part A):264-273.	<b>260</b>
<b>680447</b>	Vitali, M., Guidotti, M., Macilenti, G., Cremisini, C. (1997). Phthalate esters in freshwaters as markers of contamination sources: A site study in Italy. <i>Environment International</i> 23(3):337-347.	<b>262</b>
<b>5666279</b>	Wang, H., Li, H., Song, Q., Gao, L., Wang, N. (2017). Adsorption of Phthalates on Municipal Activated Sludge. <i>Journal of Chemistry</i> 2017:1-7.	<b>264</b>
<b>1465055</b>	Xu, X. R., Li, X. (2009). Sorption behaviour of benzyl butyl phthalate on marine sediments: Equilibrium assessments, effects of organic carbon content, temperature and salinity. <i>Marine Chemistry</i> 115(1-2):66-71.	<b>266</b>
<b>2241688</b>	Zheng, X., Zhang, B. T., Teng, Y. (2014). Distribution of phthalate acid esters in lakes of Beijing and its relationship with anthropogenic activities. <i>Science of the Total Environment</i> 476-477:107-113.	<b>268</b>
<b>Miscellaneous</b>		
<b>4829336</b>	Armstrong, D. L., Rice, C. P., Ramirez, M., Torrents, A. (2018). Fate of four phthalate plasticizers under various wastewater treatment processes. <i>Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances &amp; Environmental Engineering</i> 53(12):1075-1082.	<b>271</b>
<b>698293</b>	Asakura, H., Matsuto, T., Tanaka, N. (2007). Analytical study of endocrine-disrupting chemicals in leachate treatment process of municipal solid waste (MSW) landfill sites. <i>Environmental Sciences</i> 14(2):79-87.	<b>273</b>
<b>1322111</b>	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. <i>Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances &amp; Environmental Engineering</i> 47(10):1350-1363.	<b>275</b>
<b>3350322</b>	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. <i>Chemosphere</i> 150:639-649.	<b>277</b>
<b>3022721</b>	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. <i>Journal of Geochemical Exploration</i> 155:56-61.	<b>289</b>
<b>4728634</b>	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. <i>Environmental Science and Pollution Research</i> 25(18):17321-17329.	<b>291</b>
<b>1322127</b>	Ebinghaus, R., Xie, Z. (2006). Occurrence and air/sea-exchange of novel organic pollutants in the marine environment. <i>Journal de Physique IV</i> 139:211-237.	<b>293</b>
<b>7325021</b>	ECHA, (2009). Data on manufacture, import, export, uses and releases of benzyl butyl phthalate (BBP) as well as information on potential alternatives to its use.	<b>295</b>
<b>679494</b>	Fausser, 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. <i>Water Research</i> 37(6):1288-1295.	<b>297</b>
<b>3350189</b>	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. <i>Science of the Total Environment</i> 569-570:661-671.	<b>299</b>
<b>1987643</b>	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. <i>Chemosphere</i> 95:24-32.	<b>301</b>

<b>5432997</b>	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.	<b>303</b>
<b>5490434</b>	Jacobs, L. W., Zabik, M. J. (1983). Importance of sludge-borne organic chemicals for land application programs. :418.	<b>305</b>
<b>5576760</b>	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.	<b>307</b>
<b>1336447</b>	Liu, H.,ui, Liang, Y., Zhang, D.,an, Wang, C., Liang, H., Cai, H. (2010). Impact of MSW landfill on the environmental contamination of phthalate esters. Waste Management 30(8-9):1569-1576.	<b>309</b>
<b>3016266</b>	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.	<b>311</b>
<b>1269556</b>	Midwest Research Institute, (1984). Performance evaluation of full-scale hazardous waste incinerators - Volume I (excutive summary) contract no. 68-02-3177 (43).	<b>313</b>
<b>1359205</b>	Monsanto, (1986). Saflex Landfill Disposal Assessment with Cover Letter dated 072287.	<b>315</b>
<b>1359281</b>	Monsanto, (1983). Phosphate and phthalate ester treatability under laboratory conditions simulating the Delaware river waste treatment plant.	<b>317</b>
<b>1265686</b>	(1982). Fate of Priority Pollutants in Publicly Owned Treatment Works, Volume I.	<b>319</b>
<b>1410400</b>	Oppenheimer, J., Stephenson, R., Burbano, A., Liu, L. (2007). Characterizing the passage of personal care products through wastewater treatment processes. Water Environment Research 79(13):2564-2577.	<b>321</b>
<b>1316097</b>	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.	<b>323</b>
<b>5348332</b>	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.	<b>325</b>
<b>675388</b>	Rakkestad, K. E., Dye, C. J., Yttri, K. E., Holme, J. A., Hongslo, J. K., Schwarze, P. E., Becher, R. (2007). Phthalate levels in Norwegian indoor air related to particle size fraction. Journal of Environmental Monitoring 9(12):1419-1425.	<b>327</b>
<b>675406</b>	Roslev, P., Vorkamp, K., Aarup, J., Frederiksen, K., Nielsen, P. H. (2007). Degradation of phthalate esters in an activated sludge wastewater treatment plant. Water Research 41(5):969-976.	<b>329</b>
<b>4728386</b>	Salaudeen, T., Okoh, O., Agunbiade, F., Okoh, A. (2018). Fate and impact of phthalates in activated sludge treated municipal wastewater on the water bodies in the Eastern Cape, South Africa. Chemosphere 203(Elsevier):336-344.	<b>332</b>
<b>5490290</b>	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.	<b>334</b>
<b>4728707</b>	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.	<b>340</b>
<b>5919305</b>	Stephenson, R. (2007). Fate of pharmaceuticals and personal care products through wastewater treatment processes.	<b>342</b>
<b>2519056</b>	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.	<b>344</b>
<b>789658</b>	Vikelsøe, J., Thomsen, M., Carlsen, L. (2002). Phthalates and nonylphenols in profiles of differently dressed soils. Science of the Total Environment 296(1-3):105-116.	<b>346</b>
<b>5442818</b>	Wu, J., Ma, T., Zhou, Z., Yu, N.,a, He, Z., Li, B., Shi, Y., Ma, D. (2019). Occurrence and fate of phthalate esters in wastewater treatment plants in Qingdao, China. Human and Ecological Risk Assessment 25(6):1547-1563.	<b>348</b>



<b>4728656</b>	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. <i>Journal of Environmental Sciences</i> 61(Elsevier):49-58.	<b>350</b>
<b>3072185</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. <i>Chemical Engineering Journal</i> 275:198-205.	<b>352</b>
<b>102787</b>	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). <i>Atmospheric Environment</i> 39(18):3209-3219.	<b>376</b>
<b>698257</b>	Zeng, F., Cui, K., Xie, Z., Liu, M., Li, Y., Lin, Y., Zeng, Z., Li, F. (2008). Occurrence of phthalate esters in water and sediment of urban lakes in a subtropical city, Guangzhou, South China. <i>Environment International</i> 34(3):372-380.	<b>378</b>
<b>5433212</b>	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.	<b>380</b>
<b>698282</b>	Zheng, Z., He, P., Shao, L., Lee, D. (2007). Phthalic acid esters in dissolved fractions of landfill leachates. <i>Water Research</i> 41(20):4696-4702.	<b>382</b>
<b>Other Properties</b>		
<b>List of Abbreviations and Acronyms for Data Quality Evaluation and Extraction Tables</b>		<b>384</b>

<b>Study Citation:</b>	Lovato, M. E., Gilliard, M. B., Cassano, A. E., Martín, C. A. (2015). Kinetics of the degradation of n-butyl benzyl phthalate using O3/UV, direct photolysis, direct ozonation and UV effects. Environmental Science and Pollution Research 22(2):909-917.			
<b>OECD Harmonized Template:</b>	Photolysis in Air			
<b>HERO ID:</b>	2325052			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; Benzyl butyl phthalate			
Confidentiality, Type, Guideline	None; Experimental; other: Direct photolysis			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	Not Reported; NR; NR; NR			
Duration and Test Temperature	Not reported; 20°C			
Light Source, Intensity, and additional light details	low pressure Hg germicidal lamps; The corresponding incident radiation intensities at the reactor windows (Gw) were determined by actinometry (4.81, 1.94, and 1.08×10−8 Einstein cm−2 s−1).; Three different radiation levels were used: two Heraeus NNI 40/20 lamps (λ=253.7 nm, 40W each) and the same lamps with one or two pairs of neutral filters.			
Source Wavelength Lower and Upper	Not reported; 253.7 nm			
Test Details and Control	Cylindrical photoreactor made from Teflon with two flat windows on each end made of quartz; Not reported			
Initial Concentration, Reference Compound	2.64±0.16 ppm; 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 Type Results, Indirect Rate Constant Lower and Upper	Not reported; Not reported; Not reported			
Method Details Results and Products	BBP concentration was measured using HPLC-UV; Not reported			
Details Results	30 minutes; Half-life			
Parameter Value and Parameter Results	30 minutes; Half-life			
Reference Substance Results, Percent Degradation Results and Standard	Not reported; Not reported; Not reported			
Deviation Results	Not reported; Not reported; Mineralization was evaluated by means oftotal organic carbon (TOC) measurements			
Results Remarks, Sample time Results, Results Details	Not reported; Not reported; Mineralization was evaluated by means oftotal organic carbon (TOC) measurements			
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	Low	The test substance source and purity were not reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	Low	Controls were not reported.
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation, and storage conditions were not reported.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Lovato, M. E., Gilliard, M. B., Cassano, A. E., Martín, C. A. (2015). Kinetics of the degradation of n-butyl benzyl phthalate using O3/UV, direct photolysis, direct ozonation and UV effects. Environmental Science and Pollution Research 22(2):909-917.			
<b>OECD Harmonized Template:</b>	Photolysis in Air			
<b>HERO ID:</b>	2325052			
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 details were omitted regarding testing conditions; however, this was not likely to have influenced the results.
	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 the outcomes 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 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	Low	The analytical MDL and percent recovery or mass balance were not reported.
	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	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quality Determination</b>			<b>Medium</b>	

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Photolysis in Air			
<b>HERO ID:</b>	5348332			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-68-7; BBP			
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; 11.049X10-12 cm3/molecule/s; Not Reported			
Method Details Results and Products	NR; NR			
Details Results				
Parameter Value and Parameter Results	18.0 hours (0.75 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				
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Photolysis in Air			
<b>HERO ID:</b>	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)

<b>Study Citation:</b>	Lertsirisopon, R., Soda, S., Sei, K., Ike, M. (2009). Abiotic degradation of four phthalic acid esters in aqueous phase under natural sunlight irradiation. Journal of Environmental Sciences 21(3):285-290.
<b>OECD Harmonized Template:</b>	Hydrolysis
<b>HERO ID:</b>	680048

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; 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; Tokyo Chemical, 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	0.44 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; 1.6E-3 /d (pH 5), 1.2E-3 /d (pH 6), 4.6E-4 /d (pH 7), 1.5E-3 /d (pH 8), 1.8E-3 /d (pH 9); 440 d (pH 5), 600 d (pH 6), 1500 d (pH 7), 480 d (pH 8), 390 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 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	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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Lertsirisopon, R., Soda, S., Sei, K., Ike, M. (2009). Abiotic degradation of four phthalic acid esters in aqueous phase under natural sunlight irradiation. Journal of Environmental Sciences 21(3):285-290.			
<b>OECD Harmonized Template:</b>	Hydrolysis			
<b>HERO ID:</b>	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 temperature fluctuation may have caused the half-life to be different than other previously determined values.
	Metric 18:	QSAR Models	N/A	Not applicable.
<b>Overall Quality Determination</b>			<b>Low</b>	

<b>Study Citation:</b>	Indus Bio Test Labs Inc, (1983). Sunlight photodegradation screening of aqueous solutions of selected organic chemicals.			
<b>OECD Harmonized Template:</b>	Photolysis in Water			
<b>HERO ID:</b>	1359273			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; Butyl benzyl phthalate			
Confidentiality, Type, Guideline	None; Experimental; EPA OTS 796.3700 (Direct Photolysis Rate in Water by Sunlight): Test procedure similar to EPA method for test tube sunlight exposure described in "Draft Guidance for PMN" 9/21/78			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: Commercial product: Sanitizer 160, Lot QA 1510			
Duration and Test Temperature	28 days; Max temp recorded in a test tube with glycerin = 120F; Average max air temp = 86F, average min air temp = 63°F			
Light Source, Intensity, and additional light details	Sunlight exposure took place between August 29 and September 26, 1978; Not reported; During the time period there was ca. 252 hrs of sunshine (71% of maximum possible)			
Source Wavelength Lower and Upper	Not reported; Not reported			
Test Details and Control	Sealed glass test tubes or petri dishes with aqueous solutions of test material were exposed to sunlight; duplicate tubes sampled on day 0.25, 2, 10 and 28; 0.1% acetonitrile to inhibit bacterial growth; day/night temp cycling may have caused loss to volatilization in caps were not tightly sealed.; Dark controls wrapped in foil			
Initial Concentration and Reference Compound	1.080 mg/L; Dark control			
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; Not reported			
Method Details Results and Products	Not reported; Not reported			
Details Results				
Parameter Value and Parameter Results	Test substance concentration; Not reported			
Reference Compound, Reference	Dark control; Non-photodegradation loss = 7%; 43%; Not reported			
Substance Results, Percent Degradation Results and Standard Deviation Results				
Results Remarks, Sample time Results, Results Details	28 day Photodegradation (Dark control - sunlight)x100/(Dark control); Test tube: Day 0, 0.25, 2, 10, 28; Petri dish: Day 0, 0.25, 2, 10; Test tube 1 (mean of two replicates): Day 0 = 0.832, day 0.25 = 0.833 mg/L; day 2 = 0.829 mg/L; day 10 = 0.895; day 28 = 0.442 mg/L; Petri dish 1: Day 0.25 = 0.972 mg/L; day 2 = 0.950 mg/L; day 10 = 1.067; Petri dish 2: Day 0.25 = 0.963 mg/L; day 2 = 0.997 mg/L; day 10 = 0.962			
EVALUATION				
Domain	Metric	Rating	Comments	
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High	The test substance identified by chemical name.
	Metric 2:	Test Substance Purity	Medium	The test substance source was reported; purity not reported.
Domain 2: Test Design	Metric 3:	Study Controls	High	Control was included and appropriate.
	Metric 4:	Test Substance Stability	Low	The test substance stability, homogeneity, preparation, and storage conditions were not reported and these factors may influence the test substance.
Continued on next page ...				



...continued from previous page

<b>Study Citation:</b>	Indus Bio Test Labs Inc, (1983). Sunlight photodegradation screening of aqueous solutions of selected organic chemicals.			
<b>OECD Harmonized Template:</b>	Photolysis in Water			
<b>HERO ID:</b>	1359273			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Low	The test method did not control for other loss processes.
	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				
	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	Details were omitted; however, the lack of data is not likely to hinder the interpretation of the 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	High	Loss due to other process were 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	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	N/A	The metric is not applicable to this study type.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	The study results may be limited; loss due to other processes were not quantified and volatilization may account for loss test material.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quality Determination</b>		<b>Medium</b>		

<b>Study Citation:</b>	Lertsirisopon, R., Soda, S., Sei, K., Ike, M. (2009). Abiotic degradation of four phthalic acid esters in aqueous phase under natural sunlight irradiation. Journal of Environmental Sciences 21(3):285-290.
<b>OECD Harmonized Template:</b>	Photolysis in Water
<b>HERO ID:</b>	680048

Parameter	Data
CASRN and Test Material	85-68-7; 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; Tokyo Chemical, 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 <sup>2</sup> (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	0.44 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; 58 d (pH 5), 75 d (pH 6), 480 d (pH 7), 100 d (pH 8), 68 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: 1.2E-2 /d (pH 5), 9.3E-3 /d (pH 6), 1.5E-3 /d (pH 7), 6.9E-3 /d (pH 8), 1.0E-2 /d (pH 9) Dark control half-life: 440 d (pH 5), 600 d (pH 6), 1500 d (pH 7), 480 d (pH 8), 390 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Lertsirisopon, R., Soda, S., Sei, K., Ike, M. (2009). Abiotic degradation of four phthalic acid esters in aqueous phase under natural sunlight irradiation. Journal of Environmental Sciences 21(3):285-290.			
<b>OECD Harmonized Template:</b>	Photolysis in Water			
<b>HERO ID:</b>	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 and were in agreement with results from a previous study under similar conditions but the test substance was tested above the water solubility.
	Metric 18:	QSAR Models	N/A	Not applicable.
<b>Overall Quality Determination</b>			<b>Low</b>	

<b>Study Citation:</b>	Monsanto, (1983). Sunlight photolysis screening of selected chemicals.
<b>OECD Harmonized Template:</b>	Photolysis in Water
<b>HERO ID:</b>	1359278

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl phthalate
Confidentiality, Type, Guideline	None; Experimental; EPA OTS 796.3700 (Direct Photolysis Rate in Water by Sunlight): Test procedure followed that described in "TSCA Premanufacturing Testing of Chemical Substances" 3/16/79 and ASTM Draft No 5 "Proposed Standard Practice for Conducting Photolysis Tests"
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	No; Monsanto; NR; NR Notes: Commercial product: Sanitizer 160, Lot No QI 28501
Duration and Test Temperature	28 days; Average maximum air temperature = 85°F, average min air temp = 65F; test tube with glycerin temperature = 120F
Light Source, Intensity, and additional light details	Sunlight exposure took place between August 20 and September 17, 1979; Not reported; During the time period there was ca. 251 hrs of sunshine (70% of maximum possible)
Source Wavelength Lower and Upper	Not reported; Not reported
Test Details and Control	Sealed (tightly stoppered) quartz test tubes with aqueous solutions of test material were exposed to sunlight; Dark controls wrapped in black polyethylene film
Initial Concentration and Reference Compound	1.051 mg/L; Dark control
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; Not reported
Method Details Results and Products	Not reported; Not reported
Details Results	
Parameter Value and Parameter Results	Test substance concentration; Not reported
Reference Compound, Reference	Dark control; Non-photodegradation loss = 0%; 1%; Not reported
Substance Results, Percent Degradation Results and Standard Deviation Results	
Results Remarks, Sample time Results, Results Details	28 day Photodegradation (Dark control - sunlight)x100/(Dark control); Test tube: Day 2, 4, 10 ,17, 28; Test tube 1 (mean of two replicates): Day 0 = 0.998, day 2 = 1.117 mg/L; day 4 = 0.974 mg/L; day 10 = 1.022; day 17 = 1.014; day 28 = 1.043

EVALUATION				
Domain	Metric		Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High	The test substance identified by chemical name.
	Metric 2:	Test Substance Purity	Medium	The test substance source was reported; purity not reported.
Domain 2: Test Design	Metric 3:	Study Controls	High	Control was included and appropriate.
	Metric 4:	Test Substance Stability	Low	The test substance stability, homogeneity, preparation, and storage conditions were not reported and these factors may influence the test substance.
Domain 3: Test Conditions				

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>		Monsanto, (1983). Sunlight photolysis screening of selected chemicals.		
<b>OECD Harmonized Template:</b>		Photolysis in Water		
<b>HERO ID:</b>		1359278		
		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	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	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	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	Loss due to other process were 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	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	Medium	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Monsanto, (1979). Sunlight photodegradation screening of aqueous solutions of selected organic chemicals.			
<b>OECD Harmonized Template:</b>	Photolysis in Water			
<b>HERO ID:</b>	5348405			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; Benzyl butyl phthalate			
Confidentiality, Type, Guideline	None; Experimental; EPA OTS 796.3700 (Direct Photolysis Rate in Water by Sunlight): Similar to 9/21/73 EPA "Draft Guidance for Premanufacture Notification"			
Solvent, Reactivity, Storage, Stability	0.1 g/ 100 mL stock in acetonitrile; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: Santicizer 160			
Duration and Test Temperature	28 days; Average min: 63°F, average max: 86°F			
Light Source, Intensity, and additional light details	Sunlight; Not reported; August 29 to September 26, 1978, approximately 252 hours of sunshine			
Source Wavelength Lower and Upper	Not reported; Not reported			
Test Details and Control	Borosilicate glass test tubes containing 8 mL spiked purified water solution sealed with Teflon-faced screw caps, held on an elevated plywood platform positioned at 60 degree angle to the horizon.; Dark controls wrapped in aluminum foil			
Initial Concentration and Reference Compound	Not reported Not reported; Dark control			
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; Not Reported			
Method Details Results and Products	EC/GC; Samples extracted with hexane; Not reported			
Details Results	Not Reported; Not Reported			
Parameter Value and Parameter Results	Dark control; Not reported; Not reported; Not reported			
Reference Compound, Reference Substance Results, Percent Degradation Results and Standard Deviation Results	significant decrease in concentration attributed to photodegradation; NR; No additional details			
Results Remarks, Sample time Results, Results Details				
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	Test substance source and purity were not reported.
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Dark controls were included, the results of which were not reported.
	Metric 4:	Test Substance Stability	Medium	Test substance preparation was reported, storage was not reported.
Domain 3: Test Conditions	Metric 5:	Test Method Suitability	High	The test method was appropriate for the test substance.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1979). Sunlight photodegradation screening of aqueous solutions of selected organic chemicals.			
<b>OECD Harmonized Template:</b>	Photolysis in Water			
<b>HERO ID:</b>	5348405			
Domain	Metric	EVALUATION		Comments
	Metric 6:	Testing Conditions	Medium	No water characteristics reported, limited light conditions were reported but as natural sunlight was used, this information may be located elsewhere.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples and 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 photolytic loss.
	Metric 12:	Test Substance Purity	Medium	Sampling methods were described appropriately, frequency was not reported.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Uninformative	The data tables are missing from this document, only the intext qualitative statement of the results was available.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Not applicable.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	The analytical method was reported and appropriate; extraction efficiency, limits of detection, or data were not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	Statistical or kinetic calculations were not applied.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Uninformative	The study was missing the data table and only reported qualitatively that photolytic loss occurred.
	Metric 18:	QSAR Models	N/A	Not applicable.

**Overall Quality Determination****Uninformative**

<b>Study Citation:</b>	Monsanto, (1979). Sunlight photodegradation screening of aqueous solutions of selected organic chemicals.
<b>OECD Harmonized Template:</b>	Photolysis in Water
<b>HERO ID:</b>	5348405

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Benzyl butyl phthalate
Confidentiality, Type, Guideline	None; Experimental; EPA OTS 796.3700 (Direct Photolysis Rate in Water by Sunlight): Similar to 9/21/73 EPA "Draft Guidance for Premanufacture Notification"
Solvent, Reactivity, Storage, Stability	0.1 g/ 100 mL stock in acetonitrile; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: Santicizer 160
Duration and Test Temperature	28 days; Average min: 63°F, average max: 86°F
Light Source, Intensity, and additional light details	Sunlight; Not reported; Placed on the building roof, August 29 to September 26, 1978, approximately 252 hours of sunshine
Source Wavelength Lower and Upper	Not reported; Not reported
Test Details and Control	The 15 x 100 mm petri dishes containing 85 mL test solution covered with quartz discs 4.5" x 0.0625", held together by a spring brass clip.; Dark controls wrapped in aluminum foil
Initial Concentration and Reference Compound	1.080 mg/L; Dark control
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; Not Reported
Method Details Results and Products	EC/GC; Samples extracted with hexane; Not reported
Details Results	
Parameter Value and Parameter Results	Not Reported; Not Reported
Reference Compound, Reference	Dark control; 0.991 mg/L / 0.25 day, 1.041 mg/L / 2 day, 0.989 mg/L / 10 day; Not reported; Not reported
Substance Results, Percent Degradation Results and Standard Deviation Results	
Results Remarks, Sample time Results, Results Details	Not Reported; NR; Replicate 1: 0.972 mg/L / 0.25 day, 0.950 mg/L / 2 day, 1.067 mg/L / 10 day; replicate 2: 0.963 mg/L / 0.25 day, 0.997 mg/L / 2 day, 0.962 mg/L / 10 day

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	Test substance source and purity were not reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Dark controls were included.
	Metric 4:	Test Substance Stability	Medium	Test substance preparation was reported, storage was not 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	No water characteristics reported, limited light conditions were reported but as natural sunlight was used, this information may be located elsewhere.

Continued on next page ...



...continued from previous page

<b>Study Citation:</b>	Monsanto, (1979). Sunlight photodegradation screening of aqueous solutions of selected organic chemicals.			
<b>OECD Harmonized Template:</b>	Photolysis in Water			
<b>HERO ID:</b>	5348405			
Domain	Metric	EVALUATION		Comments
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples and 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 photolytic loss.
	Metric 12:	Test Substance Purity	Medium	Sampling methods were described appropriately, frequency was not reported.
Domain 6: Confounding/Variable Control	Metric 13:	Confounding Variables	Medium	The authors report the method as unsatisfactory as many samples were lost and volatilization loss could not be excluded. However, since they do not specify what chemical and due to results from the dark controls remaining constant, it is unlikely that volatilization was an issue for BBP.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Not applicable.
Domain 7: Data Presentation and Analysis	Metric 15:	Data Reporting	Low	The analytical method was reported and appropriate; extraction efficiency and limits of detection were not reported. Raw data was reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	Statistical or kinetic calculations were not applied.
Domain 8: Other	Metric 17:	Verification or Plausibility of Results	Medium	The study authors reported the method as unsatisfactory due to volatilization issues but do not specify for which chemical. Due to BBP having a low vapor pressure at the experimental temperatures, the study results seem reasonable.
	Metric 18:	QSAR Models	N/A	Not applicable.
<b>Overall Quality Determination</b>		<b>Uninformative</b>		

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Photolysis in Water
<b>HERO ID:</b>	5348332

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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	28 days; not reported
Light Source, Intensity, and additional light details	natural sunlight; Not Reported; Not Reported
Source Wavelength Lower and Upper	Not Reported; Not Reported
Test Details and Control	Not Reported; 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; Not Reported
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	5% degradation; 28 days; 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Photolysis in Water			
<b>HERO ID:</b>	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	Low	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	The target chemical and transformation product(s) concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, the data may be available in the cited reference.
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis or kinetic calculations were not conducted or were not described clearly; however, this information may be available in the cited reference.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quality Determination</b>			<b>Low</b>	

\* Related References: cites: HERO ID: 1337260: Gledhill WE et al. (1980) Environ Sci Technol 14:301 (not in distiller)

<b>Study Citation:</b>	Xu, X. R., Li, S. X., Li, X. Y., Gu, J. D., Chen, F., Li, X. Z., Li, H. B. (2009). Degradation of n-butyl benzyl phthalate using TiO <sub>2</sub> /UV. Journal of Hazardous Materials 164(2-3):527-532.
<b>OECD Harmonized Template:</b>	Photolysis in Water
<b>HERO ID:</b>	193726

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl phthalate
Confidentiality, Type, Guideline	None; Experimental; EPA OTS 796.3700 (Direct Photolysis Rate in Water by Sunlight): Photocatalytic degradation test in a laboratory-scale photoreactor
Solvent, Reactivity, Storage, Stability	doubly distilled water; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Sigma, St. Louis, MO; NR; analytical grade
Duration and Test Temperature	3 hours; 24±1°C
Light Source, Intensity, and additional light details	16 350 nm blue black fluorescent lamps; 30 W sq m; Peaks at 350, 375 420 nm
Source Wavelength Lower and Upper	290 nm; 420 nm
Test Details and Control	Suspensions equilibrated in the dark for 30 min; quartz cylinder; stirred; TiO <sub>2</sub> concentration 2 g/L; pH 7.0; also addition of co-existing anions; In darkness
Initial Concentration and Reference Compound	0.5; 1.0; 1.5; 2.0; 2.5 mg/L; Not applicable
Substance Wavelength Lower and Upper	Not Reported; Not Reported
Direct Quantum Yield Results, Direct Half Life by Loss Lower and Upper	Not applicable; 33.36; 77.89
Indirect Rate Constant Lower and Upper	47.85; 112.4 1/k(obs)
Method Details Results and Products	2.0 mg/L TiO <sub>2</sub> , pH 7.0; Not applicable
Details Results	
Parameter Value and Parameter Results	Not applicable; Minutes
Reference Compound, Reference	Not applicable; Not applicable; 0; Not applicable
Substance Results, Percent Degradation Results and Standard Deviation Results	
Results Remarks, Sample time Results, Results Details	No degradation in dark control for 10 days. No degradation at 350 nm irradiation indicating BBP extremely inert and difficult to degrade. Some anions enhanced degradation, some restrained.; 3 hours; Degradation efficiency BBP increased with increasing addition of TiO <sub>2</sub> up to 2.0 g/L due to increase in total surface area of the catalyst; pH increase from 3.0-7.0 increased degradation and then remained constant.

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 The source or purity of the test substance was reported or the test substance identity.
Domain 2: Test Design			
	Metric 3:	Study Controls	High A concurrent negative control, or blank group, toxicity control, and positive control were included.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Xu, X. R., Li, S. X., Li, X. Y., Gu, J. D., Chen, F., Li, X. Z., Li, H. B. (2009). Degradation of n-butyl benzyl phthalate using TiO <sub>2</sub> /UV. Journal of Hazardous Materials 164(2-3):527-532.			
<b>OECD Harmonized Template:</b>	Photolysis in Water			
<b>HERO ID:</b>	193726			
Domain		Metric	EVALUATION	
			Rating	Comments
	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	High	The test method was suitable for the test substance and the target chemical was tested at concentrations below its aqueous solubility.
	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.
	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 outcomes of interest.
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcomes 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	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 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 transformation product(s) and for degradation studies, 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.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	Reported values were consistent with related physical chemical properties.

Continued on next page ...

...continued from previous page

Study Citation:	Xu, X. R., Li, S. X., Li, X. Y., Gu, J. D., Chen, F., Li, X. Z., Li, H. B. (2009). Degradation of n-butyl benzyl phthalate using TiO2/UV. Journal of Hazardous Materials 164(2-3):527-532.
OECD Harmonized Template:	Photolysis in Water
HERO ID:	193726

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

Overall Quality Determination	High
-------------------------------	------

<b>Study Citation:</b>	Zeng, Y., Wu, Q.,i, Fan, H., Lv, S. (2012). Degradation of low concentration Benzyl butyl phthalate (mu g.L-1 range) in the tail water of municipal sewage plant by UV/H2O2. Advanced Materials Research 518-523:3131-3137.
<b>OECD Harmonized Template:</b>	Photolysis in Water
<b>HERO ID:</b>	1936008

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Benzyl butyl phthalate
Confidentiality, Type, Guideline	None; Experimental; EPA OTS 796.3700 (Direct Photolysis Rate in Water by Sunlight): Photodegradation using a cylindrical batch reactor
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; 99% Notes: BBP
Duration and Test Temperature	30 minutes; Not reported
Light Source, Intensity, and additional light details	UV lamp; 24.26 uw/cm2; power: 8W
Source Wavelength Lower and Upper	253.7 nm; Not reported
Test Details and Control	Degradation of BBP with UV alone and with the addition of H2O2.; Not reported
Initial Concentration and Reference Compound	50 µg/L; 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; Not reported
Method Details Results and Products	SPE used for water sample analysis; concentrations measured via GC with FID; Not reported
Details Results	
Parameter Value and Parameter Results	Not Reported; Test material concentration
Reference Compound, Reference	Not reported; Not reported; 41%; Not reported
Substance Results, Percent Degradation Results and Standard Deviation Results	
Results Remarks, Sample time Results, Results Details	Degradation based on loss of test material; 30 minutes; Not Reported

EVALUATION				
Domain	Metric		Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High	The test substance identified by chemical name.
	Metric 2:	Test Substance Purity	High	The test substance purity was reported.
Domain 2: Test Design	Metric 3:	Study Controls	Low	The study did not report concurrent control groups and this omission may significantly impact study results.
	Metric 4:	Test Substance Stability	Low	The test substance stability, homogeneity, preparation, and storage conditions were not reported and these factors may influence the test substance.
Domain 3: Test Conditions				

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Zeng, Y., Wu, Q.,i, Fan, H., Lv, S. (2012). Degradation of low concentration Benzyl butyl phthalate (mu g.L-1 range) in the tail water of municipal sewage plant by UV/H2O2. Advanced Materials Research 518-523:3131-3137.			
<b>OECD Harmonized Template:</b>	Photolysis in Water			
<b>HERO ID:</b>	1936008			
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	Some test conditions were not reported.
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to this study type.
	Metric 8:	System Type and Design	Medium	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	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	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 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	Low	Mass balance was not measured or reported; analytical details were omitted.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical analysis or kinetic calculations were not conducted or were not described clearly.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	Due to limited information, evaluation of the reasonableness of the study results was not possible.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quality Determination</b>			<b>Medium</b>	



<b>Study Citation:</b>	Adams, W. J., Renaudette, W. J., Doi, J. D., Stepro, M. G., Tucker, M. W., Kimerle, R. A., Franklin, B. B., Nabholz, J. V. (1988). Experimental freshwater microcosm biodegradability study of butyl benzyl phthalate. 11:19-40.
<b>OECD Harmonized Template:</b>	Biodegradation in Water
<b>HERO ID:</b>	5353168

Parameter	Data
CASRN and Test Material	85-68-7; BBP
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Laboratory microcosm test
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	14C-BBP uniformly ring labeled on the phthalate ring.; NR; NR; Unlabeled 98.6%; labeled 95% or more.
Blank and Control	Sterile control; not applicable
Oxygen and Inoculum	aerobic; natural water / sediment: freshwater: River water and sediment were collected from Illinois River in April-May 1986
Duration, Parameter, System, and Sampling Frequency	30 days; radiochem. meas.: 15 microcosms each containing 45 L river water and 1 undisturbed river sediment core; day 11, 22, 31
pH Adjusted and pH	Not Reported; 7.6-8.6
Concentration	10 - 100 µg/L
Composition and Test Temperature	not applicable; 19.4-21.9°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	not reported; Air sparged through the microcosms at 20 mL/min.; no; 13 hour light/11 hour dark
Results Details Method, Results per Degradation Parameter, and	HPLC/MS: LOD for HPLC-hexane extraction, 2.74 µg/L; LSC: LSC-14C aqueous measurement, 1.2 µg/L; LSC-14C hexane extraction, 1.2 µg/L.; % ultimate degradation; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	10.4; ±1.8%; varied; not applicable
Results Remarks and Results Details	Metabolites of phthalic acid, monobutyl and mono benzyl phthalate were found; Parent BBP concentrations rapidly declined to 50% by Day 3, to 1-20% by Day 5, and remained low (<1.0-4.3 µg/L) during the remainder of the study. While the sterile control contained 80% or more BBP.
Results Mean Total Recovery and Results per Recovery	Not Reported; total 14C recovery was 78.1-89.0%, 72.4-93.7%, 63.1-109% for 10, 100 and (control) 100µg/L, 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 test substance identity and purity were verified by analytical means.
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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Adams, W. J., Renaudette, W. J., Doi, J. D., Steprou, M. G., Tucker, M. W., Kimerle, R. A., Franklin, B. B., Nabholz, J. V. (1988). Experimental freshwater microcosm biodegradability study of butyl benzyl phthalate. 11:19-40.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	5353168			
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	High	The system type and design were appropriate.
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 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 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.
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**

<b>Study Citation:</b>	Adams, W. J., Saeger, V. W. (1993). Utility of laboratory microcosms for predicting the environmental fate of chemicals: A comparison of two microcosm designs with butyl benzyl phthalate. ASTM (American Society for Testing and Materials) Special Technical Publications, 1216 2:103-119.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359380			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Butyl benzyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Static single-dose ecocore lake microcosm operated under both oxygen rich and oxygen poor conditions			
Solvent, Reactivity, Storage, Stability	Acetone (lake microcosm) DMF (River microcosm); NR; NR; NR			
Radiolabel, Source, State, Purity	Yes; ring labeled 14C BBP (uniformly ring-labeled on the phthalate moiety); NR; NR; NR			
Blank and Control	yes; Not reported			
Oxygen and Inoculum	aerobic/anaerobic; not specified: Not reported			
Duration, Parameter, System, and Sampling Frequency	28 days; CO2 evolution: Glass cylinders with gas manifold, organic resin trap and CO2 scrubbers; Water analyzed on days 3, 7, 14, 21, and 28; sediments were not analyzed			
pH Adjusted and pH	Not Reported; Not reported			
Concentration	1 mg/L			
Composition and Test Temperature	water and sediments from freshwater lake near St Louis MO; Not reported			
CEC, Water Aeration Dilution, Continuous Dark-ness, and Other Design	Not reported; Not reported; yes; 4 conditions set to simulate light, darkness, oxygen			
Results Details Method, Results per Degradation Parameter, and	Not reported; %CO2 evolution; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Re-sults Sample Time, and Results Reference Sub-stance Compartments	50% (aerobic) 42-65% (anaerobic); Not reported; day 28; Not reported			
Results Remarks and Results Details	Studies indicated (1) under both oxygen rich and poor conditions, and light and dark, BBP was rapidly lost from water (2) transformation processes rather than sorption to sediments are prevalent in BBP loss from water.; Mean half-life (CO2 evolution) in active chambers=3.1 days; mean half-life from water=4.4 days; primary degradation half-life 1.4 days; calculated by computer using least squared analysis			
Results Mean Total Recovery and Results per Re-covery	Not reported; less than 0.2% of BBP was recovered in sediments; mass balance was not reported for this experiment but greater than 78% in subsequent studies.			
<b>EVALUATION</b>				
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	Concurrent controls were appropriate.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Adams, W. J., Saeger, V. W. (1993). Utility of laboratory microcosms for predicting the environmental fate of chemicals: A comparison of two microcosm designs with butyl benzyl phthalate. ASTM (American Society for Testing and Materials) Special Technical Publications, 1216 2:103-119.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359380			
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 omissions in testing conditions (e.g., temperature, sediment characteristics); however, sufficient data were reported to determine that the deviations and omissions were not likely to have a substantial impact on study results.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.
	Metric 8:	System Type and Design	High	The system type and design were appropriate.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Low	No details were reported microbial activity was not specified.
	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 and reported the intended outcome of interest.
	Metric 12:	Test Substance Purity	Medium	Details regarding sampling methods of the outcome were not fully reported.
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 method and detail were not reported. Sediment analysis was not conducted, adsorption was not accounted for; insufficient evidence presented to confirm that parent compound disappearance was not likely due to another process.
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis or kinetic calculations were not conducted or not reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	The study results are reasonable with the exception that sediment analysis was not conducted.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.

Continued on next page ...

...continued from previous page

Study Citation:	Adams, W. J., Saeger, V. W. (1993). Utility of laboratory microcosms for predicting the environmental fate of chemicals: A comparison of two microcosm designs with butyl benzyl phthalate. ASTM (American Society for Testing and Materials) Special Technical Publications, 1216 2:103-119.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	1359380

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		Medium	

<b>Study Citation:</b>	Adams, W. J., Saeger, V. W. (1993). Utility of laboratory microcosms for predicting the environmental fate of chemicals: A comparison of two microcosm designs with butyl benzyl phthalate. ASTM (American Society for Testing and Materials) Special Technical Publications, 1216 2:103-119.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359380			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; Butyl benzyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Static ecocore lake microcosm			
Solvent, Reactivity, Storage, Stability	Acetone (lake microcosm) DMF (River microcosm); NR; NR; NR			
Radiolabel, Source, State, Purity	Yes; ring labeled 14C BBP (uniformly ring-labeled on the phthalate moiety); NR; NR; NR			
Blank and Control	yes; Not reported			
Oxygen and Inoculum	aerobic/anaerobic; not specified: Not reported			
Duration, Parameter, System, and Sampling Frequency	41 days; CO2 evolution: Glass cylinders with gas manifold, organic resin trap and CO2 scrubbers; Water analyzed on days 0, 3, 5, 10, 14, 21, and 28; sediments were analyzed for intact BBP and radioactivity on Day 41			
pH Adjusted and pH	Not Reported; pH adjusted to 3 with HCl on day 28 to day 41 to release CO2			
Concentration	12 - 993 ppb			
Composition and Test Temperature	water and sediments from freshwater lake near St Louis MO; Not reported			
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; Test concentrations: 12, 53, 112, 512, 993 ug/L			
Results Details Method, Results per Degradation Parameter, and	Not reported; Loss of 14C from water; CO2 evolution; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	90-95%; 60%; Not reported; day 28; 17% loss from water			
Results Remarks and Results Details	Not Reported; Ultimate biodegradation (mineralization) half-life=13 days; mean half-life from water=4.7 days; calculated by computer using least squared analysis			
Results Mean Total Recovery and Results per Recovery	Not reported; Mass balance: 84.8%			
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	Concurrent controls were appropriate.	
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				
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Adams, W. J., Saeger, V. W. (1993). Utility of laboratory microcosms for predicting the environmental fate of chemicals: A comparison of two microcosm designs with butyl benzyl phthalate. ASTM (American Society for Testing and Materials) Special Technical Publications, 1216 2:103-119.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359380			
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 conditions (e.g., temperature, sediment characteristics); however, sufficient data were reported to determine that the deviations and omissions were not likely to have a substantial impact on study results.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.
	Metric 8:	System Type and Design	High	The system type and design were appropriate.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Low	No details were reported; microbial activity was not specified.
	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 and reported the intended outcome of interest.
	Metric 12:	Test Substance Purity	Medium	Details regarding sampling methods of the outcome were not fully reported.
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 method and detail were not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis or kinetic calculations were not conducted or not reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.
<b>Overall Quality Determination</b>			<b>Medium</b>	

<b>Study Citation:</b>	Adams, W. J., Saeger, V. W. (1993). Utility of laboratory microcosms for predicting the environmental fate of chemicals: A comparison of two microcosm designs with butyl benzyl phthalate. ASTM (American Society for Testing and Materials) Special Technical Publications, 1216 2:103-119.		
<b>OECD Harmonized Template:</b>	Biodegradation in Water		
<b>HERO ID:</b>	1359380		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	85-68-7; Butyl benzyl phthalate		
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Renewal multiple-dose simulated-river microcosm both operated under both oxygen rich and oxygen poor conditions		
Solvent, Reactivity, Storage, Stability	Acetone (lake microcosm) DMF (River microcosm); NR; NR; NR		
Radiolabel, Source, State, Purity	Yes; ring labeled 14C BBP (uniformly ring-labeled on the phthalate moiety); NR; NR; NR		
Blank and Control	yes; Not reported		
Oxygen and Inoculum	aerobic/anaerobic; not specified: Not reported		
Duration, Parameter, System, and Sampling Frequency	31 days; CO2 evolution: 50L glass aquaria with CO2 scrubbers; Water analyzed 3x per week for 4 weeks; sediments were analyzed on each sample day		
pH Adjusted and pH	Not Reported; Not reported		
Concentration	Not Reported		
Composition and Test Temperature	Illinois River water and sediments; 20C		
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; no; 13/11 hours light/dark		
Results Details Method, Results per Degradation Parameter, and	detection limit 20 ug/kg (sediment); %CO2 evolution; Not Reported		
Direct Quantum Yield Results			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	Not reported; Not reported; day 28; Not reported		
Results Remarks and Results Details	Not Reported; Intact BBP half-life=1.0 day		
Results Mean Total Recovery and Results per Recovery	Not reported; Mass balance: 77.0%		
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	Concurrent controls were appropriate.
Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
Domain 3: Test Conditions			
Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
Continued on next page ...			



...continued from previous page

<b>Study Citation:</b>	Adams, W. J., Saeger, V. W. (1993). Utility of laboratory microcosms for predicting the environmental fate of chemicals: A comparison of two microcosm designs with butyl benzyl phthalate. ASTM (American Society for Testing and Materials) Special Technical Publications, 1216 2:103-119.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359380			
Domain		Metric	EVALUATION Rating	Comments
	Metric 6:	Testing Conditions	Medium	There were omissions in testing conditions (e.g., temperature, sediment characteristics); however, sufficient data were reported to determine that the deviations and omissions were not likely to have a substantial impact on study results.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.
	Metric 8:	System Type and Design	High	The system type and design were appropriate.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Low	No details were reported microbial activity was not specified.
	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 and reported the intended outcome of interest.
	Metric 12:	Test Substance Purity	Medium	Details regarding sampling methods of the outcome were not fully reported.
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 method and detail were not reported. Sediment analysis was not conducted, adsorption was not accounted for; insufficient evidence presented to confirm that parent compound disappearance was not likely due to another process.
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis or kinetic calculations were not conducted or not reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.
<b>Overall Quality Determination</b>			<b>Medium</b>	

<b>Study Citation:</b>	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.		
<b>OECD Harmonized Template:</b>	Biodegradation in Water		
<b>HERO ID:</b>	679312		
<b>EXTRACTION</b>			
<b>Parameter</b>	<b>Data</b>		
CASRN and Test Material	85-68-7; butylbenzyl 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; 98% 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	0.036±0.023 - 1.76±0.32 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%		
<b>EVALUATION</b>			
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			
Continued on next page ...			

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	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).

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Biodegradation in Water
<b>HERO ID:</b>	679312

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

**Overall Quality Determination****Uninformative**

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

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl 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 $\mu_m=7.80/\text{day}$ , half saturation constant $K_s=36.25 \text{ mg/L}$ and yield coefficient $Y=0.61$ ; kinetic parameters were estimated directly from the experimental oxygen uptake curves. Estimated Monod parameter=12.8/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.

Continued on next page ...

...continued from previous page

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

Continued on next page ...

...continued from previous page

Study Citation:	Desai, S., Govind, R., Tabak, H. (1990). Determination of monod kinetics of toxic compounds by respirometry for structure biodegradability relationships. ACS Symposium Series 422:142-156.		
OECD Harmonized Template:	Biodegradation in Water		
HERO ID:	2816600		
Domain	Metric	EVALUATION Rating	Comments
Overall Quality Determination		High	

<b>Study Citation:</b>	EC/HC, (2015). State of the science report: Phthalate substance grouping: Medium-chain phthalate esters: Chemical Abstracts Service Registry Numbers: 84-61-7; 84-64-0; 84-69-5; 523-31-9; 5334-09-8;16883-83-3; 27215-22-1; 27987-25-3; 68515-40-2; 71888-89-6.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	3688160			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, EndPoint, Type, Guideline	none; aerobic biodegradability; experimental; other: Thompson-Duthie-Sturm procedure			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR			
Blank and Control	not reported; not reported			
Oxygen and Inoculum	not reported; other:: acclimated bacteria			
Duration, Parameter, System, and Sampling Frequency	27 days; %CO2 evolution: not reported; not reported			
pH Adjusted and pH	not reported; not reported			
Concentration	not reported not reported - not reported 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; %CO2 evolution; not reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	96; not reported; 27 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	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.	
Continued on next page ...				



...continued from previous page

<b>Study Citation:</b>	EC/HC, (2015). State of the science report: Phthalate substance grouping: Medium-chain phthalate esters: Chemical Abstracts Service Registry Numbers: 84-61-7; 84-64-0; 84-69-5; 523-31-9; 5334-09-8;16883-83-3; 27215-22-1; 27987-25-3; 68515-40-2; 71888-89-6.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	3688160			
Domain		Metric	EVALUATION Rating	Comments
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method is suitable.
	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	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.
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 source.
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	Gray literature source citing ECHA profile.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study.

Continued on next page ...

...continued from previous page

Study Citation:	EC/HC, (2015). State of the science report: Phthalate substance grouping: Medium-chain phthalate esters: Chemical Abstracts Service Registry Numbers: 84-61-7; 84-64-0; 84-69-5; 523-31-9; 5334-09-8;16883-83-3; 27215-22-1; 27987-25-3; 68515-40-2; 71888-89-6.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	3688160

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		Medium	

\* Related References: [ECHA] European Chemicals Agency. c2007–2014e. Registered substances database. Search for CAS RN 85-68-7 [BBP]. Helsinki (FI): ECHA. [cited 2014 Sept] Available from: [http://echa.europa.eu/information-on-chemicals/registered-substances?p\\_auth=UvS8Lp1d&p\\_p\\_id=registeredsubstances\\_WAR\\_regsubsportlet&p\\_p\\_lifecycle=1&p\\_p\\_state=normal&p\\_p\\_mode=view&p\\_p\\_col\\_id=column-1&p\\_p\\_col\\_pos=1&p\\_p\\_col\\_count=6&\\_registeredsubstances\\_WAR\\_regsubsportlet\\_javax.portlet.action=registeredSubstancesAction](http://echa.europa.eu/information-on-chemicals/registered-substances?p_auth=UvS8Lp1d&p_p_id=registeredsubstances_WAR_regsubsportlet&p_p_lifecycle=1&p_p_state=normal&p_p_mode=view&p_p_col_id=column-1&p_p_col_pos=1&p_p_col_count=6&_registeredsubstances_WAR_regsubsportlet_javax.portlet.action=registeredSubstancesAction)

<b>Study Citation:</b>	EC/HC, (2015). State of the science report: Phthalate substance grouping: Medium-chain phthalate esters: Chemical Abstracts Service Registry Numbers: 84-61-7; 84-64-0; 84-69-5; 523-31-9; 5334-09-8;16883-83-3; 27215-22-1; 27987-25-3; 68515-40-2; 71888-89-6.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	3688160			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, EndPoint, Type, Guideline	none; aerobic biodegradability; experimental; other: River Die-Away Procedure			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR			
Blank and Control	not reported; not reported			
Oxygen and Inoculum	not reported; activated sludge (adaptation not specified): not reported			
Duration, Parameter, System, and Sampling Frequency	2 days; % degradation: not reported; not reported			
pH Adjusted and pH	not reported; not reported			
Concentration	not reported not reported - not reported 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; % degradation; not reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	50; not reported; 2 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	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				
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	EC/HC, (2015). State of the science report: Phthalate substance grouping: Medium-chain phthalate esters: Chemical Abstracts Service Registry Numbers: 84-61-7; 84-64-0; 84-69-5; 523-31-9; 5334-09-8; 16883-83-3; 27215-22-1; 27987-25-3; 68515-40-2; 71888-89-6.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	3688160			
Domain	Metric	EVALUATION		Comments
	Metric 5:	Test Method Suitability	High	The test method is suitable.
	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	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.
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 source.
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	Gray literature source citing ECHA profile.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study.
<b>Overall Quality Determination</b>		<b>Medium</b>		

---

\* Related References: [ECHA] European Chemicals Agency. c2007–2014e. Registered substances database. Search for CAS RN 85-68-7 [BBP]. Helsinki (FI): ECHA. [cited 2014 Sept] Available from: [http://echa.europa.eu/information-on-chemicals/registered-substances?p\\_auth=UvS8Lp1d&p\\_p\\_id=registeredsubstances\\_WAR\\_regsubsportlet&p\\_p\\_lifecycle=1&p\\_p\\_state=normal&p\\_p\\_mode=view&p\\_p\\_col\\_id=column-1&p\\_p\\_col\\_pos=1&p\\_p\\_col\\_count=6&\\_registeredsubstances\\_WAR\\_regsubsportlet\\_javax.portlet.action=registeredSubstancesAction](http://echa.europa.eu/information-on-chemicals/registered-substances?p_auth=UvS8Lp1d&p_p_id=registeredsubstances_WAR_regsubsportlet&p_p_lifecycle=1&p_p_state=normal&p_p_mode=view&p_p_col_id=column-1&p_p_col_pos=1&p_p_col_count=6&_registeredsubstances_WAR_regsubsportlet_javax.portlet.action=registeredSubstancesAction)

<b>Study Citation:</b>	EC/HC, (2015). State of the science report: Phthalate substance grouping: Medium-chain phthalate esters: Chemical Abstracts Service Registry Numbers: 84-61-7; 84-64-0; 84-69-5; 523-31-9; 5334-09-8;16883-83-3; 27215-22-1; 27987-25-3; 68515-40-2; 71888-89-6.		
<b>OECD Harmonized Template:</b>	Biodegradation in Water		
<b>HERO ID:</b>	3688160		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	85-68-7; BBP		
Confidentiality, EndPoint, Type, Guideline	none; aerobic biodegradability; experimental; other: Analytical Chemistry Method 71-42 (SCAS test)		
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR		
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR		
Blank and Control	not reported; not reported		
Oxygen and Inoculum	not reported; activated sludge (adaptation not specified): not reported		
Duration, Parameter, System, and Sampling Frequency	27 days; %CO2 evolution: not reported; not reported		
pH Adjusted and pH	not reported; not reported		
Concentration	not reported not reported - not reported 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 Direct Quantum Yield Results	not reported; %CO2 evolution; not reported		
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	93; not reported; 27 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	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			
Continued on next page ...			

...continued from previous page

<b>Study Citation:</b>	EC/HC, (2015). State of the science report: Phthalate substance grouping: Medium-chain phthalate esters: Chemical Abstracts Service Registry Numbers: 84-61-7; 84-64-0; 84-69-5; 523-31-9; 5334-09-8; 16883-83-3; 27215-22-1; 27987-25-3; 68515-40-2; 71888-89-6.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	3688160			
Domain	Metric	EVALUATION		Comments
	Metric 5:	Test Method Suitability	High	The test method is suitable.
	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	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.
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 source.
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	Gray literature source citing ECHA profile.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study.
<b>Overall Quality Determination</b>		<b>Medium</b>		

---

\* Related References: [ECHA] European Chemicals Agency. c2007–2014e. Registered substances database. Search for CAS RN 85-68-7 [BBP]. Helsinki (FI): ECHA. [cited 2014 Sept] Available from: [http://echa.europa.eu/information-on-chemicals/registered-substances?p\\_auth=UvS8Lp1d&p\\_p\\_id=registeredsubstances\\_WAR\\_regsubsportlet&p\\_p\\_lifecycle=1&p\\_p\\_state=normal&p\\_p\\_mode=view&p\\_p\\_col\\_id=column-1&p\\_p\\_col\\_pos=1&p\\_p\\_col\\_count=6&\\_registeredsubstances\\_WAR\\_regsubsportlet\\_javax.portlet.action=registeredSubstancesAction](http://echa.europa.eu/information-on-chemicals/registered-substances?p_auth=UvS8Lp1d&p_p_id=registeredsubstances_WAR_regsubsportlet&p_p_lifecycle=1&p_p_state=normal&p_p_mode=view&p_p_col_id=column-1&p_p_col_pos=1&p_p_col_count=6&_registeredsubstances_WAR_regsubsportlet_javax.portlet.action=registeredSubstancesAction)



<b>Study Citation:</b>	EC/HC, (2015). State of the science report: Phthalate substance grouping: Medium-chain phthalate esters: Chemical Abstracts Service Registry Numbers: 84-61-7; 84-64-0; 84-69-5; 523-31-9; 5334-09-8;16883-83-3; 27215-22-1; 27987-25-3; 68515-40-2; 71888-89-6.		
<b>OECD Harmonized Template:</b>	Biodegradation in Water		
<b>HERO ID:</b>	3688160		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	85-68-7; BBP		
Confidentiality, EndPoint, Type, Guideline	none; ready biodegradability; experimental; OECD Guideline 301 C (Ready Biodegradability: Modified MITI Test (I))		
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR		
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR		
Blank and Control	not reported; not reported		
Oxygen and Inoculum	not reported; activated sludge (adaptation not specified): not reported		
Duration, Parameter, System, and Sampling Frequency	14 days; %BOD: not reported; not reported		
pH Adjusted and pH	not reported; not reported		
Concentration	not reported not reported - not reported 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 Direct Quantum Yield Results	not reported; %BOD; not reported		
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	81; not reported; 14 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	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			
Continued on next page ...			

...continued from previous page

<b>Study Citation:</b>	EC/HC, (2015). State of the science report: Phthalate substance grouping: Medium-chain phthalate esters: Chemical Abstracts Service Registry Numbers: 84-61-7; 84-64-0; 84-69-5; 523-31-9; 5334-09-8; 16883-83-3; 27215-22-1; 27987-25-3; 68515-40-2; 71888-89-6.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	3688160			
Domain	Metric	EVALUATION		Comments
	Metric 5:	Test Method Suitability	High	The test method is suitable.
	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	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.
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 source.
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	Gray literature source citing ECHA profile.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study.
<b>Overall Quality Determination</b>		<b>Medium</b>		

---

\* Related References: [ECHA] European Chemicals Agency. c2007–2014e. Registered substances database. Search for CAS RN 85-68-7 [BBP]. Helsinki (FI): ECHA. [cited 2014 Sept] Available from: [http://echa.europa.eu/information-on-chemicals/registered-substances?p\\_auth=UvS8Lp1d&p\\_p\\_id=registeredsubstances\\_WAR\\_regsubsportlet&p\\_p\\_lifecycle=1&p\\_p\\_state=normal&p\\_p\\_mode=view&p\\_p\\_col\\_id=column-1&p\\_p\\_col\\_pos=1&p\\_p\\_col\\_count=6&\\_registeredsubstances\\_WAR\\_regsubsportlet\\_javax.portlet.action=registeredSubstancesAction](http://echa.europa.eu/information-on-chemicals/registered-substances?p_auth=UvS8Lp1d&p_p_id=registeredsubstances_WAR_regsubsportlet&p_p_lifecycle=1&p_p_state=normal&p_p_mode=view&p_p_col_id=column-1&p_p_col_pos=1&p_p_col_count=6&_registeredsubstances_WAR_regsubsportlet_javax.portlet.action=registeredSubstancesAction)

<b>Study Citation:</b>	EC/HC, (2015). State of the science report: Phthalate substance grouping: Medium-chain phthalate esters: Chemical Abstracts Service Registry Numbers: 84-61-7; 84-64-0; 84-69-5; 523-31-9; 5334-09-8;16883-83-3; 27215-22-1; 27987-25-3; 68515-40-2; 71888-89-6.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	3688160			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, EndPoint, Type, Guideline	none; primary biodegradability; experimental; other: Primary biodegradation			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR			
Blank and Control	not reported; not reported			
Oxygen and Inoculum	not reported; activated sludge (adaptation not specified): not reported			
Duration, Parameter, System, and Sampling Frequency	48 hours; % degradation: not reported; not reported			
pH Adjusted and pH	not reported; not reported			
Concentration	not reported not reported - not reported 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 Direct Quantum Yield Results	not reported; % degradation; not reported			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	99; not reported; 48 hours; 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	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				
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	EC/HC, (2015). State of the science report: Phthalate substance grouping: Medium-chain phthalate esters: Chemical Abstracts Service Registry Numbers: 84-61-7; 84-64-0; 84-69-5; 523-31-9; 5334-09-8; 16883-83-3; 27215-22-1; 27987-25-3; 68515-40-2; 71888-89-6.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	3688160			
Domain	Metric	EVALUATION		Comments
	Metric 5:	Test Method Suitability	High	The test method is suitable.
	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	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.
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 source.
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	Gray literature source citing ECHA profile.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study.

**Overall Quality Determination****Medium**

\* Related References: Graham 1973 (HERO ID: 59522, not available at time of extraction)

<b>Study Citation:</b>	EC/HC, (2015). State of the science report: Phthalate substance grouping: Medium-chain phthalate esters: Chemical Abstracts Service Registry Numbers: 84-61-7; 84-64-0; 84-69-5; 523-31-9; 5334-09-8;16883-83-3; 27215-22-1; 27987-25-3; 68515-40-2; 71888-89-6.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	3688160			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, EndPoint, Type, Guideline	none; primary biodegradability; experimental; other: Primary biodegradation			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR			
Blank and Control	not reported; not reported			
Oxygen and Inoculum	not reported; activated sludge (adaptation not specified): not reported			
Duration, Parameter, System, and Sampling Frequency	24 hours; % degradation: not reported; not reported			
pH Adjusted and pH	not reported; not reported			
Concentration	not reported not reported - not reported 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 Direct Quantum Yield Results	not reported; % degradation; not reported			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	93-99; not reported; 24 hours; 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	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				
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	EC/HC, (2015). State of the science report: Phthalate substance grouping: Medium-chain phthalate esters: Chemical Abstracts Service Registry Numbers: 84-61-7; 84-64-0; 84-69-5; 523-31-9; 5334-09-8; 16883-83-3; 27215-22-1; 27987-25-3; 68515-40-2; 71888-89-6.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	3688160			
Domain	Metric	EVALUATION		Comments
	Metric 5:	Test Method Suitability	High	The test method is suitable.
	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	Medium	Details were not reported in this gray literature source; however, further details may be provided in source cited.
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 source.
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	Gray literature source citing ECHA profile.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study.

**Overall Quality Determination****Medium**

\* Related References: Saeger and Tucker 1976 (HERO ID: 790777, not in distiller at time of extraction)

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	2121719			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; Butyl benzyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; ready biodegradability; experimental; OECD Guideline 301 F (Ready Biodegradability: Manometric Respirometry Test): Non-GLP; essentially identical to OECD 301F			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR			
Blank and Control	not reported; not reported			
Oxygen and Inoculum	aerobic; activated sludge (adaptation not specified): from a laboratory scale sewage treatment plant			
Duration, Parameter, System, and Sampling Frequency	28 days; O2 consumption: not reported; not reported			
pH Adjusted and pH Concentration	not reported; not reported = 100 - 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 Direct Quantum Yield Results	not reported; BOD; not reported			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	88%; not reported; 28 days; not reported			
Results Remarks and Results Details	readily biodegradable; 86%/14 days; 88%/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: Metric 2:	Test Substance Identity Test Substance Purity	High Medium	The test substance was identified. Minimal detail reported in this secondary source; additional information may be in primary source cited.
Domain 2: Test Design	Metric 3: Metric 4:	Study Controls Test Substance Stability	Medium Medium	Minimal detail reported in this secondary source; additional information may be in primary source cited. Minimal detail reported in this secondary source; additional information may be in primary source cited.
Continued on next page ...				



...continued from previous page

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	2121719			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable.
	Metric 6:	Testing Conditions	Medium	Minimal detail reported in this secondary source; additional information may be in primary source cited.
	Metric 7:	Testing Consistency	N/A	The metric is not applicable.
	Metric 8:	System Type and Design	Medium	Minimal detail reported in this secondary source; additional information may be in primary source cited.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	The inoculum was appropriate; adaptation was not specified.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable.
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	Minimal detail reported in this secondary source; additional information may be in primary source cited.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Minimal detail reported in this secondary source; additional information may be in primary source cited.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Minimal detail reported in this secondary source; additional information may be in primary source cited.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Minimal detail reported in this secondary source; additional information may be in primary source cited.
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.
<b>Overall Quality Determination</b>		<b>Medium</b>		

\* Related References: Source cited: Bayer AG (1989) MITI (ABBAU) - Test nach. Dr. Painter.

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	2121719			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, EndPoint, Type, Guideline	Not Reported; other; 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; sewage, domestic, non-adapted: municipal sewage sludge (10% inoculum)			
Duration, Parameter, System, and Sampling Frequency	up to 8 weeks; methane and CO2 evolution: Not Reported; Not Reported			
pH Adjusted and pH	Not Reported; Not Reported			
Concentration	68 (50) mg/L (ppm carbon of BBP)			
Composition and Test Temperature	synthetic medium; 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; % ultimate degradation; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	24%; Not Reported; Not Reported; Not Reported			
Results Remarks and Results Details	Ultimate degradation was observed in 1 of 2 sludge inoculums tested.; Half-life = 15 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.
	Metric 2:	Test Substance Purity	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 2: Test Design	Metric 3:	Study Controls	High	A control was reported and valid.
	Metric 4:	Test Substance Stability	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 3: Test Conditions	Metric 5:	Test Method Suitability	High	The test method was suitable.
	Metric 6:	Testing Conditions	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 7:	Testing Consistency	Medium	Limited detail in this secondary source; additional information may be in source cited.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	2121719			
Domain	Metric	EVALUATION		Comments
	Metric 8:	System Type and Design	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 4: Test Organisms	Metric 9:	Outcome Assessment Methodology	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable.
Domain 5: Outcome Assessment	Metric 11:	Test Substance Identity	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 12:	Test Substance Purity	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 6: Confounding/Variable Control	Metric 13:	Confounding Variables	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable.
Domain 7: Data Presentation and Analysis	Metric 15:	Data Reporting	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 8: Other	Metric 17:	Verification or Plausibility of Results	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 18:	QSAR Models	N/A	The metric is not applicable.
<b>Overall Quality Determination</b>			<b>Medium</b>	

\* Related References: Source cited: Horowitz et al 1982

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	2121719			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, EndPoint, Type, Guideline	Not Reported; other: experimental; other: not specified			
Solvent, Reactivity, Storage, Stability	Not Reported; Not Reported; Not Reported; Not Reported			
Radiolabel, Source, State, Purity	14-C BBP; Not Reported; Not Reported; Not Reported			
Blank and Control	Not Reported; Not Reported			
Oxygen and Inoculum	anaerobic; sewage, domestic, non-adapted: municipal sewage sludge			
Duration, Parameter, System, and Sampling Frequency	10 weeks; methane and CO2 evolution: Not Reported; Not Reported			
pH Adjusted and pH	Not Reported; Not Reported			
Concentration	20 mg/L			
Composition and Test Temperature	mineral salt medium; 35C			
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; % ultimate degradation(methane production); Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	100%; Not Reported; 40 days; Not Reported			
Results Remarks and Results Details	Ultimate degradation was observed in 1 of 2 sludge inoculums tested.; Half-life = 15 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.
	Metric 2:	Test Substance Purity	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	A control was reported and valid.
	Metric 4:	Test Substance Stability	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable.
	Metric 6:	Testing Conditions	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 7:	Testing Consistency	Medium	Limited detail in this secondary source; additional information may be in source cited.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	2121719			
Domain	Metric	EVALUATION Rating	Comments	
	Metric 8:	System Type and Design	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 4: Test Organisms	Metric 9:	Outcome Assessment Methodology	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable.
Domain 5: Outcome Assessment	Metric 11:	Test Substance Identity	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 12:	Test Substance Purity	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 6: Confounding/Variable Control	Metric 13:	Confounding Variables	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable.
Domain 7: Data Presentation and Analysis	Metric 15:	Data Reporting	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 8: Other	Metric 17:	Verification or Plausibility of Results	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 18:	QSAR Models	N/A	The metric is not applicable.
<b>Overall Quality Determination</b>		<b>Medium</b>		

\* Related References: Entered under Source cited: Shelton et al 1984 - HERO ID 5490812

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	2121719			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; Butyl benzyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; ready biodegradability; experimental; OECD Guideline 301 C (Ready Biodegradability: Modified MITI Test (I))			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR			
Blank and Control	not reported; not reported			
Oxygen and Inoculum	aerobic; activated sludge (adaptation not specified): domestic sewage			
Duration, Parameter, System, and Sampling Frequency	28 days; O2 consumption: not reported; not reported			
pH Adjusted and pH	not reported; not reported			
Concentration	not reported - 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; BOD; not reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	81%; not reported; 28 days; not reported			
Results Remarks and Results Details	readily biodegradable; 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	Minimal detail reported in this secondary source; additional information may be in primary source cited.
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Minimal detail reported in this secondary source; additional information may be in primary source cited.
	Metric 4:	Test Substance Stability	Medium	Minimal detail reported in this secondary source; additional information may be in primary source cited.
Domain 3: Test Conditions	Metric 5:	Test Method Suitability	High	The test method was suitable.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	2121719			
		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 6:	Testing Conditions	Medium	Minimal detail reported in this secondary source; additional information may be in primary source cited.
	Metric 7:	Testing Consistency	N/A	The metric is not applicable.
	Metric 8:	System Type and Design	Medium	Minimal detail reported in this secondary source; additional information may be in primary source cited.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	The inoculum was appropriate; adaptation was not specified.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable.
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	Minimal detail reported in this secondary source; additional information may be in primary source cited.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Minimal detail reported in this secondary source; additional information may be in primary source cited.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Minimal detail reported in this secondary source; additional information may be in primary source cited.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Minimal detail reported in this secondary source; additional information may be in primary source cited.
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.
Overall Quality Determination			Medium	

\* Related References: Data also entered under HERO ID 3688160; Source cited: CSCL Japan (1992)

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	2121719			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, EndPoint, Type, Guideline	Not Reported; inherent biodegradability; experimental; OECD Guideline 302 B (Inherent biodegradability: Zahn-Wellens/EMPA Test): Similar to OECD 302B			
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 specified; not specified: adapted and non-adapted inoculum			
Duration, Parameter, System, and Sampling Frequency	Not Reported; CO2 evolution; test mat.: 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 Direct Quantum Yield Results	Not Reported; % primary degradation and ultimate degradation; Not Reported			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	77% and 43%; Not Reported; Not Reported; Not Reported			
Results Remarks and Results Details	Using an adapted inoculum 97% primary degradation and 88% ultimate degradation was observed.; Half-life = 15 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.
	Metric 2:	Test Substance Purity	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 2: Test Design	Metric 3:	Study Controls	High	A control was reported and valid.
	Metric 4:	Test Substance Stability	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 3: Test Conditions	Metric 5:	Test Method Suitability	High	The test method was suitable.
	Metric 6:	Testing Conditions	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 7:	Testing Consistency	Medium	Limited detail in this secondary source; additional information may be in source cited.
Continued on next page ...				



...continued from previous page

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	2121719			
Domain	Metric	EVALUATION Rating	Comments	
	Metric 8:	System Type and Design	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 4: Test Organisms	Metric 9:	Outcome Assessment Methodology	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable.
Domain 5: Outcome Assessment	Metric 11:	Test Substance Identity	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 12:	Test Substance Purity	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 6: Confounding/Variable Control	Metric 13:	Confounding Variables	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable.
Domain 7: Data Presentation and Analysis	Metric 15:	Data Reporting	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 8: Other	Metric 17:	Verification or Plausibility of Results	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 18:	QSAR Models	N/A	The metric is not applicable.

**Overall Quality Determination****Medium**

\* Related References: Source cited: Sugatt et al 1984 HERO ID 5348362 (not in distiller at time of extraction)

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	2121719			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, EndPoint, Type, Guideline	Not Reported; inherent biodegradability; experimental; Not Reported: River Die-Away test; primary biodegradation			
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 primary degradation observed in autoclaved control; Not Reported			
Oxygen and Inoculum	not specified; natural water: water from Mississippi			
Duration, Parameter, System, and Sampling Frequency	Not Reported; not specified: Not Reported; Not Reported			
pH Adjusted and pH	Not Reported; Not Reported			
Concentration	= 50 - = 500 µg/L			
Composition and Test Temperature	Not Reported; 24°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	Not Reported; half-life; 1-2 days (unfiltered water); 2-3 days (filtered water)			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	Not Reported; Not Reported; Not Reported; 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 in this secondary source; additional information may be in source cited.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	A control was reported and valid.
	Metric 4:	Test Substance Stability	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable.
	Metric 6:	Testing Conditions	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 7:	Testing Consistency	Medium	Limited detail in this secondary source; additional information may be in source cited.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	2121719			
Domain	Metric	EVALUATION		Comments
	Metric 8:	System Type and Design	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 4: Test Organisms	Metric 9:	Outcome Assessment Methodology	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable.
Domain 5: Outcome Assessment	Metric 11:	Test Substance Identity	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 12:	Test Substance Purity	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 6: Confounding/Variable Control	Metric 13:	Confounding Variables	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable.
Domain 7: Data Presentation and Analysis	Metric 15:	Data Reporting	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 8: Other	Metric 17:	Verification or Plausibility of Results	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 18:	QSAR Models	N/A	The metric is not applicable.
<b>Overall Quality Determination</b>			<b>Medium</b>	

\* Related References: Source cited: Monsanto 85-9167; 1979

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

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Benzyl butyl 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; Tokyo Chemical Ind., Tokyo; NR; Analytical grade
Blank and Control	Controls without the inoculum; Controls with inoculum and no test substance; 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 (2vweeks); 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 <sub>2</sub> HPO <sub>4</sub> : 21.8mg; KH <sub>2</sub> PO <sub>4</sub> : 8.5mg; Na <sub>2</sub> HPO <sub>4</sub> -12H <sub>2</sub> O: 44.6mg; NH <sub>4</sub> Cl: 17mg; MgSO <sub>4</sub> -7H <sub>2</sub> O: 22.5 mg; CaCl <sub>2</sub> : 27.5mg; FeCl <sub>3</sub> -6H <sub>2</sub> O: 0.25mg; MnSO <sub>4</sub> -5H <sub>2</sub> O: 0.71mg; ZnSO <sub>4</sub> -7H <sub>2</sub> O: 0.01mg; CuSO <sub>4</sub> -5H <sub>2</sub> O: 5mg; CoCl <sub>2</sub> 6H <sub>2</sub> 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	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	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Biodegradation in Water
<b>HERO ID:</b>	5490395

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Benzyl butyl 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; Tokyo Chemical Ind., Tokyo; 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 <sub>2</sub> HPO <sub>4</sub> : 21.8mg; KH <sub>2</sub> PO <sub>4</sub> : 8.5mg; Na <sub>2</sub> HPO <sub>4</sub> 12H <sub>2</sub> O: 44.6mg; NH <sub>4</sub> Cl: 17mg; MgSO <sub>4</sub> 7H <sub>2</sub> O: 22.5 mg; CaCl <sub>2</sub> : 27.5mg; FeCl 6H <sub>2</sub> 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 BBP 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 <sub>2</sub> 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: 60-80%, 35-70%, 30-50%, respectively.; 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: 5-8; river water microbes: 9-20; and pond water microbes: 12-21 (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				

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Jonsson, S., Ejlerthsson, J., Svensson, B. H. (2003). Transformation of phthalates in young landfill cells. Waste Management 23(7):641-651.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	789568			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	not reported; Butyl benzyl 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 Darkness, 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, Results Sample Time, and Results Reference Substance 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 Recovery	Cell 1995: BBP was not detected; phthalic acid concentration decreased from 18 µg/L to 1 µg/L. Cell 1996: BBP was observed in only one leachate; monoester monobutyl phthalate increased from 40 to 180 µg/L; phthalic acid concentration fluctuated from 5 mg/L to 50 µg/L. Cell 1997: BBP was below the detection limit for all samples; 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	The test substance was identified.
	Metric 2:	Test Substance Purity	Low	The source of the test substance was a solid waste material with unknown composition; test material source is not routinely used.
Domain 2: Test Design				
Continued on next page ...				



...continued from previous page

<b>Study Citation:</b>	Jonsson, S., Ejlerthsson, J., Svensson, B. H. (2003). Transformation of phthalates in young landfill cells. Waste Management 23(7):641-651.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	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, when available.
	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.
<b>Overall Quality Determination</b>			<b>Medium</b>	

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

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl phthalate
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	8 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 <sub>2</sub> PO <sub>4</sub> , 348 mg K <sub>2</sub> HPO <sub>4</sub> , 535 mg NH <sub>4</sub> Cl, 73.5 mg CaCl <sub>2</sub> ·2H <sub>2</sub> O, 101.5 mg MgCl <sub>2</sub> ·6H <sub>2</sub> O, 20 mg FeCl <sub>2</sub> ·4H <sub>2</sub> O, trace metals solution, 1.2 mg NaHCO <sub>3</sub> , 120 mg Na <sub>2</sub> S·9H <sub>2</sub> 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	24%; Not reported; Not reported; CH <sub>4</sub> production in Jackson-90 sludge 87% and 90% after 2 weeks; 198% after 4 weeks (glucose); CH <sub>4</sub> 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: 4 weeks. Test duration up to 14 weeks in total.
Results Mean Total Recovery and Results per Recovery	101% 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Michigan State University, (1981). Development of test for determining anaerobic biodegradation potential.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>			<b>Low</b>	

<b>Study Citation:</b>	Monsanto, (1986). Experimental freshwater microcosm biodegradability study on benzyl butyl phthalate with attachments and cover letter dated 030288.
<b>OECD Harmonized Template:</b>	Biodegradation in Water
<b>HERO ID:</b>	1359186

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Benzyl butyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: BBP aerobic biodegradation in Illinois river water.
Solvent, Reactivity, Storage, Stability	DMF; NR; NR; NR
Radiolabel, Source, State, Purity	14-C-BBP (2.51 mCi). 94.4% of 14-C activity was in BBP peak.; Monsanto; Clear liquid; 98.6%, determined by HPLC.
Blank and Control	Blank samples were included.; Controls were used that received 222mg/L of mercuric chloride on days 1 and 11.
Oxygen and Inoculum	aerobic; natural water / sediment: freshwater: Microcosms contained 45 L Illinois river water and undisturbed Illinois river sediment core samples.
Duration, Parameter, System, and Sampling Frequency	30 days; CO <sub>2</sub> evolution: 5 replicate microcosms of each exposure were constructed. Water exchanges in the microcosms were designed to simulate intermittent discharges of BBP into the river system and to develop a steady state BBP concentration.; Days 1, 3, 5, 8, 10, 12, 15, 22, 29
pH Adjusted and pH	Not Reported; 8.4
Concentration	10 - 100 µg/L
Composition and Test Temperature	Not Reported; 20.5°C (19.4-21.9°C)
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Air was sparged through at 20mL/minute.; no; 13 hours light, 11 hours darkness. Dissolved oxygen: 9.3 mg/L; alkalinity: 138 mg/L; hardness: 292 mg/L
Results Details Method, Results per Degradation Parameter, and	HPLC was used to determine stock solution concentrations. Radioactivity measured with Liquid Scintillation Counting (LOD: 1.2µg/L); BBP half-life in water; Not Reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	1.5 days in 10µg/L treatments and 2.2 days in 100µg/L treatments.; Not reported; Not reported; Not reported
Results Remarks and Results Details	The metabolic pathway appears to be BBP to monobutyl/monobenzyl phthalate to phthalic acid to 4,5-dihydroxyphthalic acid to oxalic acid to formic acid to CO <sub>2</sub> .; After 5 days and additional doses of BBP, half-life in water was reduced to 1.0 day.
Results Mean Total Recovery and Results per Recovery	14-C-BBP in water by LSC: 75% with 6.0 S.D.; BBP in river water by HPLC: 85.5% with 8.7% RSD; recovery of 14-C-BBP from river water blank by LSC: 100.9%±6.1% ; recovery of BBP from river water blank 85.5% via HPLC

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 and toxicity controls were both reported.
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported and appropriate.
Domain 3: Test Conditions				

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1986). Experimental freshwater microcosm biodegradability study on benzyl butyl phthalate with attachments and cover letter dated 030288.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359186			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance and it was tested below its aqueous solubility.
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.
	Metric 7:	Testing Consistency	High	The testing conditions were the same 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 was 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 described and appropriate.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Standard deviations were reported in the concentration measurements and the variability 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 this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	The analytical method was suitable and test substance concentrations and extraction recoveries were reported.
	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 comparable to other reported results.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
<b>Overall Quality Determination</b>		<b>High</b>		

\* Related References: Cited in ECHA

<b>Study Citation:</b>	Monsanto, (1987). Letter from Monsanto Company to USEPA regarding information on the primary and ultimate biodegradation rates for benzyl butyl phthalate with attachment.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359190			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Not reported; primary biodegradation			
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	not specified; natural water: freshwater: Illinois River water			
Duration, Parameter, System, and Sampling Frequency	5 days; not specified: 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; Primary biodegradation rate; Not Reported			
Direct Quantum Yield Results				
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	> 1.0 < 2.0 days; Not reported; 5 days; Not reported			
Results Remarks and Results Details	One line summary of study referencing data reported elsewhere.; Primary biodegradation rate after 5 d is > 1.0 < 2.0 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 by name.
	Metric 2:	Test Substance Purity	Medium	Test substance source and purity not reported.
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Controls were not reported.
	Metric 4:	Test Substance Stability	Medium	Test substance preparation was not reported.
Domain 3: Test Conditions				
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1987). Letter from Monsanto Company to USEPA regarding information on the primary and ultimate biodegradation rates for benzyl butyl phthalate with attachment.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359190			
Domain		Metric	EVALUATION Rating	Comments
	Metric 5:	Test Method Suitability	High	Test method was likely suitable.
	Metric 6:	Testing Conditions	Medium	Test conditions were not reported.
	Metric 7:	Testing Consistency	High	Test conditions were likely to be consistent.
	Metric 8:	System Type and Design	N/A	Not applicable.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	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	Outcome assessment methodology likely appropriate.
	Metric 12:	Test Substance Purity	Medium	No details reported.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Low	Value is a one line study summary.
	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	No details reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetic calculations not described.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Uninformative	Value is from a one line study summary and rate units do not make sense, unless the value is meant to be the primary biodegradation half-life.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quality Determination</b>			<b>Uninformative</b>	

<b>Study Citation:</b>	Monsanto, (1987). Letter from Monsanto Company to USEPA regarding information on the primary and ultimate biodegradation rates for benzyl butyl phthalate with attachment.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359190			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Not reported; Ultimate biodegradation			
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	not specified; water (not specified): Not reported			
Duration, Parameter, System, and Sampling Frequency	31 days; test mat.: Not reported; 5, 8, 10, 12, 15, 17, 19, 22, 24, 26, 29, and 31 d			
pH Adjusted and pH	Not Reported; Not reported			
Concentration	10 - 100 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; Test substance re-added to system every other day.			
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	Not reported; CO2 evolution; Not Reported			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	61% and 89%; Not applicable; 31 days; Not reported			
Results Remarks and Results Details	for 10 ug/L and 100 ug/L; Biodegradation rate first orderHalf-life=27.5 d (10 ug/L) and 20.5 d (100 ug/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.
	Metric 2:	Test Substance Purity	Medium	The test substance source and purity were not reported.
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Controls were not reported.
	Metric 4:	Test Substance Stability	Medium	Test substance preparation and storage were not reported.
Domain 3: Test Conditions	Metric 5:	Test Method Suitability	High	The test method was presumably suitable.
	Metric 6:	Testing Conditions	Medium	No test conditions were reported.
Continued on next page ...				



...continued from previous page

<b>Study Citation:</b>	Monsanto, (1987). Letter from Monsanto Company to USEPA regarding information on the primary and ultimate biodegradation rates for benzyl butyl phthalate with attachment.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359190			
Domain		Metric	EVALUATION Rating	Comments
	Metric 7:	Testing Consistency	High	Test conditions were presumably consistent.
	Metric 8:	System Type and Design	N/A	Not applicable.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	Inoculum source was not specified.
	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 determining biodegradation.
	Metric 12:	Test Substance Purity	Medium	Sampling methods were not reported.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Low	Few study details were reported. Degradation kinetics were reported graphically.
	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 method not reported. Degradation kinetics only reported graphically.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The kinetic calculations were described and applied appropriately.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	There were no study details provided to support this result.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quality Determination</b>			<b>Uninformative</b>	

<b>Study Citation:</b>	Monsanto, (1983). Study on Related Parameters in the Shake Flask Co2 Evolution Biodegradation Test (es-82-ss-89).
<b>OECD Harmonized Template:</b>	Biodegradation in Water
<b>HERO ID:</b>	1359201

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butylbenzyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Shake flask CO2 evolution biodegradation test (Gledhill Procedure, ASTM Draft No. 3)
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Monsanto Company (study sponsor); NR; NR
Blank and Control	Blank and glucose control; Not Reported
Oxygen and Inoculum	aerobic; other:: soil, raw sewage, and activated sludge
Duration, Parameter, System, and Sampling Frequency	35 days; CO2 evolution: Shake flask method; 3, 7, 14, 21, 28, 35 days
pH Adjusted and pH	Not Reported; Not reported
Concentration	10 - 20 mg
Composition and Test Temperature	minimal salts; ambient temperature
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; 70% oxygen in nitrogen; yes; Study compared various combinations of test apparatus, inoculums, and test substances. Only certain results were extracted.
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	Gledhill media and inoculum (S-160) acclimated, Larson external trap, Erlenmeyer flask.; CO2 evolution; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	66.1% (10 mg); 51.9% (20 mg); Not reported; 35 days; Values adjusted for controls
Results Remarks and Results Details	Lag time before CO2 evolution (days)=0.82 days (10 mg) and 0.99 days (20 mg); 10 mg, k (rate constant)=0.268 day-1; 20 mg, k (rate constant)=0.0976 day-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
	Metric 2:	Test Substance Purity	Medium
			Test substance was definitively identified.
			Test substance was not explicitly identified, but the study sponsor was Monsanto. Purity was not explicitly identified but %C was reported.
Domain 2: Test Design	Metric 3:	Study Controls	Medium
	Metric 4:	Test Substance Stability	Medium
			Study controls were used and results were adjusted to account for controls. However, results were not explicitly stated.
			Test substance stability, homogeneity, preparation and storage conditions were not reported.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1983). Study on Related Parameters in the Shake Flask Co2 Evolution Biodegradation Test (es-82-ss-89).			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359201			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	Test method was suitable for the outcome on interest.
	Metric 6:	Testing Conditions	Medium	Some test conditions were reported but others were poorly described or were not reported.
	Metric 7:	Testing Consistency	Medium	Testing consistency was difficult to interpret. It appears the main goal of the study is to determine impacts on different apparatus, method, and inoculum. Some variations were not duplicated and tested in only one flask.
	Metric 8:	System Type and Design	N/A	Not acceptable.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	The source of the inoculum was not reported.
	Metric 10:	Sampling Methods	N/A	Not applicable.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	Outcome assessment reported the intended outcome of interest.
	Metric 12:	Test Substance Purity	Medium	Sampling intervals and details were not well described.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Minor deviations and sources of variability and uncertainty were reported.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Not applicable.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	The target chemical and transformation products, extraction efficiency, percent recovery, ad mass balance were not reported, limiting meaningful interpretation. Not all testing variables were well reported, included missing test concentrations.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Kinetic calculations were well described.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	Results were reasonable for a test substance in an acclimated inoculum.
	Metric 18:	QSAR Models	N/A	Not applicable.
<b>Overall Quality Determination</b>		<b>Medium</b>		

<b>Study Citation:</b>	Monsanto, (1983). Study on Related Parameters in the Shake Flask Co2 Evolution Biodegradation Test (es-82-ss-89).		
<b>OECD Harmonized Template:</b>	Biodegradation in Water		
<b>HERO ID:</b>	1359201		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	85-68-7; Butylbenzyl phthalate		
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Shake flask CO2 evolution biodegradation test (Gledhill Procedure, ASTM Draft No. 3)		
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR		
Radiolabel, Source, State, Purity	NR; Monsanto Company (study sponsor); NR; NR		
Blank and Control	Blank and glucose control; Not Reported		
Oxygen and Inoculum	aerobic; other:: soil, raw sewage, and activated sludge		
Duration, Parameter, System, and Sampling Frequency	35 days; CO2 evolution: Shake flask method; 3, 7, 14, 21, 28, 35 days		
pH Adjusted and pH	Not Reported; Not reported		
Concentration	20 mg		
Composition and Test Temperature	minimal salts; ambient temperature		
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; 70% oxygen in nitrogen; yes; Study compared various combinations of test apparatus, inoculums, and test substances. Only certain results were extracted.		
Results Details Method, Results per Degradation Parameter, and	Gledhill media and inoculum (acclimated), Gledhill internal well, Erlenmeyer flask or Ace Glass flask and internal well; CO2 evolution; Not Reported		
Direct Quantum Yield Results			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	34.1% (Gledhill well); 24.9% (Ace Glass well); Not reported; 35 days; Values adjusted for controls		
Results Remarks and Results Details	Lag time before CO2 evolution (days)=0.00 days (Gledhill well) and 2.97 days (Ace Glass well); Gledhill well, k (rate constant)=0.0447 day-1; Ace Glass well, k (rate constant)=0.529 day-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	Test substance was definitively identified.
Metric 2:	Test Substance Purity	Medium	Test substance was not explicitly identified, but the study sponsor was Monsanto. Purity was not explicitly identified but %C was reported.
Domain 2: Test Design			
Metric 3:	Study Controls	Medium	Study controls were used and results were adjusted to account for controls. However, results were not explicitly stated.
Metric 4:	Test Substance Stability	Medium	Test substance stability, homogeneity, preparation and storage conditions were not reported.
Domain 3: Test Conditions			
Continued on next page ...			

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1983). Study on Related Parameters in the Shake Flask Co2 Evolution Biodegradation Test (es-82-ss-89).			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359201			
Domain	Metric	EVALUATION		Comments
	Metric 5:	Test Method Suitability	High	Test method was suitable for the outcome of interest.
	Metric 6:	Testing Conditions	Medium	Some test conditions were reported but others were poorly described or were not reported.
	Metric 7:	Testing Consistency	Medium	Testing consistency was difficult to interpret. It appears the main goal of the study is to determine impacts on different apparatus, method, and inoculum. Some variations were not duplicated and tested in only one flask.
	Metric 8:	System Type and Design	N/A	Not applicable.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	The source of the inoculum was not reported.
	Metric 10:	Sampling Methods	N/A	Not applicable.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	Outcome assessment reported the intended outcome of interest.
	Metric 12:	Test Substance Purity	Medium	Sampling intervals and details were not well described.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Minor deviations and sources of variability and uncertainty were reported.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Not applicable.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	The target chemical and transformation products, extraction efficiency, percent recovery, ad mass balance were not reported, limiting meaningful interpretation. Not all testing variables were well reported, included missing test concentrations.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Kinetic calculations were well described.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	Results were reasonable for a test substance in an acclimated inoculum.
	Metric 18:	QSAR Models	N/A	Not applicable.
<b>Overall Quality Determination</b>			<b>Medium</b>	

<b>Study Citation:</b>	Monsanto, (1986). Experimental freshwater microcosm biodegradability study of butyl benzyl phthalate.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359214			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Butyl benzyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Mineralization of BBP in river microcosms			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	14C-BBP (uniformly ring labeled on phthalate ring), purity: ≥95%; Monsanto Commercial Sanitizer 160; NR; Two lots with purities determined by HPLC = 98.6 % (used to spike microcosms) and 98.5% (used as analytical standard)			
Blank and Control	5 sterile control microcosms included (100 µg/L test substance); sterilized via mercuric chloride treatment; not reported			
Oxygen and Inoculum	aerobic; natural water / sediment: freshwater: Sediment and water from Illinois River; Bacteria in microcosms were measured at day 1, 19, and 31 in active microcosms and ranged from 50 to >2000 CFUs/mL water			
Duration, Parameter, System, and Sampling Frequency	31 days; CO2 evolution: Freshwater microcosm set up in glass containers sealed with glass plate top; day 5, 8, 10, 12, 15, 17, 19, 22, 24, 26, 29, 31			
pH Adjusted and pH	Not Reported; 7.6-8.6 (measured on days 1, 8, 17, 31); day 1: pH=8.4			
Concentration	10 - 100 µg/L			
Composition and Test Temperature	not applicable; 20±1°C (day one: 20.2); average 20.5°C ranged from 19.4-21.9°C (internally monitored on day 17)			
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	not reported; Aerated through at 20 mL/min; no; 10 microcosms were set up with concentrations of 10 and 100 µg/L added 3x per week; 13/11 hrs of light/dark; DO 9.3 mg/L; 580 umbos; 138 mg/L alkalinity; 292 mg/L hardness; river flow rate 6.0 Cm/s; 400±40 ft-candles.			
Results Details Method, Results per Degradation Parameter, and	HPLC for BBP concentrations in microcosms (LOD=2.74 µg/L); LSC for 14-CO2 evolution (LOD=1.0 µg/L); analysis of 14-BBP in water by LSC (LOD=1.2 µg/L); analysis of 14-BBP in sediment by LSC (LOD=0.03 and 0.003 mg/kg); % CO2 evolution (average of all test concentrations);			
Direct Quantum Yield Results	Not Reported			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	10.8; ±1.8%; 30 days; 0.12% mineralization (average; ultimate biodegradation)			
Results Remarks and Results Details	BBP concentrations declined to 50% by day 3, 1-20% by day 5 and remained low for the duration indicating rapid primary degradation; the study suggests the metabolites are polar water soluble organic acids; monobutyl and possibly monobenzyl phthalate.; Calculation of half-life for ultimate degradation not possible due to addition of BBP 3x per week); primary degradation (days 1-3) half-life=1.5 days (at 10 µg/L), 2.2 days (at 100 µg/L) assuming first-order kinetics; degradation (days 3-5) half-life=1.2 days (at 10 µg/L), 1.3 days (at 100 µg/L); degradation (days 5 and thereafter) half-life=1.0 days			
Results Mean Total Recovery and Results per Recovery	Mean % recovery of BBP from river water: 100.2% (w/o extraction) and 94.2% (with hexane extraction), in sediment=117%; mean 14C-BBP recovery for river water by LSC 87.5%; mean recovery of blind spiked and blank water samples for QA/QC 75%; Mass balance was calculated for each microcosm, average total 14C recovery was 74.7±11.2%; mean value in water phase 48.2%, sediment phase: 2.1%, solvent rinse: 4.8%, silicone sealant: 7.6%, in water removed 8.5%.			
<b>EVALUATION</b>				
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1986). Experimental freshwater microcosm biodegradability study of butyl benzyl phthalate.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359214			
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Controls were included and appropriate.
	Metric 4:	Test Substance Stability	Medium	Test substance preparation and stability were not reported.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable.
	Metric 6:	Testing Conditions	High	Testing conditions were monitored and reported.
	Metric 7:	Testing Consistency	High	Test method was applied consistently across 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	Medium	The outcome assessment methodology addressed the outcomes of interest; however calculation of ultimate biodegradation half-life was not possible.
	Metric 12:	Test Substance Purity	High	Sampling methods addressed the outcomes of interest and sampling was conducted at an acceptable frequency.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Confounding variables 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	The analytical method was reported and validated. Mass balances and recoveries were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical methods were appropriate; limited detail regarding kinetic calculations.
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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	Monsanto, (1983). Study of selected parameters in the CO2 evolution biodegradation screening test with cover letters.
<b>OECD Harmonized Template:</b>	Biodegradation in Water
<b>HERO ID:</b>	1359241

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Shake flask CO2 evolution test described in ASTM Draft No. 3 "Proposed Standard for the Determination of the Ultimate Biodegradability of Organic Chemicals" conducted via Gledhill and Larson procedures
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Monsanto; NR; NR
Blank and Control	Not reported; Not reported
Oxygen and Inoculum	aerobic; activated sludge, adapted: Gledhill: Acclimated (14d) inoculum prepared from soil, raw sewage and activated sludge mixed liquor; Larson: Sugar Creek treatment plant raw water acclimation (14d) via SCAS system
Duration, Parameter, System, and Sampling Frequency	19 days; CO2 evolution: Rotary shaker flasks; natural diffusion in well containing Ba(OH)2 for CO2 trapping in Gledhill and continuous air purge to external Ba(OH)2 solution in Larson procedure; day 3, 7, 14, 21, 28, and 35
pH Adjusted and pH	Not Reported; Not reported
Concentration	20 mg/L
Composition and Test Temperature	minimal salts medium; ambient
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; Not reported
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	Titration using barium hydroxide; % Theoretical CO2 evolution; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	Gledhill media:Larson trap=67%/19days (at 9.7 mg/L); 42%/19days (at 20.3 mg/L); Gledhill media:Gledhill trap=20%/19days (at 20.0 mg/L); Gledhill media:Ace glass=25%/19days (at 20.0 mg/L);; Not reported; Not reported; Not reported
Results Remarks and Results Details	A non-linear regression analysis was used to evaluate the kinetic parameters (i.e. pseudo first-order rate, etc); Gledhill media:Gledhill trap rate constant=0.0447/day (at 20 mg); Gledhill media:Larson trap rate constant =0.268/day (at 10 mg) and 0.0976/day (at 20 mg); Gledhill media:Ace glass rate constant=0.529/day (at 20 mg)
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	Medium	The test substance commercial source reported; however, purity was not reported.
Domain 2: Test Design	Metric 3:	Study Controls	High	Appropriate controls were used.
	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.

Continued on next page ...



...continued from previous page

<b>Study Citation:</b>	Monsanto, (1983). Study of selected parameters in the CO2 evolution biodegradation screening test with cover letters.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359241			
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	Some of the testing conditions were not reported, such as pH; however, the omissions are unlikely to have a substantial impact on the study results.
	Metric 7:	Testing Consistency	High	There were no reported changes in the testing conditions between the sampling groups.
	Metric 8:	System Type and Design	High	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	High	The test organism information or inoculum source 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 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 in the concentration 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 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 are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	Monsanto, (1983). Santicizer 160 (S-160) natural water die-away toxicity test with Daphnia magna.		
<b>OECD Harmonized Template:</b>	Biodegradation in Water		
<b>HERO ID:</b>	1359249		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	85-68-7; BBP		
Confidentiality, EndPoint, Type, Guideline	no; biodegradation; experimental; other: not specified		
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR		
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR		
Blank and Control	9 L of distilled water spiked with similar levels of BBP and 5 mL of a 0.05% mercuric chloride solution.; NR		
Oxygen and Inoculum	NR; other:: Water from the Mississippi River used in the Daphnia die-way toxicity tests.		
Duration, Parameter, System, and Sampling Frequency	168 hr; NR: 100 mL samples were collected from the 9 liter solution each time a Daphnia test was started.; 2		
pH Adjusted and pH	NR; NR		
Concentration	NR NR - NR NR NR		
Composition and Test Temperature	NR; NR		
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	NR; NR; NR; both distilled water and Mississippi river water spiked with 2.0 mg/L BBP		
Results Details Method, Results per Degradation Parameter, and	NR; NR; NR		
Direct Quantum Yield Results	NR; NR; NR; NR		
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	NR; NR; NR; NR		
Results Remarks and Results Details	Similar decreases observed for test and control experiments. Suggests adsorption to the container wall accounts for the decrease but also mentions it could be due to volatilization, photodegradation or hydrolysis.; Mississippi river BBP concentration: after 0 hours=9.7 mg/L, after 168 hours=6.8 mg/L; Mississippi river BBP concentration: after 0 hours=9.7 mg/L, after 168 hours=6.8 mg/L; Distilled water BBP concentration: after 0 hours=12.3 mg/L, after 168 hours=7.3 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 the test substance purity was low or not reported (e.g., lack of information on hydration state of a compound introduces uncertainty into concentration calculations); however, the omissions or identified impurities were not likely to have a substantial impact on the study results
	Metric 2: Test Substance Purity	Medium	
Domain 2: Test Design			
Continued on next page ...			

...continued from previous page

<b>Study Citation:</b>		Monsanto, (1983). Santicizer 160 (S-160) natural water die-away toxicity test with Daphnia magna.		
<b>OECD Harmonized Template:</b>		Biodegradation in Water		
<b>HERO ID:</b>		1359249		
Domain	Metric	EVALUATION		Comments
	Metric 3:	Study Controls	High	Inhibited control was used
	Metric 4:	Test Substance Stability	Uninformative	There were problems with test substance stability, homogeneity, preparation, or storage conditions that had an impact on concentration or dose estimates and interfered with interpretation of study results. These are serious flaws that make the study unusable.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Uninformative	The test method was not reported
	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	Uninformative	the system type and design was not intended to show the outcome of interest
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	Uninformative	Results did not address the outcome 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	Uninformative	Results were the same as the inhibited control
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Not applicable
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	Low	Statistical analysis or kinetic calculations were not conducted or were not described clearly
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Uninformative	Reported value was completely inconsistent with reference substance data, related physical chemical properties, analog data, or otherwise implausible, suggesting that an unidentified serious study deficiency exists. These are serious flaws that make the study unusable
	Metric 18:	QSAR Models	N/A	Not applicable

Continued on next page ...

...continued from previous page

Study Citation:	Monsanto, (1983). Santicizer 160 (S-160) natural water die-away toxicity test with Daphnia magna.		
OECD Harmonized	Biodegradation in Water		
Template:			
HERO ID:	1359249		
Domain	Metric	EVALUATION Rating	Comments
Overall Quality Determination		Uninformative	

<b>Study Citation:</b>	Monsanto, (1979). Evaluation of activated sludge oxygen and river die-away tests as routine biodegradation screening tests.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359270			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; Butyl benzyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: River-Die away test			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; Monsanto; NR; NR			
Blank and Control	Autoclave controls included; Not reported			
Oxygen and Inoculum	aerobic; activated sludge, non-adapted: Meramec River water collected on 11/13/1978 at Kirkwood Greentree Park			
Duration, Parameter, System, and Sampling Frequency	10 days; test mat.: Boston round bottles; 0, 5, 10, 15, and 20 days			
pH Adjusted and pH	Not Reported; Not reported			
Concentration	104.4 µg/L			
Composition and Test Temperature	Not reported; 23C			
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; Not reported			
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	flame-ionization gas chromatography and electron capture gas chromatography; no further details; % test chemical remaining relative to day 0; Not Reported			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	<5% after 5 days, <5% after 10 days; not reported; day 5 and 10; 80.0% remaining after 5 days, 67.8% remaining after 10 days			
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: Metric 2:	Test Substance Identity Test Substance Purity	High Medium	The test substance was identified using common nomenclature. The test substance source was reported but the purity was not reported, the omission is unlikely to have a substantial impact on the study results.
Domain 2: Test Design	Metric 3: Metric 4:	Study Controls Test Substance Stability	Medium High	Controls were reported; results were not included in the study but the omission is unlikely to have a substantial impact on the study results. 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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1979). Evaluation of activated sludge oxygen and river die-away tests as routine biodegradation screening tests.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359270			
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	Some testing conditions were not reported but the omissions are unlikely to have a substantial impact on the study results.
	Metric 7:	Testing Consistency	High	Testing consistency was appropriate.
	Metric 8:	System Type and Design	High	The system and design were appropriate.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Low	Some details regarding the microbial activity were not reported are which may 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	Medium	Some details regarding the sampling method 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	Sources of variability were not 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	Low	Details regarding the analytical method were not reported.
	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	Medium	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
<b>Overall Quality Determination</b>			<b>Medium</b>	

\* Related References: Cited in ECHA

<b>Study Citation:</b>	Monsanto, (1979). Evaluation of activated sludge oxygen and river die-away tests as routine biodegradation screening tests.		
<b>OECD Harmonized Template:</b>	Biodegradation in Water		
<b>HERO ID:</b>	1359270		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	85-68-7; Butyl benzyl phthalate		
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: SCAS primary degradation test based on ASTM D19.22.02		
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR		
Radiolabel, Source, State, Purity	NR; Monsanto; NR; NR		
Blank and Control	Not reported; Not reported		
Oxygen and Inoculum	aerobic; activated sludge, adapted: acclimated sludge		
Duration, Parameter, System, and Sampling Frequency	10 days; O2 consumption: Boston round bottles; Not reported		
pH Adjusted and pH	Not Reported; Not reported		
Concentration	104.4 µg/L		
Composition and Test Temperature	nutrient broth/urea/K2HPO4; 23C		
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; incremental build up of test compound achieved over a 15 day period (50, 100, 200, 400 mg/1500mL) accompanied by incremental decrease in synthetic nutrient		
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	flame-ionization gas chromatography and electron capture gas chromatography; no further details; primary degradation rate%; Not Reported		
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	93% (feed rate=3 mg/l/24 hr) 99+% (feed rate=133 mg/l/24 hr); ±6; Not reported; 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 using common nomenclature.
Metric 2:	Test Substance Purity	Medium	The test substance source was reported but the purity was not reported, the omission is unlikely to have a substantial impact on the study results.
Domain 2: Test Design			
Metric 3:	Study Controls	Uninformative	Controls were not reported; the omission is likely to have a substantial impact on interpretation of the study results.
Metric 4:	Test Substance Stability	High	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 test substance.
Continued on next page ...			

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1979). Evaluation of activated sludge oxygen and river die-away tests as routine biodegradation screening tests.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359270			
Domain	Metric	EVALUATION		Comments
	Metric 6:	Testing Conditions	Medium	Some testing conditions were not reported but the omissions are unlikely to have a substantial impact on the study results.
	Metric 7:	Testing Consistency	High	Testing consistency was appropriate.
	Metric 8:	System Type and Design	High	The system and design were appropriate.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Uninformative	The inoculum was previously acclimated.
	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 method 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	Sources of variability were not 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	Low	Details regarding the analytical method were not reported.
	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	Medium	The study results are reasonable; although no control was reported for validation.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
<b>Overall Quality Determination</b>		<b>Uninformative</b>		



<b>Study Citation:</b>	Monsanto, (1983). The environmental fate of Santicizer 160 (butyl benzyl phthalate) in lake water-sediment microcosms.
<b>OECD Harmonized Template:</b>	Biodegradation in Water
<b>HERO ID:</b>	1359271

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; Not Reported: CO <sub>2</sub> evolution in a microcosm using lake water and sediment from the littoral region of a spring fed fresh water lake in Missouri
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	<sup>14</sup> C carbonyl-labeled butyl benzyl phthalate, specific activity = 1.98 $\mu$ Ci/mm; <sup>14</sup> C ring labeled BBP specific activity = 9.52 mCi/mm; NR; NR; Ring labeled BBP purity 97.0% (used as reference)
Blank and Control	two chambers sterilized by autoclaving at 125C; Not reported
Oxygen and Inoculum	aerobic; natural water: freshwater: natural water: freshwater and sediment
Duration, Parameter, System, and Sampling Frequency	28 days; O <sub>2</sub> consumption: Test chambers designed to simulate natural environmental conditions; one chamber used to control for photolysis; two used to simulate low oxygen; Duplicate water column samples collected on day 3, 7, 14, 21, and 28; sediment samples were not analyzed
pH Adjusted and pH	Not Reported; 8.4-8.6
Concentration	1 mg/L
Composition and Test Temperature	Not Reported; Not reported
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Conductivity varied from 420-460 umhos; microcosms stabilized with gentle aeration; no; DO levels reported as 6.5-7.5; 16/8 hr light/dark cycle using a fluorescent lamp
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	liquid scintillation counting; Half-life; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	1.4 days (RSD 12%); 1.1 days (RSD 31%); 4.4 days (RSD 59%); 3.1 days (24%); mean value determined by first order least squares; determined by linear regression model of same data; determined from non-linear regression of <sup>14</sup> C loss from water column; mean half-life based on non-linear regression model of CO <sub>2</sub> evolution data; day 3, 7, 14, 21, and 28; Sterilized chamber CO <sub>2</sub> evolution was 56% after 28 days; addition of nitrogen purge reduced this to nearly zero
Results Remarks and Results Details	Air active chambers CO <sub>2</sub> evolution ranged from 42-65% after 28 days; Rate constants: mean value determined by first order least squares=0.474/day; determined by linear regression model=0.686/day; determined from non-linear regression of <sup>14</sup> C loss from water column=0.170/day; mean half-life based on non-linear regression model of CO <sub>2</sub> evolution data=0.229/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
	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			

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1983). The environmental fate of Santicizer 160 (butyl benzyl phthalate) in lake water-sediment microcosms.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359271			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 3:	Study Controls	Medium	No controls were reported in the study but the omission is unlikely to have a substantial impact on the study results.
	Metric 4:	Test Substance Stability	High	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 test substance.
	Metric 6:	Testing Conditions	High	Some testing conditions were not reported but the omissions are unlikely to have a substantial impact on the study results.
	Metric 7:	Testing Consistency	High	Testing consistency was appropriate.
	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	Some details regarding the microbial activity were not reported are which may 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	Some details regarding the sampling method 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	Sources of variability were not 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	Some details regarding the analytical method were not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis was reported.
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**

<b>Study Citation:</b>	Monsanto, (1983). Santicizer 160 river die-away biodegradation rate study.
<b>OECD Harmonized Template:</b>	Biodegradation in Water
<b>HERO ID:</b>	1359272

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
Confidentiality, EndPoint, Type, Guideline	None; inherent biodegradability; Experimental; Not Reported: River die-away test
Solvent, Reactivity, Storage, Stability	dimethyl sulfoxide; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Sterilized by 2x 0.2 um membrane filtration with 1360 mg/L particulate content autoclaved 3x; Not reported
Oxygen and Inoculum	not specified; natural water: freshwater: Not applicable
Duration, Parameter, System, and Sampling Frequency	5 days; test mat.: 400 mL water sample in bottle, sealed with PTFE-fluorocarbon lined cap, mixed by shaking.; 0, 1, 2, 3, 5 d
pH Adjusted and pH	Not Reported; 7.4
Concentration	50.3 - 503 µg/L
Composition and Test Temperature	Settled water from the Mississippi River collected 10/27/81 at St. Louis waterfront (Eads Bridge); 24°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; DOC: 3.0 mg/L
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	Extraction with isoootane, analyzed by electron capture gas chromatography; method limit 5 ug/L; Test material remaining; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	ND, 5.5 ug/L; Not reported; 5 days; Half-life: 115 d. Hydrolysis not a significant pathway of degradation. Correlation coefficient=-0.3220. First order rate equation: $\ln [C] = -0.006018 \cdot t + 6.099$
Results Remarks and Results Details	Likely to undergo rapid and near complete transformation in natural river environmentTest conducted at 50.3 and 503 ug/L, average of two replicates. Initial 50.5 ug/L: 46 ug/L/0d, 13 ug/L/1d, ND/2d, ND/3d, ND/5dInitial 503 ug/L: 454.5 ug/L/0d, 352 ug/L/1, ND/2d, ND/3d, 5.5 ug/L/5d; Half-life: 0.5 and 1.4 daysHalf-life=0.693/rate constantSufficient data not collected to determine applicability of first order rate equation.
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.
Domain 2: Test Design	Metric 3:	Study Controls	High	A concurrent blank control was included and tested valid.
	Metric 4:	Test Substance Stability	High	The test substance preparation and stability were reported and appropriate for the study.
Domain 3: Test Conditions				

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1983). Santicizer 160 river die-away biodegradation rate study.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359272			
Domain		Metric	EVALUATION Rating	Comments
	Metric 5:	Test Method Suitability	High	The test method was suitable for the substance.
	Metric 6:	Testing Conditions	High	Test conditions were monitored and reported and were appropriate.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples.
	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 and 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 the intended outcomes of interest.
	Metric 12:	Test Substance Purity	High	Sampling methods addressed the outcomes of interest and used widely accepted methods and approaches for the chemical and media analyzed.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Statistical analysis was not performed between study groups.
	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 concentrations were reported, analytical methods were suitable for detection and quantification of the target chemical, sufficient evidence was presented to confirm the parent compound disappearance was not due to some other process.
	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 this study type.
<b>Overall Quality Determination</b>			<b>High</b>	

\* Related References: Cited in ECHA

<b>Study Citation:</b>	Monsanto, (1978). Anaerobic biodegradation procedure.
<b>OECD Harmonized Template:</b>	Biodegradation in Water
<b>HERO ID:</b>	1359282

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Not reported; Biodegradation in anaerobic inoculum
Solvent, Reactivity, Storage, Stability	Hexane or dioxane, 200 mg carbon/mL; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Blank without test substance added; Solvent control; ethanol
Oxygen and Inoculum	anaerobic; other:: Supernatant from anaerobic digester supernatant collected from domestic waste treatment plant
Duration, Parameter, System, and Sampling Frequency	4 weeks; test mat.: 125 mL serum bottles with 100 mL medium, sparged with O <sub>2</sub> -free N <sub>2</sub> .; Twice during first week and weekly thereafter
pH Adjusted and pH	Not Reported; Not reported
Concentration	10 - 100 mg carbon/L
Composition and Test Temperature	Resazurin, (NH <sub>4</sub> ) <sub>2</sub> PO <sub>4</sub> , NH <sub>4</sub> Cl, CaCl <sub>2</sub> , MgCl <sub>2</sub> *6H <sub>2</sub> O, KCl, MnCl <sub>2</sub> *4H <sub>2</sub> O, CoCl <sub>2</sub> *6H <sub>2</sub> O, H <sub>3</sub> BO <sub>3</sub> , CuCl <sub>2</sub> , MoO <sub>3</sub> , ZnCl <sub>2</sub> , FeCl <sub>2</sub> *H <sub>2</sub> O, NaHCO <sub>3</sub> , Na <sub>2</sub> S*9H <sub>2</sub> O; 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	Gas sampled by 20 gauge needle inserted into serum bottle, attached to 12" x 0.076" I.D. Teflon tube to UniMeasure 100-500 ohm/2mA pressure transducer, quantitated by DigiTec Model 2120 meter, to measure gas evolution by gas pressure; % Gas evolution (CH <sub>4</sub> + CO <sub>2</sub> ) of theoretical; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	0% (low) -21.3% (high); Not reported; 17 days; 91.0% of theoretical gas was produced.
Results Remarks and Results Details	All values blank corrected. Values reported not corrected for solvent gas evolution. High concentration values were able to be corrected for solvent hexane (net 8.5%), low concentration was unable to be corrected due to lack suitable replicate at comparable solvent concentration.; Cumulative gas evolution kineticsHigh concentration (solvent corrected): -0.4 mL/3d, - 0.5 mL/5d, - 0.4 mL/7d, -0.3 mL/10d, 1.5 mL/17dLow concentration (not solvent corrected): -0.6 mL/3d, -0.9 mL/5d, -0.9 mL/7d, -1.1 mL/10d, -1.1 mL/17d
Results Mean Total Recovery and Results per Recovery	Not applicable; Not reported

EVALUATION				
Domain	Metric		Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High	The test mixture composition was reported.
	Metric 2:	Test Substance Purity	Medium	The source and purity were not reported.
Domain 2: Test Design	Metric 3:	Study Controls	Low	Solvent and blanks included, however solvent blank for low concentration was not included and blank correction resulted in negative gas evolution for the test substance.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1978). Anaerobic biodegradation procedure.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	1359282			
Domain	Metric	EVALUATION		Comments
	Metric 4:	Test Substance Stability	Medium	Test substance preparation but not 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	Medium	Some testing conditions (pH) were omitted.
	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 used for similar study types.
	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 biodegradation.
	Metric 12:	Test Substance Purity	High	Sampling methods address the outcomes of interest and samples were collected at an appropriate frequency.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Negative gas evolution observed, no solvent control for low concentration system.
	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 non-standard but appropriate; raw data was reported but biodegradation rate was not explicitly reported, only gas evolved per day.
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	Statistical and kinetic calculations were not applied.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The results showed low positive net gas evolution when corrected for blanks and solvent (where possible), and may show an inhibitory effect due to hexane solvent. Results were not compared to previous studies. Solvent correction could not be completed for the low concentration.
	Metric 18:	QSAR Models	N/A	Not applicable.
<b>Overall Quality Determination</b>			<b>Medium</b>	

<b>Study Citation:</b>	Monsanto, (1976). Biodegradabilty of plasticizers.
<b>OECD Harmonized Template:</b>	Biodegradation in Water
<b>HERO ID:</b>	790484

EXTRACTION	
Parameter	Data
CASRN and Test Material	Not reported; Not Reported
Confidentiality, EndPoint, Type, Guideline	No; Ultimate Biodegradability; Experimental; other: Thompson-Duthie-Sturm test
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR
Blank and Control	blank control included; results subtracted from test material results; Not Reported
Oxygen and Inoculum	aerobic; other:: 500 mL acclimated bacterial seed
Duration, Parameter, System, and Sampling Frequency	28-35 days; CO2 evolution: Bottles connected to CO2-free air source and effluent scrubbers; not reported
pH Adjusted and pH	not reported; not reported
Concentration	ca. 120 - mg
Composition and Test Temperature	5,500 mL standard BOD water; not reported
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	not reported; not reported; not reported; Method details cited to other sources [J. Amer. Oil Chem. Soc. 50, 159 (1973); J. Water Poll. Control Fed. 40, 306 (1968)]
Results Details Method, Results per Degradation Parameter, and	Quantification of CO2 evolved via trapping and titration; % ThCO2 evolution; not reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	96%; Not reported; 27 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 definitively.
	Metric 2:	Test Substance Purity	Low	Source and purity of the test substance were not reported or verified by analytical means.
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				

Continued on next page ...				
----------------------------	--	--	--	--

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1976). Biodegradability of plasticizers.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	790484			
Domain	Metric	EVALUATION		Comments
	Metric 5:	Test Method Suitability	High	The test method was suitable.
	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	High	The system type and design were appropriate.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Low	Limited detail regarding acclimated bacterial seed.
	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	Low	Details regarding sampling methods of the outcome were not fully reported.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	No reported variability or uncertainty included.
	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	Study summary only; not a complete study. Analytical MDL, extraction efficiency, percent recovery, and mass balance were not reported.
	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	Medium	Limited information; however, study results were reasonable based on data provided.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study.
<b>Overall Quality Determination</b>			<b>Medium</b>	



<b>Study Citation:</b>	Monsanto, (1976). Biodegradabilty of plasticizers.
<b>OECD Harmonized Template:</b>	Biodegradation in Water
<b>HERO ID:</b>	790484

EXTRACTION	
Parameter	Data
CASRN and Test Material	Not reported; Not Reported
Confidentiality, EndPoint, Type, Guideline	No; inherent biodegradability; Experimental; other: Semi-Continuous Activated Sludge (Analytical Chemistry Method 71-32)
Solvent, Reactivity, Storage, Stability	ethanol; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR
Blank and Control	not reported; Not Reported
Oxygen and Inoculum	aerobic; activated sludge, domestic, non-adapted: mixed liquor (activated sludge and supernatant) 2500 mg/L suspended solids concentration)
Duration, Parameter, System, and Sampling Frequency	primary degradation evaluated during one weekly cycle; test material concentration: magnetically-stirred vessel; not reported
pH Adjusted and pH Concentration	not reported; not reported = 3 - = 134 ppm added per cycle
Composition and Test Temperature	300 mg glucose, 200 mg nutrient broth, 130 mg K <sub>2</sub> HPO <sub>4</sub> ; not reported
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	not reported; typical aeration cycle 23-167 hours; not reported; Not Reported
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	Analytical method GC with FID or UV: Analytical Chemistry method No. 71-M-31 and AC-72-M-4; % primary biodegradation; not reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	Primary degradation rate = 93% (at 3 ppm); >99% (at 134 ppm); ±6% (at 3 ppm); not reported; not reported
Results Remarks and Results Details	% primary biodegradation calculated based on the equation: (Co-Cn)/Cox100; not reported
Results Mean Total Recovery and Results per Recovery	105.7±3.8% recovery from mixed liquor extraction; 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 of the test substance were not reported or verified by analytical means.
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Controls were not reported.
	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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1976). Biodegradability of plasticizers.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	790484			
Domain	Metric	EVALUATION Rating	Comments	
	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	High	The system type and design were appropriate.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	Inoculum was 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 or reported the intended outcome of interest.
	Metric 12:	Test Substance Purity	Medium	Details regarding sampling methods of the outcome 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 reported variability or uncertainty included.
	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	Study summary only; not a complete study. Analytical method reported; MDL, percent recovery, and mass balance were not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Std deviation and kinetic calculations were reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	Limited information; however, study results were reasonable based on data provided.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study.
<b>Overall Quality Determination</b>		<b>Medium</b>		

<b>Study Citation:</b>	Monsanto, (1976). Biodegradabilty of plasticizers.
<b>OECD Harmonized Template:</b>	Biodegradation in Water
<b>HERO ID:</b>	790484

EXTRACTION	
Parameter	Data
CASRN and Test Material	Not reported; Not Reported
Confidentiality, EndPoint, Type, Guideline	No; inherent biodegradability; Experimental; other: Rive Die-Away test
Solvent, Reactivity, Storage, Stability	ethanol; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR
Blank and Control	sterile control included; not reported
Oxygen and Inoculum	aerobic; natural water: Settled river water from Meramec or Mississippi Rivers supernatant
Duration, Parameter, System, and Sampling Frequency	ca. 6 weeks; test material concentration: sealed bottles; not reported
pH Adjusted and pH	not reported; not reported
Concentration	= 1 - ppm
Composition and Test Temperature	Not Reported; ambient
CEC, Water Aeration Dilution, Continuous Dark-ness, and Other Design	not reported; not reported; yes; Not Reported
Results Details Method, Results per Degradation Parameter, and	Analytical method GC with FID or UV: Analytical Chemistry method No. 71-M-31 and AC-72-M-4; days required for 50% primary biodegrada- tion; not reported
Direct Quantum Yield Results	
Results Value, Results Standard Deviation, Re- sults Sample Time, and Results Reference Sub- stance Compartments	50%/2 days; not reported; not reported; not reported
Results Remarks and Results Details	primary biodegradation half-life = 2 days; not reported
Results Mean Total Recovery and Results per Re- covery	105.7±3.8% recovery from mixed liquor extraction; 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 of the test substance were not reported or verified by analytical means.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Controls were reported.
	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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1976). Biodegradability of plasticizers.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	790484			
Domain	Metric	EVALUATION Rating	Comments	
	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	High	The system type and design were appropriate.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	Inoculum was 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 or reported the intended outcome of interest.
	Metric 12:	Test Substance Purity	Medium	Details regarding sampling methods of the outcome 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 reported variability or uncertainty included.
	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	Study summary only; not a complete study. Analytical method reported; MDL, percent recovery, and mass balance were not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Std deviation and kinetic calculations were reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	Limited information; however, study results were reasonable based on data provided.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study.
<b>Overall Quality Determination</b>		<b>Medium</b>		

<b>Study Citation:</b>	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	5492430			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Butyl benzyl 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	Sterile inoculated control: 0% degraded after 63 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; 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.: 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, 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	(BBP) after /n days (n total 63); Not Reported			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	48% (52% bioconversion); Not reported; 63 days; 108% remaining after 63d. Sterile control			
Results Remarks and Results Details	BBP 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 71% of BBP was associated with the sediment phase.; 50% of BBP disappeared after 29 days and 100% after 34 days			
Results Mean Total Recovery and Results per Recovery	Not reported; Not Reported			
<b>EVALUATION</b>				
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	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	High	The system was appropriate.
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.
<b>Overall Quality Determination</b>		<b>Medium</b>		

\* Related References: Cited in ECHA

<b>Study Citation:</b>	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	5492430			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Butyl benzyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Anaerobic biotransformation in anaerobic 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: 15% 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 days: 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 methylcellulose, 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 (BBP) after /n days (n total 365); Not Reported			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	103% (0% bioconversion); Not reported; 61 days; 85% remaining after 61d. Sterile control			
Results Remarks and Results Details	BBP did not degrade after 61 days. 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 BBP disappeared after 61 days			
Results Mean Total Recovery and Results per Recovery	Not reported; Not Reported			
<b>EVALUATION</b>				
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	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 system was appropriate.
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	Medium	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.
<b>Overall Quality Determination</b>		<b>Medium</b>		

\* Related References: Cited in ECHA



<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Biodegradation in Water
<b>HERO ID:</b>	5348332

Parameter		EXTRACTION		
CASRN and Test Material		85-68-7; BBP		
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		2.2/day; Not Reported; Not Reported; Not Reported		
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments		half-life 0.32 days; Not Reported		
Results Remarks and Results Details		Not Reported; Not Reported		
Results Mean Total Recovery and Results per Recovery				
Domain		EVALUATION		
		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				
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	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)

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	5348332			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, EndPoint, Type, Guideline	no; primary biodegradation; experimental; other: river die-away (RDA); slow-stirred (SS); unstirred (US)			
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:: Mississippi River water (RDA); water-sediment from a spring-fed freshwater lake (SS); water-sediment from Illinois River (US)			
Duration, Parameter, System, and Sampling Frequency	not reported; not specified: Not Reported; not reported			
pH Adjusted and pH	not reported; not reported			
Concentration	10 - 100 ug/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 Direct Quantum Yield Results	Not Reported; first-order rate constant; Not Reported			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	0.35/day (RDA); 0.14/day (SS); >0.23/day (US); Not Reported; Not Reported; Not Reported			
Results Remarks and Results Details	half-life: 2 days (RDA); 5 days (SS); <3 days (US); Value calculated from data presented in the referenced paper.			
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	5348332			
		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 6:	Testing Conditions	Medium	There were omissions in the testing conditions but more information may be available in the cited reference.
	Metric 7:	Testing Consistency	Low	Test consistency was not reported but may be available in the cited reference.
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	The inoculum source was not reported but may be available in the cited reference.
	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: 1359413: Carson DB, Saeger VW, Gledhill WE (1990) Use of microcosms versus conventional biodegradation testing for estimating chemical persistence. In: Landis WG, van der Schalie WH (eds) Aquatic toxicology and risk assessment: thirteenth volume. ASTM STP 1096. American Society for testing and Materials, Philadelphia PA, p 48 (not in distiller)

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	5348332			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	84-74-2; BBP			
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	0.19/day; Not Reported; Not Reported; Not Reported			
Results Remarks and Results Details	half-life 3.7 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	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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	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 HEROID: 6813682: Ziogou K, Kirk PW, Lester JN (1989) Water Res 23 :743. (not in distiller)

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	5348332			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; Not Reported			
Confidentiality, EndPoint, Type, Guideline	Not Reported; Not Reported; Not Reported; 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			
Blank and Control	Not Reported; Not Reported			
Oxygen and Inoculum	Not Reported; Not Reported			
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; 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; Not Reported; Not Reported			
Results Remarks and Results Details	Not Reported; anaerobic degradation in laboratory systems; after 178 days 77% removal observed			
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	5348332			
Domain		EVALUATION		Comments
	Metric	Rating		
	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	Medium	The lipid content or lipid normalized BCF was not reported for BCF studies, but these deficiencies or 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 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

## Medium

\* Related References: Cited from Ejlerstsson J,Houwen FP, Svensson BH (1996) Swed J Agric Res 26 :53 (HERO ID 1315796, not in distiller at the time of extraction) Ejlerstsson J,Meyerson U, Svensson BH (1996) Biodegradation 7:345 (HERO ID 5556571, in distiller at the time of extraction) Data very close to data already extracted under HERO ID 5556571, difficult to tell due to multiple sources being referenced for same endpoint. Ejlerstsson J, Svensson BH (1996) Biodegradation 7:501 (HERO ID 5755272 and 679474, not in distiller at the time of extraction)



<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Biodegradation in Water
<b>HERO ID:</b>	5348332

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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: Mississippi River water
Duration, Parameter, System, and Sampling Frequency	not reported; not specified: unstirred; not reported
pH Adjusted and pH	not reported; not reported
Concentration	1 mg/L
Composition and Test Temperature	not reported; not reported
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	not reported; not reported; yes; 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	0.46/day; Not Reported; Not Reported; Not Reported
Results Remarks and Results Details	half-life 1.5 days; Value calculated from data presented in the referenced paper.
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	Low	The test method was not reported but may be available in the cited reference. Applied target chemical concentrations were greater than the aqueous solubility.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	5348332			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 6:	Testing Conditions	Medium	There were omissions in the testing conditions but more information may be available in the cited reference.
	Metric 7:	Testing Consistency	Low	Test consistency was not reported but may be available in the cited reference.
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	The inoculum source was not reported but may be available in the cited reference.
	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	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	Low	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.
<b>Overall Quality Determination</b>		<b>Low</b>		

\* Related References: Cites Data already entered under HEROID: 790777: Saeger VW, Tucker ES (1976) Appl Environ Microbiol 31 :29

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

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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	≥ 99% after 10 days at 20°C and negligible 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; 85% for suspended particulate matter and 96% from water% 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				

Continued on next page ...

...continued from previous page

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

Continued on next page ...

...continued from previous page

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

<b>Study Citation:</b>	Shelton, Boyd, S. A., Tledje, J. M. (1984). Anaerobic biodegradation of phthalic acid esters in sludge. Environmental Science & Technology 18(2):93-97.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	5490812			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; Butyl benzyl 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	[14-C] BBP (3.6 µCi) in ethanol from Monsanto Chemical Co.; Chem Services (West Chester, PA); 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; 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 Direct Quantum Yield Results	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.; BBP removal %; Not Reported			
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	100% degradation in 10% diluted sludge; >90% BBP degraded in 40 d; Not Reported; 70 days; No significant loss PAE's in autoclaved controls			
Results Remarks and Results Details	Phthalic acid and monobutyl phthalate were detected as transient degradation products. 103% theoretical CH4 recovered as end product.; 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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Shelton, Boyd, S. A., Tledje, J. M. (1984). Anaerobic biodegradation of phthalic acid esters in sludge. Environmental Science & Technology 18(2):93-97.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>			<b>High</b>	

\* Related References: Cited in ECHA

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

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Benzyl butyl phthalate
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	42.5% in 28 days (average, S.D. 11.1); 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	101; 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				

Continued on next page ...



...continued from previous page

<b>Study Citation:</b>	SRC, (1983). Exhibit I shake flask biodegradation of 14 commercial phthalate esters.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	SRC, (1983). Exhibit I shake flask biodegradation of 14 commercial phthalate esters.		
<b>OECD Harmonized Template:</b>	Biodegradation in Water		
<b>HERO ID:</b>	1316198		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	85-68-7; Benzyl butyl phthalate		
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	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 Direct Quantum Yield Results	GC-FID; % primary biodegradation; Not Reported		
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	59 to 89% after 28 days (average 77.7%); 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	101; 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.
Continued on next page ...			

...continued from previous page

<b>Study Citation:</b>	SRC, (1983). Exhibit I shake flask biodegradation of 14 commercial phthalate esters.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>			<b>High</b>	

\* Related References: Cited in ECHA

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Biodegradation in Water
<b>HERO ID:</b>	9861

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl 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: 0.1mg/L; Average loss of test substance after 7 days; 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.; Adaptation of the inoculum to BBP was classified as "rapid" at both 5 and 10 mg/L.
Results Mean Total Recovery and Results per Recovery	62-149%; 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	N/A	The test substance purity was not reported; however, the omission is unlikely to have an impact on the study results.
Domain 2: Test Design	Metric 3:	Study Controls	High	Appropriate blanks were used without inoculum and without substrate.
	Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported and appropriate.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	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; Monsanto Chemical Co. (St. Louis, Mo.); NR; 99% pure			
Blank and Control	Not applicable; Not applicable			
Oxygen and Inoculum	aerobic; other:: 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 Direct Quantum Yield Results	GC-ECD; Not Reported; Not Reported			
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): 148 (DMP 1-1); 139 (DEP 4-1); 200 (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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	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	High	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	
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**

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Biodegradation in Water
<b>HERO ID:</b>	1316130

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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; Chemservice; 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=107 hours; Not reported; 32 days; Not reported
Results Remarks and Results Details	Not applicable; k1=6.5E-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
	Metric 2:	Test Substance Purity	High
Domain 2: Test Design	Metric 3:	Study Controls	High
	Metric 4:	Test Substance Stability	High
Domain 3: Test Conditions			

Continued on next page ...



...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Water			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

\* Related References: Cited in HSDB

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment
<b>HERO ID:</b>	1322110

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Benzyl butyl 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 influent: COD (mg/L): 325-450; BOD (mg/L): 205-240; Plant B influent: COD (mg/L): 670-885; BOD (mg/L): 345-400.
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
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.: 0.89-1.5±0.18 µg/LPlant A effluent conc.: 0.1-0.26±0.05 µg/LPlant B influent conc.: 6.26-9.91±1.07 µg/LPlant B effluent conc.: 1.31-2.48±0.40 µg/L
Half-life, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported; (Estimated from table) Plant A:±5%; Plant B:±5%; 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 %: 86; Plant B removal %: 76; 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	Standard and analytical grade chemicals were used.
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Controls were not reported but their omission is unlikely to have a substantial impact on the study results.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

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

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Benzyl butyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Non-guideline aerobic degradation in sludge
Solvent, Reactivity, Storage, Stability	Hexane; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Chem Service, West Chester, PA; NR; 99%
Oxygen and Inoculum	aerobic; activated sludge, industrial, adapted: Not reported
Duration, Parameter, System, and Sampling Frequency	Not reported; test mat.; Bioreactor; Not reported
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Not reported; Not reported; Not reported; Not reported; Not reported; 7.0
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); Detection limit: 1.0 ug/L; 7
Results Remarks	Not reported
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	2.1 days; < 10%; Not reported; Not reported
Results Details	Not Reported
Mean Total Recovery Results and Results Per Recovery	Not Reported; 91.4%
Results Value, Direct Quantum Yield Results, and Transformation Products	k=0.332; 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.

Continued on next page ...

...continued from previous page

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

\* Related References: Cited in HSDB

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	2121719			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, EndPoint, Type, Guideline	Not Reported; other; 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			
Oxygen and Inoculum	aerobic/anaerobic; natural sediment: acclimated for 7 days with 0.25 g/L BBP			
Duration, Parameter, System, and Sampling Frequency	up to 90 days; Not Reported; Microcosm; 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	variable; Not Reported; Sterilization inhibited mineralization = 250 mg/L			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Not Reported; Not Reported; Not Reported			
Results Remarks	After 14 days: primary aerobic degradation 0-30% at 8-10°C and 96-100% at 20°C.			
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	1.4 days (mean; primary biodegradation); 8-13 days (mineralization to CO2); 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 in this secondary source; additional inforamtion may be in source cited.
Domain 2: Test Design	Metric 3:	Study Controls	High	A control was reported.
	Metric 4:	Test Substance Stability	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
Domain 3: Test Conditions	Metric 5:	Test Method Suitability	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	2121719			
Domain	Metric	EVALUATION		Comments
	Metric 6:	Testing Conditions	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 7:	Testing Consistency	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 8:	System Type and Design	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 12:	Test Substance Purity	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 18:	QSAR Models	N/A	The metric is not applicable.
<b>Overall Quality Determination</b>			<b>Medium</b>	

\* Related References: Source cited: Rike and Borresen 1999; possible related HERO ID 5490729 (not available at time of extraction)

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	2121719			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, EndPoint, Type, Guideline	Not Reported; other; experimental; other: Microcosm			
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	variable oxygen saturation; natural water / sediment: lake water-sediment			
Duration, Parameter, System, and Sampling Frequency	41 days; Not Reported; Microcosm; 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	variable; Not Reported; Sterilization inhibited mineralization >= 12 - <= 1000 µg/L			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Not Reported; Not Reported; Not Reported			
Results Remarks	Light and oxygen variables did not effect primary degradation results.			
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	1.4 days (mean; primary biodegradation); 8-13 days (mineralization to CO2); 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 in this secondary source; additional inforamtion may be in source cited.
Domain 2: Test Design	Metric 3:	Study Controls	High	A control was reported.
	Metric 4:	Test Substance Stability	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
Domain 3: Test Conditions	Metric 5:	Test Method Suitability	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
	Metric 6:	Testing Conditions	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
	Metric 7:	Testing Consistency	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
Continued on next page ...				



...continued from previous page

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	2121719			
Domain	Metric	EVALUATION Rating	Comments	
	Metric 8:	System Type and Design	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 4: Test Organisms	Metric 9:	Outcome Assessment Methodology	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable.
Domain 5: Outcome Assessment	Metric 11:	Test Substance Identity	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 12:	Test Substance Purity	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 6: Confounding/Variable Control	Metric 13:	Confounding Variables	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable.
Domain 7: Data Presentation and Analysis	Metric 15:	Data Reporting	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 8: Other	Metric 17:	Verification or Plausibility of Results	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 18:	QSAR Models	N/A	The metric is not applicable.
<b>Overall Quality Determination</b>		<b>Medium</b>		

\* Related References: Source cited: Monsanto ES-82-SS53; 1982

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment
<b>HERO ID:</b>	1315944

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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	Transformed to monobutyl phthalate, monobenzyl phthalate, benzoate, methane & carbon dioxide
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	11%; Not Reported; monobutyl phthalate, monobenzyl phthalate methane & 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				

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	1315944			
Domain		Metric	EVALUATION 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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	Kickham, P., Otton, S. V., Moore, M. M., Ikonomou, M. G., Gobas, F. A. P., C (2012). Relationship between biodegradation and sorption of phthalate esters and their metabolites in natural sediments. Environmental Toxicology and Chemistry 31(8):1730-1737.
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment
<b>HERO ID:</b>	1339546

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl phthalate
Confidentiality, EndPoint, Type, Guideline	None; ready biodegradability; Experimental; other: Biodegradation of BBP 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: marine: 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	70 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: 2.9; 0.07; 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	82±6%; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	rate constant, k (day <sup>-1</sup> ): 0.24; 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Kickham, P., Otton, S. V., Moore, M. M., Ikonomou, M. G., Gobas, F. A. P., C (2012). Relationship between biodegradation and sorption of phthalate esters and their metabolites in natural sediments. Environmental Toxicology and Chemistry 31(8):1730-1737.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment
<b>HERO ID:</b>	675274

Parameter	Data
CASRN and Test Material	85-68-7; Benzyl butyl 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; Tokyo Chemical, Tokyo; NR; Analytical grade
Oxygen and Inoculum	anaerobic; natural sediment: freshwater: Sediment: Ue Pond, pH 6.95, 16.3°C, solid content 52.4 g/L dw. Mineral salt medium: 356 mg K <sub>2</sub> HPO <sub>4</sub> , 272 mg KH <sub>2</sub> PO <sub>4</sub> , 530 mg NH <sub>4</sub> Cl, 10 mg MgCl <sub>2</sub> 6H <sub>2</sub> O, 75 mg CaCl <sub>2</sub> , 20 mg FeCl <sub>2</sub> 4H <sub>2</sub> O, 1.2 g NaHCO <sub>3</sub> , 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 column; 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	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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	675274			
Domain		Metric	EVALUATION	
			Rating	Comments
	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 or 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	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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment
<b>HERO ID:</b>	675274

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Benzyl butyl 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; Tokyo Chemical, Tokyo; NR; Analytical grade
Oxygen and Inoculum	anaerobic; natural sediment: freshwater: Sediment: Zuion Pond, pH 6.61, 15.2°C, 82.2 solid content g/L dw. Mineral salt medium: 356 mg K <sub>2</sub> HPO <sub>4</sub> , 272 mg KH <sub>2</sub> PO <sub>4</sub> , 530 mg NH <sub>4</sub> Cl, 10 mg MgCl <sub>2</sub> 6H <sub>2</sub> O, 75 mg CaCl <sub>2</sub> , 20 mg FeCl <sub>2</sub> 4H <sub>2</sub> O, 1.2 g NaHCO <sub>3</sub> , 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 column; 7
Results Remarks	Not reported
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	2.2 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
	Metric 2:	Test Substance Purity	High
Domain 2: Test Design	Metric 3:	Study Controls	Medium
	Metric 4:	Test Substance Stability	High

Continued on next page ...



...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	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 or 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	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment
<b>HERO ID:</b>	675274

Parameter	Data
CASRN and Test Material	85-68-7; Benzyl butyl 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; Tokyo Chemical, Tokyo; NR; Analytical grade
Oxygen and Inoculum	anaerobic; natural sediment: freshwater: Sediment: Piano Pond, pH 6.47, 15.7°C, solid content 106.6 g/L dw. Mineral salt medium: 356 mg K <sub>2</sub> HPO <sub>4</sub> , 272 mg KH <sub>2</sub> PO <sub>4</sub> , 530 mg NH <sub>4</sub> Cl, 10 mg MgCl <sub>2</sub> 6H <sub>2</sub> O, 75 mg CaCl <sub>2</sub> , 20 mg FeCl <sub>2</sub> 4H <sub>2</sub> O, 1.2 g NaHCO <sub>3</sub> , 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 column; 7
Results Remarks	Not reported
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	1.8 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

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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	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 or 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	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.
<b>Overall Quality Determination</b>		<b>High</b>		

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

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl 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	8 weeks for 10% sludge incubations; 9 weeks for Adrian whole sludge; 10 weeks for Jackson whole sludge.; CH4 evolution; Digester bottles were incubated for 8-10 weeks with 20 ppm of the test substance.; 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	No CH4 was observed in Adrian sludge.
Half-life, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported; Not reported; Not reported; Not reported
Results Details	BBP degradation measured by substrate disappearance in whole sludge=93 and 98% in Adrian and Jackson sludges, respectively, after 9 and 10 weeks.
Mean Total Recovery Results and Results Per Recovery	Adrian sludge: 94%; Jackson sludge: 101%; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	% Degradation after 8 weeks in 10% Adrian Sludge=0; in 10% Jackson sludge: 24; 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	Metric 3:	High	Appropriate blanks were used to measure background levels and correct concentration measurements.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Michigan State University, (1981). Final report to battelle columbus laboratories and EPA-OTS, subcontract no. T-6419 (7197)-033, 100179 - 093081. Development of test for determining anaerobic biodegradation potential.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	1316233			
Domain	Metric	EVALUATION		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.

<b>Study Citation:</b>	Monsanto, (1986). Letter from Monsanto Company to USEPA concerning the concentration of benzyl butyl phthalate in the sediment samples of the microcosm report with attachments.
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment
<b>HERO ID:</b>	1359192

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Not Reported
Confidentiality, EndPoint, Type, Guideline	No; Inherent biodegradation; Sediment microcosm; Not Reported
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	14C; NR; NR; NR
Oxygen and Inoculum	Not specified; not specified: Sediment
Duration, Parameter, System, and Sampling Frequency	31 days; NR; NR; 11, 22, 31 days
Results Sample Time, Compartment, Sludge	11 days; Sediment; NR; NR; NR; NR
Compartment, Water	
Compartment, CEC, and pH	
Control Dark, Control, and Blank	NR; NR; Sterile control included
Concentration	10 - 100 mg/kg
Analytical Method, Analytical Details, and Results Per Degredation Parameter	LSC and confirmed by electron capture GC; Sediment extracted by hexane; Test substance disappearance
Results Remarks	Low concentration 0 - 2 cm: < 0.015 mg/kg / 11d, < 0.020 mg/kg / 22d, < 0.20 - 0.023 mg/kg / 31 d. High concentration 0 - 2 cm: 0.007 mg/kg / 11d, < 0.016 mg/kg / 22d, < 0.013 - 0.022 mg/kg / 31dControl 0 - 2 cm: < 0.025 mg/kg / 11d, 0.069 mg/kg / 22 d, 0.068 - 0.079 mg/kg / 31 dNot detected at 2-4 cm and 4-6 cm depths
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not Reported; Not Reported; Sterile control; BBP detected in all 0-2 cm samples of the sterile control except on day 11 (possibly due to hydrolysis or incomplete sterilization)
Results Details	NR
Mean Total Recovery Results and Results Per Recovery	NR; NR
Results Value, Direct Quantum Yield Results, and Transformation Products	99.9%; NR; NR

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	This source is a follow-up to another study; this information may have been reported in the main study.
Domain 2: Test Design	Metric 3:	Study Controls	Medium	This source is a follow-up to another study; this information may have been reported in the main study.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1986). Letter from Monsanto Company to USEPA concerning the concentration of benzyl butyl phthalate in the sediment samples of the microcosm report with attachments.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	1359192			
Domain	Metric	EVALUATION		Comments
	Metric 4:	Test Substance Stability	Medium	This source is a follow-up to another study; this information may have been reported in the main study.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Medium	This source is a follow-up to another study; this information may have been reported in the main study.
	Metric 6:	Testing Conditions	Medium	This source is a follow-up to another study; this information may have been reported in the main study.
	Metric 7:	Testing Consistency	Medium	This source is a follow-up to another study; this information may have been reported in the main study.
	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	This source is a follow-up to another study; this information may have been reported in the main 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	Medium	This source is a follow-up to another study; this information may have been reported in the main study.
	Metric 12:	Test Substance Purity	Medium	This source is a follow-up to another study; this information may have been reported in the main study.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	This source is a follow-up to another study; this information may have been reported in the main 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	The analytical method was appropriate, raw data was reported. Further details may be included in the full study.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	This source is a follow-up to another study; this information may have been reported in the main study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	This source is a follow-up to another study and should not be used alone.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Continued on next page ...

---

**...continued from previous page**

---

<b>Study Citation:</b>	Monsanto, (1986). Letter from Monsanto Company to USEPA concerning the concentration of benzyl butyl phthalate in the sediment samples of the microcosm report with attachments.
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment
<b>HERO ID:</b>	1359192

---

		EVALUATION	
Domain	Metric	Rating	Comments
<b>Overall Quality Determination</b>		<b>Medium</b>	

---

\* Related References: Possibly related to TSCA submissions under HERO ID 1359190 and 1359214.



<b>Study Citation:</b>	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	5492430			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Butyl benzyl 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			
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	61 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: 4% degraded by day 61			
Concentration	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	BBP degraded rapidly in freshwater sediment. Additional experiments indicated that adsorption of PAE's to sediment was rapid: >50% in initial samples and 71% of BBP was associated with the sediment phase.			
Halfife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported; Not reported; Not reported; 98% remaining after 61d. Sterile control			
Results Details	88% of BBP disappeared after 35 days.			
Mean Total Recovery Results and Results Per Recovery	Extraction efficiency for BBP (20-100 µM) ranged from 92 ±5% to 91 ±8.5%.; Not reported			
Results Value, Direct Quantum Yield Results, and Transformation Products	0% (100% bioconversion); % remaining test material (BBP) after /n days (n total 365); Not Reported; Not reported			
<b>EVALUATION</b>				
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>		Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015.		
<b>OECD Harmonized Template:</b>		Biodegradation in Sediment		
<b>HERO ID:</b>		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	High	The system was appropriate.
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.
<b>Overall Quality Determination</b>		<b>Medium</b>		

<b>Study Citation:</b>	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	5492430			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Butyl benzyl 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; sewage, predominantly industrial, adapted: 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	1 year; 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 days: 0, 22, 36, 100 365			
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	100 d; Not reported; Not reported; Not reported; Not reported; 7.0			
Control Dark, Control, and Blank Concentration	Not Reported; Sterile inoculated control: 89% remaining (11% degraded); Sterile inoculated control (results not reported)			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	200 µmol/L			
Results Remarks	PAE's were spiked and 3x extracted with HPLC grade hexane (performed in triplicate). Partitioning to sediments were examined by centrifugation and separate hexane extraction. Extracts examined by GC (Hewlett Packard 5890A) with flame ionization detector.; Not reported; 7			
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	BBP 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 BBP was associated with the sediment phase.			
Results Details	Not reported; Not reported; Not reported; 89% remaining after 100d. Sterile control			
Mean Total Recovery Results and Results Per Recovery	97% of BBP disappeared after 36 days.			
Results Value, Direct Quantum Yield Results, and Transformation Products	Extraction efficiency for BBP (20-100 µM): 75 ±7% and 61 ±8.5%.; Not reported			
	0% (100% bioconversion); % remaining test material (BBP) after /n days (n total 365); Not Reported; Not reported			
<b>EVALUATION</b>				
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Painter, S. E., Jones, W. J. (1990). Anaerobic bioconversion of phthalic acid esters by natural inocula. Environmental Technology 11(11):1015.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	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 system was appropriate.
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.
<b>Overall Quality Determination</b>		<b>Medium</b>		

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment
<b>HERO ID:</b>	1316112

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butylbenzyl 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 12000 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 92.8%Secondary digester removal 76.3%Secondary supernatant residual 0.8%Secondary sludge residual 0.9%Kp: 8.17Kp 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): 3.40 L/g day (95% confidence interval 3.00 - 3.80 L/g day)
Mean Total Recovery Results and Results Per Recovery	Not reported; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	98.3%; 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

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment
<b>HERO ID:</b>	1316084

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butylbenzylphthalate
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 33.5 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	BBP was detected in 2 samples
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 %: 96; 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 its omission is unlikely to have a substantial impact on the study results.
Domain 2: Test Design	Metric 3:	High	A blank control was used.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

\* Related References: Cited in ECHA



<b>Study Citation:</b>	Tan, B. L., Hawker, D. W., Muller, J. F., Leusch, F. D., Tremblay, L. A., Chapman, H. F. (2007). Modelling of the fate of selected endocrine disruptors in a municipal wastewater treatment plant in South East Queensland, Australia. Chemosphere 69(4):644-654.
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment
<b>HERO ID:</b>	675442

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Benzyl butyl 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: 133.6 ng/L (water); 261.3 ng/g (solids)anaerobic bioreactor: 62.5 ng/L (water); 14.3 ng/g (solids/sludge)aerobic bioreactor: 65.7 ng/L (water); 12.3 ng/g (solids)final settling tank: 121 ng/L (water)return activated sludge: 35.1 ng/L (water); 25.7 ng/g (solids/sludge)effluent: 75.7 ng/L (water)point of discharge: 60.8 ng/L1 km down stream: 13.2 ng/L
Results Value, Direct Quantum Yield Results, and Transformation Products	Not reported; Not reported
	Estimated 44.4% biotransformation, 8.8% sorption to sludge; Not Reported; Not reported

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

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Tan, B. L., Hawker, D. W., Muller, J. F., Leusch, F. D., Tremblay, L. A., Chapman, H. F. (2007). Modelling of the fate of selected endocrine disruptors in a municipal wastewater treatment plant in South East Queensland, Australia. Chemosphere 69(4):644-654.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Xu, X. R., Li, H. B., Gu, J. D. (2006). Elucidation of n-butyl benzyl phthalate biodegradation using high-performance liquid chromatography and gas chromatography-mass spectrometry. Analytical and Bioanalytical Chemistry 386(2):370-375.
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment
<b>HERO ID:</b>	675522

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Benzyl butyl 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	Not reported; sludge and water; anaerobic and aerobic bioreactors, settling tank, return activated sludge; influent, effluent, point of discharge 1 km down stream; Not reported; Not reported
Compartment, CEC, and pH	
Control Dark, Control, and Blank	Not reported; Not reported; Not reported
Concentration	Not Reported
Analytical Method, Analytical Details, and Results Per Degredation Parameter	gas chromatography-mass spectrometry; extracted from samples with solid phase extraction; 7
Results Remarks	These measured concentrations were reported from Tan et al. 2007 and used in this source to develop a QSAR model for WWTP removal
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not Reported; Not reported; Not reported; Not reported
Results Details	influent: 201 ng/L (water); 948 ng/g (solids)anaerobic bioreactor: 24.5 ng/L (water); 36.6 ng/g (solids/sludge)aerobic bioreactor: 16.4 ng/L (water); 55.4 ng/g (solids)final settling tank: 31.8 ng/L (water)return activated sludge: 15.1 ng/L (water); 149 ng/g (solids/sludge)effluent: 34.4 ng/L (water)effluent: point of discharge 1 km down stream
Mean Total Recovery Results and Results Per Recovery	Not reported; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	Estimated 92.9% biotransformation, 1.1% sorption to sludge; Not Reported; Not reported

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

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Xu, X. R., Li, H. B., Gu, J. D. (2006). Elucidation of n-butyl benzyl phthalate biodegradation using high-performance liquid chromatography and gas chromatography-mass spectrometry. Analytical and Bioanalytical Chemistry 386(2):370-375.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	675522			
		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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment
<b>HERO ID:</b>	5541359

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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 50 ug/L; Sediment extracted 3x by rotating shaker with hexane; Not Reported
Results Remarks	Range half-life: 0.5 - 10.5 daysAverage background test substance sediment concentration (range): 0.2 ug/g (N.D. - 1.8 ug/g)Danshui River sed. half-life: 0.6 dDanshui River sed. background conc.: NDZhonggang River sed. half-life: 5.1 dZhonggang River sed. background conc.: 0.2 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	3.1 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	93.5%; 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	5541359			
EXTRACTION				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; BBP			
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			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	5 ug/g			
Results Remarks	GC/MS, analytes separated on DB-5 capillary column, 0.25 um film thickness, 0.25 m i.d., 30 m length; detection limit 50 ug/L; Sediment extracted 3x by rotating shaker with hexane; Not Reported			
	Range half-life: 9.9 - 25.5 daysAverage background test substance sediment concentration (range): 0.2 ug/g (N.D. - 1.8 ug/g)Danshui River sed. half-life: 5.9 dDanshui River sed. background conc.: NDZhonggang River sed. half-life: 17.7 dZhonggang River sed. background conc.: 0.2 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	19.3 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	93.5%; 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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Biodegradation in Sediment			
<b>HERO ID:</b>	5541359			
Domain		EVALUATION		Comments
	Metric	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.
<b>Overall Quality Determination</b>			<b>High</b>	



<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Soil			
<b>HERO ID:</b>	2121719			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, EndPoint, Type, Guideline	Not Reported; primary biodegradation; 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			
Oxygen, pH, and CEC	aerobic; Not Reported; Not Reported			
Test Type, Test Temperature, and Test Details	laboratory; Not Reported; soil: wood preserving sludge			
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: Not Reported			
Duration, Parameter, System, and Sampling Frequency	Not Reported; Not Reported; Not Reported; Not Reported			
Control and Blank	Not Reported; Not Reported			
Concentration	117 mg/kg BBP in soil			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Not Reported; Not Reported; Not Reported			
Results Remarks	Not Reported			
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and References Substance Compartment Results	Not Reported; Not Reported; Not Reported; Not Reported; Not Reported			
Results Details	half-lives in two sludges were 59.2 and 178.2 days			
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.
	Metric 2:	Test Substance Purity	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
	Metric 4:	Test Substance Stability	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
Domain 3: Test Conditions				
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>		ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).		
<b>OECD Harmonized Template:</b>		Biodegradation in Soil		
<b>HERO ID:</b>		2121719		
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 5:	Test Method Suitability	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 6:	Testing Conditions	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 7:	Testing Consistency	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 8:	System Type and Design	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 12:	Test Substance Purity	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 18:	QSAR Models	N/A	The metric is not applicable.
<b>Overall Quality Determination</b>		<b>Medium</b>		

\* Related References: Source cited: Kincannon and Lin (1985) (not available at time of extraction)

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Soil			
<b>HERO ID:</b>	2121719			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, EndPoint, Type, Guideline	Not Reported; primary biodegradation; 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			
Oxygen, pH, and CEC	aerobic; Not Reported; Not Reported			
Test Type, Test Temperature, and Test Details	laboratory; 60°C; artificial compost			
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: Not Reported			
Duration, Parameter, System, and Sampling Frequency	7 and 30 days; Not Reported; Not Reported; Not Reported			
Control and Blank	Not Reported; Not Reported			
Concentration	500 mg/kg BBP in soil			
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Not Reported; Not Reported; Not Reported			
Results Remarks	primary biodegradation was 75 and 65%			
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and References 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.
	Metric 2:	Test Substance Purity	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
	Metric 4:	Test Substance Stability	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
Domain 3: Test Conditions	Metric 5:	Test Method Suitability	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
	Metric 6:	Testing Conditions	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Biodegradation in Soil			
<b>HERO ID:</b>	2121719			
Domain	Metric	EVALUATION		Comments
	Metric 7:	Testing Consistency	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 8:	System Type and Design	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 12:	Test Substance Purity	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 18:	QSAR Models	N/A	The metric is not applicable.
<b>Overall Quality Determination</b>			<b>Medium</b>	

\* Related References: Source cited: Kincannon and Lin (1985) (not available at time of extraction)

<b>Study Citation:</b>	Barrows, M. E., Petrocelli, S. R., Macek, K. J., Carroll, J. J. (1980). Bioconcentration and elimination of selected water pollutants by bluegill sunfish ( <i>Lepomis macrochirus</i> ). :379-392.
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration
<b>HERO ID:</b>	18050

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl phthalate
Confidentiality, Type, and Guideline	None; Experimental; other: Bioconcentration in Bluegill sunfish: Aquarium with well-water and modified continuous-flow proportional dilution apparatus for chemical introduction
Solvent, Reactivity, Storage, Stability	NR; NR; Stored in sealed vial under refrigerated conditions.; NR
Radiolabel, Source, State, Purity	Ring labelled C-14.; New England Nuclear, Boston, Massachusetts.; NR; NR
Test Organism and Test Organism Details	Bluegill sunfish ( <i>Lepomis macrochirus</i> ); Sunfish were obtained from 1) a commercial fish farm in Connecticut. Wet weights: 0.37±0.18 to 0.94±0.34 mm. Lengths: 25±3 to 32±4 mm. 2) commercial farm in Nebraska: Weight: 0.95±0.36 g; Length: 35±4 mm.
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; 16±1°C (mean); Measured daily; 7.1; 7 days
Media Type, TOC, and Salinity	natural water; Not reported; Not reported
Dissolved Oxygen, Conductivity, and Hardness	>60% saturation; Not reported; 35 mg/L as calcium carbonate
Exposure Route, Elimination, and Nominal Measurements	500mL of diluent well water was mixed with stock solution.; t1/2 >1 but <2 days. following the apparent equilibrium or 28 d exposure period fish were transferred to pollutant free aquarium; sample days 1, 2, 4, 7; Measured
Test Type, Test Temperature, and Test Condition	flow-through; 16±1°C (mean); Measured daily; Control aquarium which received only well water
Comments	
Duration, Parameter, and Sampling Frequency	21 days; Test: 28 days or until equilibrium; water and fish samples collected periodically until apparent equilibrium was reached or the max exposure of 28 days was reached; DT50; Days 0, 1, 2, 4, 7, 10, 14, and 21.
Concentration	9.73±1.75 µg/L
Analytical Method and Analytical Details	Quantitation of radiolabeled residue using a Packard Model 306 Oxidizer and Model 2002 Packard Tri-Carb Liquid Scintillation Spectrometer; samples collected and prepared according to US EPA;
Rate Constant and Results per Recovery	Half-life >1 but <2 days; Half-life defined as the period of time required for the mean chemical residue measured in fish at equilibrium to be reduced by half during depuration; Oxidizer: 99-100% recovery; Counting efficiencies: 7.9% counting error at 95% confidence level, decreased as sample activity increased
Statistics, Basis, and Calculation Basis	Not Reported; whole fish; steady state
Results Value and Results Details	BCF=663; Not Reported
Metabolites, Reference, and Results Reference Substance	Not Reported; Not Reported; NA (control aquarium used but not discussed other than its use as a baseline)

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 purity of the test substance 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
			Control aquaria were used without the introduction of the test substance.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Barrows, M. E., Petrocelli, S. R., Macek, K. J., Carroll, J. J. (1980). Bioconcentration and elimination of selected water pollutants by bluegill sunfish ( <i>Lepomis macrochirus</i> ). :379-392.			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	18050			
Domain		Metric	EVALUATION Rating	Comments
	Metric 4:	Test Substance Stability	High	The test substance storage 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	High	The testing conditions were reported and appropriate.
	Metric 7:	Testing Consistency	High	The samples were kept in the same aquarium and subject to the same treatment and conditions.
	Metric 8:	System Type and Design	High	Equilibrium was reported and the system type 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	High	The test organism 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	High	Uncertainty in the concentration measurements were reported and unlikely to impact the study results.
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No adverse health outcomes were reported among the test organisms.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Lipid content and test substance recovery in fish tissue were not reported; however, the omissions are unlikely to have a substantial impact on the study results.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetic calculations were not clearly described; however, the omissions are 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 results.

**Overall Quality Determination****High**

\* Related References: Cited in ECHA

<b>Study Citation:</b>	Carr, K. H., Coyle, G. T., Kimerle, R. A. (1997). Bioconcentration of (14C)butyl benzyl phthalate in bluegill sunfish ( <i>Lepomis macrochirus</i> ). Environmental Toxicology and Chemistry 16(10):2200-2203.
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration
<b>HERO ID:</b>	1359448

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; [U-14C-phthalate ring]butyl benzyl phthalate
Confidentiality, Type, and Guideline	None; Experimental; other: whole fish, fillet (edible tissues), and viscera (non-edible) tissues BCF from a dynamic study
Solvent, Reactivity, Storage, Stability	DMF; NR; refrigeration; Stability experiments were conducted that demonstrated the stability of radiolabeled materials under the shipping and storage conditions used for this study.
Radiolabel, Source, State, Purity	1.55 mCi/mg; 3430 dpm/mg; Monsanto Company (St. Louis, MO, USA) Monsanto Code 323.03; Solution; dimethyl formamide solution of [14C]BBP after extended refrigerated storage was approximately 92% by high pressure liquid chromatography (HPLC) using radioactive flow detection; Notes: Impurities were represented by three or more unidentified materials, which were present at levels of 2.2% or less of the total radioactivity in the dosing solution. All of the impurities were more polar than BBP
Test Organism and Test Organism Details	bluegill sunfish ( <i>Lepomis macrochirus</i> ); 24 fish from Osage Catfisheries, Osage Beach, MO, USA; mean weight (of representative fish) of 9.72±2.76 g and a mean standard length of 64±5.3 mm
Lipid Content, Test Temperature, pH, and Depuration Time	6% lipid content; 22±0°C; 8.23±0.15; Not reported
Media Type, TOC, and Salinity	not specified; Not reported; Not reported
Dissolved Oxygen, Conductivity, and Hardness	7.9±0.45 mg/L; Not reported; Not reported
Exposure Route, Elimination, and Nominal Measurements	water; Not reported; measured
Test Type, Test Temperature, and Test Condition	flow-through; 22±0°C; initial exposure concentration was 0.081 and averaged 0.034 mg/L for days 1-3
Comments	
Duration, Parameter, and Sampling Frequency	3.27 days; other; Not reported
Concentration	0.034±0.002 mg/L
Analytical Method and Analytical Details	radio analyses by ABC Laboratories; extracts analyzed by HPLC with radioactive flow detection using a C18 column and a binary gradient program; Following radio analysis, the tissue and water samples were shipped frozen to Monsanto Company, where extraction and characterization of the radioactivity in tissues was conducted;
Rate Constant and Results per Recovery	Not reported; Extraction recoveries from water=96.0% and tissues=98.9%; column recoveries for tissues 97.4% and water extracts 106.8%
Statistics, Basis, and Calculation Basis	Not reported; Not Reported; steady state
Results Value and Results Details	9.4 (whole fish), 8.7 (viscera), 1.7 (fillet); normalized to 6% lipid
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	Source and purity were reported.
Domain 2: Test Design	Metric 3:	Study Controls	High	Appropriate controls were included.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Carr, K. H., Coyle, G. T., Kimerle, R. A. (1997). Bioconcentration of (14C)butyl benzyl phthalate in bluegill sunfish ( <i>Lepomis macrochirus</i> ). Environmental Toxicology and Chemistry 16(10):2200-2203.			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	1359448			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	High	The test substance stability, 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	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 the study type.
	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.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	No confounding variables were 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	Data reported was acceptable for this study.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical analyses was not detailed.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quality Determination</b>		<b>High</b>		

\* Related References: Cited in HSDB



<b>Study Citation:</b>	Carr, K. H., Coyle, G. T., Kimerle, R. A. (1997). Bioconcentration of (14C)butyl benzyl phthalate in bluegill sunfish (Lepomis macrochirus). Environmental Toxicology and Chemistry 16(10):2200-2203.			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	1359448			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Butyl benzyl phthalate			
Confidentiality, Type, and Guideline	None; Experimental; other: Short -term bioconcentration in Bluegill Sunfish			
Solvent, Reactivity, Storage, Stability	DMF; NR; refrigeration; NR			
Radiolabel, Source, State, Purity	[U-14C-phthalate ring]butyl benzyl phthalate; 1.55 mCi/mg; 3430 dpm/mg; Monsanto Company (St. Louis, MO, USA); Solution; 92% by HPLC (3 or more impurities present at 2.2% or less) Notes: BBP; Monsanto Code 323.03			
Test Organism and Test Organism Details	Bluegill sunfish (Lepomis Macrochirus); 24 fish in two aquaria (one treated, one control) from Osage Catfisheries, Osage Beach, MO, USA			
Lipid Content, Test Temperature, pH, and Depuration Time	lipid data used to normalize BCF values to 6% lipid content; 22±0C (mean of 4 measurements); 8.23±0.15 (mean of 4 measurements); Not reported			
Media Type, TOC, and Salinity	other; Not reported; Not reported			
Dissolved Oxygen, Conductivity, and Hardness	7.9±0.45 mg/L (mean of 4 measurements); Not reported; Not reported			
Exposure Route, Elimination, and Nominal Measurements	Environment; Not reported; measured (HPLC, see test condition comments); nominal=0.070±0.011			
Test Type, Test Temperature, and Test Condition Comments	flow-through; 22±0C (mean of 4 measurements); dynamic flow-through system; exposure level 0.081 mg/L at initiation; mean exposure level on days 1-3=0.034±0.002 based on intact BBP and 0.06±0.006 mg/L based on total radioactivity as BBP equivalents			
Duration, Parameter, and Sampling Frequency	3.27 days; BCF; Water samples collected on days 0, 1, 2, and 3.27; at termination sample grinding and radio-analyses of whole fish, fillet, and visceral portions were conducted			
Concentration	0.070±0.011 mg/L			
Analytical Method and Analytical Details	HPLC with radioactive flow detection and LSC; HPLC tissue LOD=100 dpm, whole fish LOD=2.2% of HPLC distribution, viscera and fillets LOD=3% of HPLC distribution;			
Rate Constant and Results per Recovery	Not reported; extraction recoveries: water 100%, tissue 96.0-98.9% (radioactivity extractability: 83.5, 93.7, and 93.6% for fillet, viscera, and whole fish, respectively); column recoveries: water 106.8±12.7%, tissue 97.4±.22%			
Statistics, Basis, and Calculation Basis	values reported as mean±SD; whole fish; viscera, fillet; steady state			
Results Value and Results Details	BCF based on total radioactivity=194, 175, and 38 in whole fish, viscera and fillet, respectively; BCF based on intact BBP=9.4, 8.7, and 1.7 in whole fish, viscera and fillet, respectively; BCF based on total radioactivity is greater than BCF based on intact BBP and greater than 90% of radiolabeled compounds were degradates which suggests metabolism of BBP.			
Metabolites, Reference, and Results Reference Substance	Not reported; Not reported; no mortality observed during exposure			
<b>EVALUATION</b>				
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	Control tanks were included in the 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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Carr, K. H., Coyle, G. T., Kimerle, R. A. (1997). Bioconcentration of (14C)butyl benzyl phthalate in bluegill sunfish (Lepomis macrochirus). Environmental Toxicology and Chemistry 16(10):2200-2203.				
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration				
<b>HERO ID:</b>	1359448				
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	Testing conditions were appropriate.	
	Metric 7:	Testing Consistency	High	The test conditions were consistent.	
	Metric 8:	System Type and Design	High	The system type 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 and appropriate for the study type.	
Domain 5: Outcome Assessment					
	Metric 11:	Test Substance Identity	High	Outcome assessment methodology was appropriate.	
	Metric 12:	Test Substance Purity	High	The study reported sampling methods that address the outcome of interest.	
Domain 6: Confounding/Variable Control					
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.	
	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 reported that influenced the outcome assessment.	
Domain 7: Data Presentation and Analysis					
	Metric 15:	Data Reporting	Medium	Mass balance omitted; however, sufficient data were reported to determine that the omissions were not likely to have had a substantial impact on the study results.	
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	This metric is not applicable.	
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		

<b>Study Citation:</b>	Chemical Manufacturers Association, (1984). Phthalate esters panel: Summary report: Environmental studies - Phase I. Generation of environmental fate and effects data base on 14 phthalate esters.
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration
<b>HERO ID:</b>	7325943

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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	Bluegill; 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=115; calculated from actual Kow determinations $\log BCF = (0.542 \times \log Kow) + 0.124$
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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Chemical Manufacturers Association, (1984). Phthalate esters panel: Summary report: Environmental studies - Phase I. Generation of environmental fate and effects data base on 14 phthalate esters.			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	7325943			
Domain	Metric	EVALUATION		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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	657957			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Butyl benzyl 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	22% (AWT water); 25% (Miramar water); Percentage of samples with concentrations above DL (1 ug/kg)			
Metabolites, Reference, and Results Reference Substance	Not reported; Not reported; Not reported			
<b>EVALUATION</b>				
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	657957			
Domain	Metric	EVALUATION		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	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	Standard species; however, prior contamination from plastic shipping bags noted but not assessed/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	The statistical analysis was 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**

<b>Study Citation:</b>	EC/HC, (2000). Canadian environmental protection act priority substances list assessment report: Butylbenzylphthalate.			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	1333728			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; butyl benzyl phthalate			
Confidentiality, Type, and Guideline	no; experimental; other: bioconcentration in oysters			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	14C-BBP; NR; NR; NR			
Test Organism and Test Organism Details	eastern oysters; Crassostrea virginica			
Lipid Content, Test Temperature, pH, and Depuration Time	not reported; not reported; not reported; 42 days			
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	whole body; not reported; not specified			
Test Type, Test Temperature, and Test Condition	not specified; not reported; Not Reported			
Comments				
Duration, Parameter, and Sampling Frequency	not reported; BCF; not reported			
Concentration	0.012 mg/L			
Analytical Method and Analytical Details	not specified; Not Reported;			
Rate Constant and Results per Recovery	not reported; not reported			
Statistics, Basis, and Calculation Basis	Not Reported; whole body; Not Reported			
Results Value and Results Details	135; The calculated steady-state BCF, based on uptake and depuration rate constants, was 380. The half-life of the steady-state tissue residues was calculated to be 7.4 days. 50% of the 14C-residue was eliminated between days 1 and 2 of the 42-daydepuration period; by day 14 of depuration, 85% of the 14C-residue had been eliminated.			
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 and CASRN.
	Metric 2:	Test Substance Purity	Medium	Details regarding this metric were not reported in the secondary source.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Details regarding this metric were not reported in the secondary source.
	Metric 4:	Test Substance Stability	Medium	Details regarding this metric were not reported in the secondary source.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Medium	Details regarding this metric were not reported in the secondary source.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	EC/HC, (2000). Canadian environmental protection act priority substances list assessment report: Butylbenzylphthalate.			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	1333728			
Domain		Metric	EVALUATION Rating	Comments
	Metric 6:	Testing Conditions	Medium	Details regarding this metric were not reported in the secondary source.
	Metric 7:	Testing Consistency	Medium	Details regarding this metric were not reported in the secondary source.
	Metric 8:	System Type and Design	High	steady state was established.
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 for the study method or route.
	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, but these omissions were not likely to have a substantial impact on study results.
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	Medium	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	Medium	Details regarding this metric were not reported in the secondary source.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Details regarding this metric were not 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	Medium	Details regarding this metric were not reported in the secondary source.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.

**Overall Quality Determination****Medium**

\* Related References: cites: HEROID: 6574644; Springborn Bionomics. 1986. Uptake and elimination of 14C-residue by eastern oyster (*Crassostrea virginica*) exposed to butylbenzyl phthalate (BBP). Research report submitted to Monsanto Company, St. Louis, Missouri (Report No. BW-86-2114).



<b>Study Citation:</b>	EC/HC, (2017). Draft screening assessment: Phthalate substance grouping.			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	5353181			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; Not Reported			
Confidentiality, Type, and Guideline	None; Not specified; other: 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			
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			
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	Not Reported; Not Reported; Not Reported			
Duration, Parameter, and Sampling Frequency	Not Reported			
Concentration	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; Not Reported			
Results Value and Results Details	Not Reported; BAF: 631			
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 common nomenclature.
	Metric 2:	Test Substance Purity	Low	Details regarding the test substance purity were not reported in the secondary source.
Domain 2: Test Design	Metric 3:	Study Controls	Low	Details regarding the use of control groups were not reported in the secondary source.
	Metric 4:	Test Substance Stability	Low	The test substance stability, homogeneity, preparation, and storage conditions were not reported in the secondary source.
Domain 3: Test Conditions	Metric 5:	Test Method Suitability	Uninformative	The test method was not reported in the secondary source.
	Metric 6:	Testing Conditions	Uninformative	Testing conditions were not reported in the secondary source.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	EC/HC, (2017). Draft screening assessment: Phthalate substance grouping.			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	5353181			
Domain	Metric	EVALUATION Rating	Comments	
	Metric 7:	Testing Consistency	Low	The testing consistency could not be evaluated due to limited information reported by the secondary source.
	Metric 8:	System Type and Design	Uninformative	The system type was not reported in the secondary source.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.
	Metric 10:	Sampling Methods	Uninformative	No details were provided in the secondary source regarding the test organism.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Uninformative	The outcome assessment methodology was not reported in the secondary source.
	Metric 12:	Test Substance Purity	Low	Details regarding the sampling methods were not reported in the secondary source.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Low	Sources of variability and uncertainty were not reported.
	Metric 14:	Health Outcomes Unrelated to Exposure	Low	Health outcomes were not described in the secondary source.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	The analytical method and chemical concentrations were not reported in the secondary source.
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis and kinetic calculations 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 the study type.
<b>Overall Quality Determination</b>		<b>Uninformative</b>		

\* Related References: Environmental Canada, Health Canada 2015a, 2015b, 2015c, 2015d. (HERO IDs: 7264200, 3688160, 3688004, 7264199)

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration
<b>HERO ID:</b>	3661424

EXTRACTION	
Parameter	Data
CASRN and Test Material	Not Reported; Butyl benzyl phthalate
Confidentiality, Type, and Guideline	None; experimental; other: Mount and Brungs (1967) test method
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR
Test Organism and Test Organism Details	fish; Crassostrea virginica
Lipid Content, Test Temperature, pH, and Depuration Time	NR; 19.5°C; NR; 1-2 days
Media Type, TOC, and Salinity	NR; NR; NR
Dissolved Oxygen, Conductivity, and Hardness	NR; NR; NR
Exposure Route, Elimination, and Nominal Measurements	NR; NR; Not Reported
Test Type, Test Temperature, and Test Condition	Not Reported; 19.5°C; Not Reported
Comments	
Duration, Parameter, and Sampling Frequency	11 days; NR; NR
Concentration	0.012 - NR mg/L
Analytical Method and Analytical Details	Not Reported; NR;
Rate Constant and Results per Recovery	NR; NR
Statistics, Basis, and Calculation Basis	NR; NR; NR
Results Value and Results Details	BCF = 135; for parent compound and metabolites
Metabolites, Reference, and Results Reference Substance	Not Reported; NR; NR

		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 and the test substance purity was low or not reported.
Domain 2: Test Design	Metric 3:	Study Controls	Low
	Metric 4:	Test Substance Stability	Low
			Control details were not reported.
			The test substance stability, homogeneity, preparation, and storage conditions were not reported and these factors likely influenced the test substance or are likely to have a substantial impact on the study results.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	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	Equilibrium was established. However, 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	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	Low	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: No primary reference cited.

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	2121719			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, Type, and Guideline	Not Reported; Not Reported; other: Mount and Brungs 1967			
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; Crassostrea virginica			
Lipid Content, Test Temperature, pH, and Depuration Time	Not Reported; 19.5°C; 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; 19.5°C; Not Reported			
Comments				
Duration, Parameter, and Sampling Frequency	11 days; Not Reported; Not Reported			
Concentration	0.012 mg/L			
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; whole body; Not Reported			
Results Value and Results Details	Depuration half-life = 1-2 days; BCF = 135 (whole; parent and metabolites)			
Metabolites, Reference, and Results Reference Substance	metabolites readily excreted; 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 in this secondary source; additional inforamtion may be in source cited.
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
	Metric 4:	Test Substance Stability	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
Domain 3: Test Conditions	Metric 5:	Test Method Suitability	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
	Metric 6:	Testing Conditions	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
	Metric 7:	Testing Consistency	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	2121719			
Domain	Metric	EVALUATION		Comments
	Metric 8:	System Type and Design	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 4: Test Organisms	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable.
	Metric 10:	Sampling Methods	High	Standard species was used.
Domain 5: Outcome Assessment	Metric 11:	Test Substance Identity	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 12:	Test Substance Purity	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 6: Confounding/Variable Control	Metric 13:	Confounding Variables	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 14:	Health Outcomes Unrelated to Exposure	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 7: Data Presentation and Analysis	Metric 15:	Data Reporting	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 8: Other	Metric 17:	Verification or Plausibility of Results	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 18:	QSAR Models	N/A	The metric is not applicable.
<b>Overall Quality Determination</b>		<b>Medium</b>		

\* Related References: Source cited Springborn Laboratories (1986)

<b>Study Citation:</b>	ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	2121719			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, Type, and Guideline	Not Reported; Not Reported; 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; Lepomis macrochirus			
Lipid Content, Test Temperature, pH, and Depuration Time	Not Reported; 22°C; 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; 22°C; Not Reported			
Comments				
Duration, Parameter, and Sampling Frequency	17 days; Not Reported; Not Reported			
Concentration	0.00296 mg/L			
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; whole body; Not Reported			
Results Value and Results Details	Depuration half-life = 0.75 days; BCF = 188 (whole; parent and metabolites); BCF = 28 (muscle); BCF =1693 (viscera); uptake 143/day			
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	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
Domain 2: Test Design	Metric 3:	Study Controls	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
	Metric 4:	Test Substance Stability	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
Domain 3: Test Conditions	Metric 5:	Test Method Suitability	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
	Metric 6:	Testing Conditions	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
	Metric 7:	Testing Consistency	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
	Metric 8:	System Type and Design	Medium	Limited detail in this secondary source; additional inforamtion may be in source cited.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>		ECJRC, (2008). European Union Summary Risk Assessment Report: Benzyl butyl phthalate (BBP) (CAS No: 85-68-7, EINECS: 201-622-7).		
<b>OECD Harmonized Template:</b>		Aquatic Bioconcentration		
<b>HERO ID:</b>		2121719		
Domain	Metric	EVALUATION		Comments
		Rating		
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable.
	Metric 10:	Sampling Methods	High	Standard species was used.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 12:	Test Substance Purity	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 14:	Health Outcomes Unrelated to Exposure	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail in this secondary source; additional information may be in source cited.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	Limited detail in this secondary source; additional information may be in source cited.
	Metric 18:	QSAR Models	N/A	The metric is not applicable.
<b>Overall Quality Determination</b>		<b>Medium</b>		

\* Related References: Source cited Heidolph and Gledhill 1976



<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration
<b>HERO ID:</b>	675207

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl phthalate
Confidentiality, Type, and Guideline	None; Experimental; other: BSAF field study
Solvent, Reactivity, Storage, Stability	Hexane; NR; -20°C in an amber vial; NR
Radiolabel, Source, State, Purity	NR; Supelco, Bellefonte, PA; NR; >99.0% Notes: NR
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	Not reported; Mean BBP sediment recovery (RSD): 94% (9.9%); Mean BBP fish recovery (RSD): 102.0% (1.9%)
Statistics, Basis, and Calculation Basis	Not Reported; Not Reported; Not Reported
Results Value and Results Details	BSAF in five fish species (reported in figure): Mean=8; range=2-20; Biota Sediment Accumulation Factor 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	The 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	675207			
<b>EVALUATION</b>				
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. Test conditions were consistent across sample groups. The system type was appropriate.
	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	The metric is not applicable to this study type.
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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration
<b>HERO ID:</b>	3350326

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; butylbenzyl 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: BBP
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	S1-0.32; S2-0.32; S3-0.32; S4-0.31; S5-2.48; S6-0.09; Data compared to the experimental TMF of 0.77. Concentrations in biota were (ng/g-lipid): S1: 9.67-91.3; S2: 358-3380; S3: 35.8-338; S4: 9.74-91.6; S5: 78.1-5770; S6: 12.8-7810.
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 = 0.32

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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration
<b>HERO ID:</b>	5043593

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Benzylbutyl phthalate
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	four fish species including crucian carp, skygager, bluegill, and bass; n=30
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: not detected (water), not detected (sediment) detection frequency = 0% (for water and sediment)
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	
Duration, Parameter, and Sampling Frequency	Not applicable; Not Reported; October 2016. January 2017 (water and sediment only), May and July 2017
Concentration	not detected - 65.0 ug/kg dw
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	Not Reported; Fish: 3.0 ug/kg dw (mean, range ND-65.0, n = 30); study reported that BBP was not detected in water (DF 0%, n=47) or sediment (DF 0%, n=47) but did not hypothesize the source of BBP in fish only. Detection frequency in fish = 10.0%.
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	High
Domain 2: Test Design	Metric 3:	Study Controls	Medium

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	5043593			
		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 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	Medium	The outcome assessment methodology allowed for BAF and BSAF determination; however, non-detect levels were reported.
	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Mackintosh, C. E., Maldonado, J., Hongwu, J., Hoover, N., Chong, A., Ikonomou, M. G., Gobas, F. A. (2004). Distribution of phthalate esters in a marine aquatic food web: Comparison to polychlorinated biphenyls. Environmental Science & Technology 38(7):2011-2020.
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration
<b>HERO ID:</b>	789501

EXTRACTION	
Parameter	Data
CASRN and Test Material	Not Reported; butylbenzyl 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=2.56; BA=2.29; PK=2.83; BM=2.29; PO=2.11; GC=2.61; MC=2.26; DC=2.04; St=1.47; jPer=1.93; He=1.67; PP=2.82; SP=2.90; Sc=2.85; So=2.51; WG=2.15; Dg=1.61 (muscle) 1.18 (liver) 1.81 (embryo); SS=3.15
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	0.77; lower-upper 95% interval (0.43-1.38)
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				

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Mackintosh, C. E., Maldonado, J., Hongwu, J., Hoover, N., Chong, A., Ikonomou, M. G., Gobas, F. A. (2004). Distribution of phthalate esters in a marine aquatic food web: Comparison to polychlorinated biphenyls. Environmental Science & Technology 38(7):2011-2020.			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	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.

Continued on next page ...



...continued from previous page

<b>Study Citation:</b>	Mackintosh, C. E., Maldonado, J., Hongwu, J., Hoover, N., Chong, A., Ikonomou, M. G., Gobas, F. A. (2004). Distribution of phthalate esters in a marine aquatic food web: Comparison to polychlorinated biphenyls. Environmental Science & Technology 38(7):2011-2020.
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration
<b>HERO ID:</b>	789501

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

<b>Overall Quality Determination</b>	<b>High</b>
--------------------------------------	-------------

<b>Study Citation:</b>	Monsanto, (1983). Bioconcentration, distribution and elimination of 14C-labeled santicizer 160 by bluegill (Lepomis macrochirus).			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	1359250			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Butyl benzyl phthalate			
Confidentiality, Type, and Guideline	None; Experimental; other: Bioconcentration in fish			
Solvent, Reactivity, Storage, Stability	DMF; NR; NR; NR			
Radiolabel, Source, State, Purity	14C-labeled S-160; activity 882.02 µCi; from H. Yopez, MIC Applied Science 08/07/1979; MIC Applied Science; NR; radiochemical purity = 97% Notes: S-160			
Test Organism and Test Organism Details	Bluegill (Lepomis macrochirus); Osage Catfisheries, Missouri July 25, 1979; mean weight 0.915 g			
Lipid Content, Test Temperature, pH, and Depuration Time	Not reported; 22-23C; 6.6-7.0; 14 days			
Media Type, TOC, and Salinity	other; Not reported; Not applicable			
Dissolved Oxygen, Conductivity, and Hardness	2.4-7.0 mg/L; Not reported; 105-120 mg/L			
Exposure Route, Elimination, and Nominal Measurements	Natural environment; Whole fish clearance rate constants (/day) ranged from 0.76 to 1.18; measured			
Test Type, Test Temperature, and Test Condition Comments	flow-through; 22-23C; continuous flow diluter system; test concentrations: 2.22, 22.2, and 222 µg/L; DMF used as vehicle, concentration did not exceed 0.33 mg/L (0.033%)			
Duration, Parameter, and Sampling Frequency	7 day uptake; Not Reported; Sample days at 2.22 mg/L (definitive test): uptake 0.5, 1,2,4,7,14,16,18,21 and depuration 1,2,4,7,14,18,21; sample days at 22.2 and 222 mg/L (Kinetic tests): uptake 1,4,7 and depuration 1,4,7,14			
Concentration	2.22 - 222 µg/L			
Analytical Method and Analytical Details	Combusto cones with Combustaid were combusted in a sample oxidizer, radioactivity analyzed via scintillation counter; radioactivity measurements taken over the entire uptake and depuration; sampling time determined based on predicted time to steady state;			
Rate Constant and Results per Recovery	Whole fish uptake rate constants (/day) ranged from 143.40 to 315.07; recovery of radioactivity=92.8-100.8%			
Statistics, Basis, and Calculation Basis	Not reported; Not Reported; steady state			
Results Value and Results Details	Whole fish BCF: 187.65 (2.22 definitive test); 135.40 (2.22 preliminary test); 92.15 (22.2 kinetic); 96.53 (222 kinetic); whole fish half-lives ranged from 0.30 to 0.91 days; highest half-life was reported for muscle (2.22 definitive test) 1.14 days 1.14			
Metabolites, Reference, and Results Reference Substance	Not reported; Controls included; Results (survival) valid			
<b>EVALUATION</b>				
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 was reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	A control was included.
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported and appropriate for the study.
Domain 3: Test Conditions				
Continued on next page ...				

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1983). Bioconcentration, distribution and elimination of 14C-labeled santicizer 160 by bluegill ( <i>Lepomis macrochirus</i> ).			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	1359250			
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	Test conditions 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 flow-through 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 the study type.
	Metric 10:	Sampling Methods	High	Test organism weight and source were reported and organism is used for similar study types.
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	High	Sampling methods addressed the outcomes of interest.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Variability and uncertainty in the measurements were not explicitly evaluated.
	Metric 14:	Health Outcomes Unrelated to Exposure	High	No differences in health outcomes or organism attrition were reported.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Target chemical concentrations in the organism were reported, analytical methods were appropriate and sensitive enough for quantification. Lipid normalized BCF was not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail regarding statistical analysis.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quality Determination</b>			<b>High</b>	

\* Related References: Cited in ECHA

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration
<b>HERO ID:</b>	1249662

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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: butylbenzyl phthalate (BBP)
Test Organism and Test Organism Details	Roach, Chub, and Perch; Liver, gonad, and muscle from roach and muscle 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; 82.5% in river water, 86.2% in riverbed sediment and 109.1% in fish tissue
Statistics, Basis, and Calculation Basis	averages and SD reported; total lipid content; other
Results Value and Results Details	Roach: 4.3±2.7, Chub: 4.6±7.8, and Perch: 2.8±1.6; Biota Sediment Accumulation Factor (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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Aquatic Bioconcentration			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>			<b>High</b>	

\* Related References: Cited in HSDB

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Terrestrial Bioconcentration
<b>HERO ID:</b>	5041214

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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 BBP in topsoil(2015 and 2016): 0.003 and 0.001 (reclaimed), 0.001 and 0.001 (mix), 0.001 and 0.001 (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	6.79 and 13.46 (reclaimed water), 15.45 and 18.29 (mixed water), 35.75 and 12.23 (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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Terrestrial Bioconcentration			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Terrestrial Bioconcentration			
<b>HERO ID:</b>	5041214			
EXTRACTION				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; BBP			
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 BBP in topsoil: 0.006 (reclaimed), 0.009 (mix), 0.008 (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	2.90 (reclaimed water), 1.41 (mixed water), 2.77 (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.
Continued on next page ...				

Continued on next page ...



...continued from previous page

<b>Study Citation:</b>		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.		
<b>OECD Harmonized Template:</b>		Terrestrial Bioconcentration		
<b>HERO ID:</b>		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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Terrestrial Bioconcentration			
<b>HERO ID:</b>	3350219			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; BBP			
Confidentiality, EndPoint, Type, Guideline	None; bioaccumulation: terrestrial; Field study; other: Monitoring in greenhouse vegetable production			
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	NA; 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 0.004 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	Not detected in samples; 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 $p < 0.01$			
<b>EVALUATION</b>				
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.	
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Terrestrial Bioconcentration			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Terrestrial Bioconcentration
<b>HERO ID:</b>	1597686

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl 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	BBP: Approximate BCFs for plants under different treatments (taken from bar graph): VP-R = 205, VP-CF = 175, VP-C = 150, VP-PL = 110, VP-RL = 150, VP-CFL = 53, VP-CL = 74, GP-D = 25, GP-B = 35; 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				

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Terrestrial Bioconcentration			
<b>HERO ID:</b>	1597686			
		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 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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Terrestrial Bioconcentration
<b>HERO ID:</b>	5522239

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl 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 the six PAE compounds (1 mg/mL) and the internal standard benzyl benzoate solution (5 mg/mL); NR Notes: BBP
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 Horticulture 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) = 100 (A), 90 (AS-S), 100 (AS-A), 80 (AE-E), 100 (AE-A), 50 (AES-S), 60 (AES-E), 75 (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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Terrestrial Bioconcentration			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	Teil, M. J., Tlili, K., Blanchard, M., Labadie, P., Alliot, F., Chevreuil, M. (2014). Polychlorinated biphenyls, polybrominated diphenyl ethers, and phthalates in roach from the Seine River Basin (France): Impact of densely urbanized areas. Archives of Environmental Contamination and Toxicology 66(1):41-57.			
<b>OECD Harmonized Template:</b>	Terrestrial Bioconcentration			
<b>HERO ID:</b>	2149497			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; Butyl benzyl phthalate			
Confidentiality, EndPoint, Type, Guideline	None; bioaccumulation: terrestrial; Experimental; other: Bioaccumulation based on concentrations of contaminants in roaches, waters and sediments 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: BBP other; Rutilus rutilus (Cyprinidae; roach)			
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; 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; Not Reported; 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	High	The test substance source was 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.
Continued on next page ...				



...continued from previous page

<b>Study Citation:</b>		Teil, M. J., Tlili, K., Blanchard, M., Labadie, P., Alliot, F., Chevreuil, M. (2014). Polychlorinated biphenyls, polybrominated diphenyl ethers, and phthalates in roach from the Seine River Basin (France): Impact of densely urbanized areas. Archives of Environmental Contamination and Toxicology 66(1):41-57.		
<b>OECD Harmonized Template:</b>		Terrestrial Bioconcentration		
<b>HERO ID:</b>		2149497		
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 8:	System Type and Design	N/A	This metric is not applicable to this type of study.
Domain 4: Test 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.
<b>Overall Quality Determination</b>		<b>Uninformative</b>		

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Adsorption and Desorption
<b>HERO ID:</b>	698293

Parameter	Data
CASRN and Test Material	85-68-7; BBP
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 (ratio of suspended sediment to the filtrate); median log Kp not reported; more than half of the Kp values were not calculable
Partition Coefficient Phase and Partition Coefficient Results	suspended matter-water; Influent (median): 3.3 ug/L1st aeration (median): 0.9 ug/Lbiological treatment (median): 2.2 ug/LCS treatment (median): 1.3 ug/LACA treatment (median): n.d. ug/L
Mass Balance	Concentration in suspended sediment 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	Medium	A general description of the test substance source was provided, and purity is not an applicable metric for field studies; the source and purity of analytical standards was not reported.
Domain 2: Test Design			
Metric 3:	Study Controls	N/A	Field studies do not require negative controls.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Adsorption and Desorption			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Adsorption and Desorption			
<b>HERO ID:</b>	1333362			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; benzylbutyl phthalate			
Confidentiality, Type, Guideline	None; experimental; other			
Solvent, Reactivity, Storage, Stability	methanol; NR; NR; NR			
Radiolabel, Source, State, Purity	Not Reported; Merck; 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; Dissolved phase BBP concentration 0.2-4.7 ug/L; suspended solids BBP concentrations 0.1-26.9 ug/g.; Not Reported			
Partition Coefficient Type and Partition Coefficient Results	Not Reported; Not Reported			
Partition Coefficient Phase and Partition Coefficient Results	Not Reported; 19-88% of BBP (of phthalic acid esters) was found in the solution phase of 26 municipal landfill leachates.			
Mass Balance	not reported			
<b>EVALUATION</b>				
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	High	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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.				
<b>OECD Harmonized Template:</b>	Adsorption and Desorption				
<b>HERO ID:</b>	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		

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Adsorption and Desorption
<b>HERO ID:</b>	3661424

EXTRACTION	
Parameter	Data
CASRN and Test Material	Not Reported; Butyl benzyl phthalate
Confidentiality, Type, Guideline	None; Experimental; other: NR
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR
Sampling Frequency, Sampling Details, and Number of Replicates	NR; NR; NR
pH, Test Temperature, Buffer, and Test Details	NR; NR; NR; NR
Matrix, Clay Silts and Organic Carbon, and CEC	other; NR; NR
Bulk Density and Matrix Details	NR; NR
Media, Recovery, and Statistics	NR; NR; NR
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	NR; 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; Soil adsorption coefficient (kd) - 68-350 and 210.; Not Reported; Not Reported
Partition Coefficient Type and Partition Coefficient Results	Not Reported; Organic carbon/water part. coefficient (Koc) = 9,000, 17,000 and 10,500 l/kg.
Partition Coefficient Phase and Partition Coefficient Results	Not Reported; Sludge concentration factor = 244 (sludge samples in $\mu\text{g/l}$ divided by the influent concentration) and Concentration factor = 172 (Sludge wet weight concentration divided by influent wastewater in $\mu\text{g/l}$ )
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
Domain 2: Test Design	Metric 3:	Study Controls	Low

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Adsorption and Desorption			
<b>HERO ID:</b>	3661424			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 4:	Test Substance Stability	Low	The test substance stability, homogeneity, preparation, and storage conditions were not reported and these factors likely influenced the test substance or are likely to have a substantial impact on the study results.
Domain 3: Test 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	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.
Continued on next page ...				

...continued from previous page

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:	Adsorption and Desorption
HERO ID:	3661424

Domain	Metric	EVALUATION Rating	Comments
Overall Quality Determination		Low	

\* Related References: Data from Gledhill et al. entered under HERO ID 1359277.



<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Adsorption and Desorption
<b>HERO ID:</b>	5433399

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl phthalate
Confidentiality, Type, Guideline	None; Experimental; other: Seasonal organic-carbon normalized partition coefficients of BBP in water-SPM system.
Solvent, Reactivity, Storage, Stability	NR; NR; Hexane and Acetone working standards; NR
Radiolabel, Source, State, Purity	Not Reported; 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: 2.09±0.67; Autumn: 2.19±0.87; Winter: 2.91±0.82.
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	The test substance was identified using common nomenclature.
	Metric 2:	Test Substance Purity	High	The test substance was measured in field samples using appropriate analytical techniques.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Appropriate controls in the analytical method were used.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Adsorption and Desorption			
<b>HERO ID:</b>	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, allogenic 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.
Continued on next page ...				

...continued from previous page

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

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Adsorption and Desorption
<b>HERO ID:</b>	2816369

Parameter	Data
CASRN and Test Material	Not Reported; butyl benzyl 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: BBP
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: <0.01; dry season 0.21; overall 0.03
Partition Coefficient Phase and Partition Coefficient Results	sediment-water; Calculated by [sediment]/[water]
Mass Balance	Wet season: 0.79-5.32 ug/L, mean 2.16 ug/L (water); nd-0.12 ug/g, mean 0.01 ug/g (sediment); Dry season: nd-0.80 ug/L, mean 0.19 ug/L (water); 0.01-0.16 ug/g, mean 0.04 ug/g (sediment); overall: nd-5.32 ug/L, mean 1.18 ug/L (water); nd-0.16 ug/g, mean 0.03 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Adsorption and Desorption			
<b>HERO ID:</b>	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.

Continued on next page ...

...continued from previous page

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	

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Adsorption and Desorption
<b>HERO ID:</b>	3350200

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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, 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	Sediment-water partition coefficient: spring, summer, and winter, respectively.; 0.0046, NA, 0.21 g d.w./L Calculated based on measured sediment and water concentrations.
Partition Coefficient Type and Partition Coefficient Results	sediment-water; Spring average (range): 2.16 (0.79-5.32) ug/L; 0.01 (n.d.-0.12) ug/g dw Summer average (range): n.d. ug/L; 0.071 (n.d.-0.14) ug/g dw Winter average (range): 0.19 (n.d.-0.80) ug/L; 0.04 (0.01-0.16) 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Adsorption and Desorption			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		



<b>Study Citation:</b>	Lu, C. (2009). Prediction of environmental properties in water-soil-air systems for phthalates. Bulletin of Environmental Contamination and Toxicology 83(2):168-173.			
<b>OECD Harmonized Template:</b>	Adsorption and Desorption			
<b>HERO ID:</b>	807140			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; 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; 4.32			
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				
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Lu, C. (2009). Prediction of environmental properties in water-soil-air systems for phthalates. Bulletin of Environmental Contamination and Toxicology 83(2):168-173.			
<b>OECD Harmonized Template:</b>	Adsorption and Desorption			
<b>HERO ID:</b>	807140			
Domain		Metric	EVALUATION 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**

<b>Study Citation:</b>	Mackintosh, C. E., Maldonado, J. A., Ikonomou, M. G., Gobas, F. A. (2006). Sorption of phthalate esters and PCBs in a marine ecosystem. Environmental Science & Technology 40(11):3481-3488.
<b>OECD Harmonized Template:</b>	Adsorption and Desorption
<b>HERO ID:</b>	2158899

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl 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 standards of DMP, DnBP and DnOP: sea water 37-86±12-28% spring water 48-79±22-36% bottom sediment 82-95±12-19%; 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 = 5.52±0.17 (OD), 6.21±0.17 (FD); Kss,oc = 6.38±0.29 (OD), 6.75±0.25 (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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Mackintosh, C. E., Maldonado, J. A., Ikonomou, M. G., Gobas, F. A. (2006). Sorption of phthalate esters and PCBs in a marine ecosystem. Environmental Science & Technology 40(11):3481-3488.				
<b>OECD Harmonized Template:</b>	Adsorption and Desorption				
<b>HERO ID:</b>	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 this type of study.	
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		

<b>Study Citation:</b>	Monsanto, (1983). Determining soil adsorption coefficients.
<b>OECD Harmonized Template:</b>	Adsorption and Desorption
<b>HERO ID:</b>	1359277

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl phthalate
Confidentiality, Type, Guideline	None; Experimental; other: Determination of adsorption coefficient using a batch experiment; method similar to those described by TSCA, ASTM and Monsanto Agricultural Prod. Co.
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; Industrial grade Notes: Commercial product: Sanitizer 160 (S-160)
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; Soil and aqueous phases sampled after hexane extraction; Not reported
pH, Test Temperature, Buffer, and Test Details	Drummer = 6.2, Spinks = 4.7; Not reported; Not reported; Dried and sieved soil samples (100 mesh screen) were added to vial with 0.0, 0.1, 0.2, 0.5 and 1.0 ppm S-160, sealed with foil and shaken for 24 hrs.
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; Drummer 3.4% OM, 2.4% sand, 68.8% silt, 25.3% clay; Spinks 2.4% OM, 75.1% sand, 17.8% silt, 4.8% clay; Drummer = 24.6, Spinks = 11.3
Bulk Density and Matrix Details	Particle density: Drummer = 1.16, Spinks = 1.41; Drummer silty clay loam: central IL; Spinks sandy loam: East Lansing area, MI
Media, Recovery, and Statistics	water; After extraction of both phases, up to 80% of the starting material was accounted for; 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	Kd: soil adsorption coefficient; Drummer: 350; Spinks: 68; Kd = Csoil/Csolution (average from all spiking levels); Not reported
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	Not reported; Not reported
Partition Coefficient Phase and Partition Coefficient Results	soil-water; Concentration of chemical remaining in solution and amount adsorbed on soil after equilibration
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	Metric 3:	Study Controls	Low
			No controls were reported, this may have an impact on the study results.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1983). Determining soil adsorption coefficients.			
<b>OECD Harmonized Template:</b>	Adsorption and Desorption			
<b>HERO ID:</b>	1359277			
		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	Some test condition details were not reported.
	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 this 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 of interest was addressed appropriately.
	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 mass balance concentrations were not reported but the omission is unlikely to have substantial impact on the study results.
	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	Medium	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.
<b>Overall Quality Determination</b>		<b>High</b>		

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

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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: Butylbenzyl 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; 85% for suspended particulate matter and 96% from water% 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; >4.7
Partition Coefficient Phase and Partition Coefficient Results	suspended matter-water; Based on the mean PE concentrations in water and SPMlog Koc (S) = 4.0log Koc (Kow) = 4.0log Koc (mean) >4.7
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				

Continued on next page ...

...continued from previous page

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

Continued on next page ...



...continued from previous page

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

		EVALUATION	
Domain	Metric	Rating	Comments

<b>Study Citation:</b>	Russell, D. J., Mcduffie, B. (1986). Chemodynamic properties of phthalate esters partitioning and soil migration. Chemosphere 15(8):1003-1022.		
<b>OECD Harmonized Template:</b>	Adsorption and Desorption		
<b>HERO ID:</b>	1316119		
EXTRACTION			
Parameter	Data		
CASRN and Test Material	85-68-7; BBP		
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; Chem Service, Westchester, PA; 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); 270; Not applicable; Not reported		
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Koc; 17,000 (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			
Continued on next page ...			

...continued from previous page

<b>Study Citation:</b>	Russell, D. J., Mcduffie, B. (1986). Chemodynamic properties of phthalate esters partitioning and soil migration. Chemosphere 15(8):1003-1022.			
<b>OECD Harmonized Template:</b>	Adsorption and Desorption			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Adsorption and Desorption
<b>HERO ID:</b>	3491242

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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; One week and on 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 <sup>3</sup> ; 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 Desorption Type	Not Reported; Not Reported; Not Reported; 0.18 cm <sup>3</sup> /ug
Partition Coefficient Type and Partition Coefficient Results	Not Reported; Not Reported
Partition Coefficient Phase and Partition Coefficient Results	soil-water; Dispersion coefficient: 0.14 cm <sup>2</sup> /d; Fraction of sorption sites assumed to be in equilibrium with solution: 0.02; Freundlich exponent: 0.16; First order sorption rate coefficient for non-equilibrium sites: 0.0002/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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Adsorption and Desorption			
<b>HERO ID:</b>	3491242			
		EVALUATION		
Domain	Metric	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Vitali, M., Guidotti, M., Macilenti, G., Cremisini, C. (1997). Phthalate esters in freshwaters as markers of contamination sources: A site study in Italy. Environment International 23(3):337-347.
<b>OECD Harmonized Template:</b>	Adsorption and Desorption
<b>HERO ID:</b>	680447

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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: 105%; sediment: 65 %; average of 4 replicates: water:±1.3%; sediment:±5.9%
Transformation Products, Equilibrium	Not reported; Not applicable; Not applicable
Adsorption Details, and Equilibrium Desorption Details	
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 = ND, ND, ND, ND, ND, ND, ND, 60.7, ND, ND, ND, ND, ND, ND, ND, ND, ND, ND, ND, ND, 2.61
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	Calculated from [river sediment] / [river water]; Sediment concentrations: ND, 0.8, 1.5, ND, ND, ND, ND, 18.2, ND, 0.3, ND, ND, ND, ND, ND, 1.5, ND, ND, ND, ND, 2.0, and 17.2 ug/kg; Water concentrations: ND, ND, ND, ND, ND, ND, ND, 0.3, ND, ND, ND, ND, ND, ND, ND, ND, ND, ND, ND, and 6.6 ug/L
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
	Metric 2:	Test Substance Purity	High
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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Vitali, M., Guidotti, M., Macilenti, G., Cremisini, C. (1997). Phthalate esters in freshwaters as markers of contamination sources: A site study in Italy. Environment International 23(3):337-347.			
<b>OECD Harmonized Template:</b>	Adsorption and Desorption			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Wang, H., Li, H., Song, Q., Gao, L., Wang, N. (2017). Adsorption of Phthalates on Municipal Activated Sludge. Journal of Chemistry 2017:1-7.			
<b>OECD Harmonized Template:</b>	Adsorption and Desorption			
<b>HERO ID:</b>	5666279			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; Benzyl butyl 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: BBP			
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; 4.629/hr; 0.150 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, 24.2 µg remained in sludge, 0 µg remained in water, 55.8 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.
Continued on next page ...				



...continued from previous page

<b>Study Citation:</b>	Wang, H., Li, H., Song, Q., Gao, L., Wang, N. (2017). Adsorption of Phthalates on Municipal Activated Sludge. Journal of Chemistry 2017:1-7.			
<b>OECD Harmonized Template:</b>	Adsorption and Desorption			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>Medium</b>		

<b>Study Citation:</b>	Xu, X. R., Li, X. (2009). Sorption behaviour of benzyl butyl phthalate on marine sediments: Equilibrium assessments, effects of organic carbon content, temperature and salinity. Marine Chemistry 115(1-2):66-71.
<b>OECD Harmonized Template:</b>	Adsorption and Desorption
<b>HERO ID:</b>	1465055

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl phthalate
Confidentiality, Type, Guideline	None; Experimental; other: Sorption of BBP to marine sediments
Solvent, Reactivity, Storage, Stability	Stock solution in methanol; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Acros Organics (Geel, Belgium); NR; analytical grade Notes: BBP
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; Waters SPE C18 cartridge used for solid-phase extraction; sorption exp run 3 times for each sediment sample; assays conducted in duplicate
pH, Test Temperature, Buffer, and Test Details	fresh sediment mixtures pH = 7.5; 25±1°C; pH buffered at 7.5 with HCl or NaOH as needed; 0.1 g dry raw sediment placed in flasks with 90 mL seawater and 100, 150, 200, 300, 400, 600, 800, 900, 1100 or 1200 µg/L BBP, NaN <sub>3</sub> included for bacterial inhibition; flasks placed in temperature-controlled S150 shaking incubator at 100 rpm for 10 min
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; B1: 44.2% sand, 55.7% clay, 0.1% silt; B2: 29.4% sand, 70.4% clay, 0.2% silt; B3: 0.2% sand, 98.1% clay, 1.7% silt; B4: 22.5% sand, 77.3% clay, 0.2% silt; B5: 0.3% sand, 93.5% clay, 6.2% silt; Not reported
Bulk Density and Matrix Details	Not reported; marine sediment from 5 sites (B1, B2, B3, B4, B5) in Victoria Harbour, Hong Kong, collected in April 2006
Media, Recovery, and Statistics	Artificial seawater with ionic composition representative of real sea water, no OM added; Not reported; RSD: <3.2%
Transformation Products, Equilibrium	Not reported; aqueous BBP concentration did not show any significant change after 6 h; mean sorption rate constant = 0.37 h <sup>-1</sup> ; values for B1, B2, B3, B4, B5 were 0.35, 0.39, 0.39, 0.34 and 0.39 h <sup>-1</sup> , respectively; obtained using a first-order reaction model
Adsorption Details, and Equilibrium Desorption Details	Not reported; Not reported; After 30 min, BBP adsorption on B1, B2, B3, B4, B5 reached 66%, 78%, 70%, 59% and 68% of their respective equilibrium levels.
Reference Substance, Reference Substance Results, and Percent Adsorption	K <sub>d</sub> (L/g); Average = 10.01±2.33; B1: 7.98, B2: 12.54, B3: 10.87, B4: 7.16, B5: 11.52; foc % = B1: 1.38, B2: 1.96, B3: 1.81, B4: 1.29, B5: 1.87;
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not reported
Partition Coefficient Type and Partition Coefficient Results	K <sub>oc</sub> (L/g); Average = 598±33; B1: 578, B2: 640, B3: 601, B4: 555, B5:616
Partition Coefficient Phase and Partition Coefficient Results	sediment-water; marine sediment and artificial salt water
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	Medium	The source and purity were reported.
Domain 2: Test Design	Metric 3:	Study Controls	Medium	The use of controls was not reported but the omission is unlikely to have a substantial impact on the study results.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Xu, X. R., Li, X. (2009). Sorption behaviour of benzyl butyl phthalate on marine sediments: Equilibrium assessments, effects of organic carbon content, temperature and salinity. Marine Chemistry 115(1-2):66-71.			
<b>OECD Harmonized Template:</b>	Adsorption and Desorption			
<b>HERO ID:</b>	1465055			
Domain	Metric	EVALUATION		Comments
	Metric 4:	Test Substance Stability	Medium	Details regarding the test substance storage and stability were not reported but the 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	High	Test conditions were reported.
	Metric 7:	Testing Consistency	High	Testing conditions were consistent.
	Metric 8:	System Type and Design	High	Equilibrium was established and the system type was capable of appropriately 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 outcomes of interest.
	Metric 12:	Test Substance Purity	High	The study used sampling methods that addressed the outcomes of interest and used accepted approaches.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty 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	Medium	Mass balance, and extraction efficiency were not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Sorption 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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Adsorption and Desorption
<b>HERO ID:</b>	2241688

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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-1.246 ug/L in water samples, ND-379.5 ng/g d.w. in sediment and 1.5-179.6 ug/g d.w in suspended particle samples
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Not applicable; Not applicable; Not applicable; Not applicable
Desorption Type	
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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Adsorption and Desorption			
<b>HERO ID:</b>	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.

Continued on next page ...

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Adsorption and Desorption
<b>HERO ID:</b>	2241688

## Overall Quality Determination

<b>Study Citation:</b>	Armstrong, D. L., Rice, C. P., Ramirez, M., Torrents, A. (2018). Fate of four phthalate plasticizers under various wastewater treatment processes. Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances & Environmental Engineering 53(12):1075-1082.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	4829336

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Benzyl butyl phthalate
Confidentiality, Type, Guideline	None; Experimental; Experimental
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	d4-BBP (98.0%); Sigma Aldrich (St. Louis, MO, USA); NR; 98.0% Notes: BBP
Test Method Details, Test Condition Details, and Test Consistency Details	wastewater and sludge sample analysis to evaluate fate of target chemicals; Treatment system configurations reported for each plant in document; Not applicable
System Type Design	WWTPs #1-4 use anaerobic digestion for sludge treatment; WWTPs #5-6 use aerobic processes
Sampling Frequency and Sampling Details	Not specified; wastewater influent and effluent, and sludge sampled
Test Temperature	Reported plant treatment processing temperatures ranged from 30-38C
Results Details	% change in WWTP #1: -74.3% (Anaerobic Digestion Effluent), +506% (final solids), #2: +147% (Anaerobic Digestion Effluent), -54.5% (final solids); #3: +227% (Thermal Hydrolysis Effluent), NS (Anaerobic Digestion), NS (final solids); #4: -76.4% (Anaerobic Digestion Effluent), NS (final solids); #5: -68.2% (Anaerobic Digestion Effluent), -57.8% (final solids); #6: -55.5% (Anaerobic Digestion Effluent), NS (final solids); NS = change in concentration not significant and, thus, not calculated.
Analytical Method and Analytical Details	Ultra High Performance Liquid Chromatograph; Details and method detection limits (MDLs) cited to a previous publication
Transformation Products, Statistics, and Kinetics	Not applicable; Standard deviation reported for concentration measurements; Not applicable
Reference Substance and Reference Substance Results	Each extraction batch consisted of a blank and a spiked sample for recovery calculations.; 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	Test substance analytical standards were reported.
Domain 2: Test Design	Metric 3:	Study Controls	High	Analytical blanks were included and presumably were within a valid range.
	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	High	This metric met the criteria for high confidence as expected for this type of study.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Armstrong, D. L., Rice, C. P., Ramirez, M., Torrents, A. (2018). Fate of four phthalate plasticizers under various wastewater treatment processes. Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances & Environmental Engineering 53(12):1075-1082.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	4829336			
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	This metric met the criteria for high 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.
	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 analytical detail reported; cited to previous publication.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	This metric met the criteria for medium confidence as expected for this type of study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results are reasonable based on the reported data.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quality Determination</b>		<b>High</b>		



<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	698293

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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	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): 5.7 µg/L 1st aeration (max): 14 µg/L biological treatment (max): 2.2 µg/L CS treatment (max): 1.7 µg/L ACA treatment (max): n.d. µg/L
Analytical Method and Analytical Details	GC-MS; Detection limit: 0.2 µg/L
Transformation Products, Statistics, and Kinetics	Not reported; Influent (median): 3.3 ug/L 1st aeration (median): 0.9 ug/L biological treatment (median): 2.2 ug/L CS treatment (median): 1.3 ug/L ACA treatment (median): n.d. 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	1322111			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
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	65% anaerobic, 75% 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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	1322111			
		EVALUATION		
Domain	Metric	Rating	Comments	
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	Appropriate for a WWTP removal monitoring study.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 6: Confounding/Variable Control				
	Metric 13:	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	3350322

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Benzyl butyl phthalate
Confidentiality, Type, Guideline	None; 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	Membrane bioreactor containing sludge was fed mixed leachate.; mixed leachate: Carbon/nitrogen ratio adjusted to 10. Feed BBP 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: 0.050/h, 0.045/h, 0.018/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 0.993, 0.991, 0.966 for SRT 90 d, 15 d, 5 d, respectively.; Increased SRT from 5 to 90 days resulted in increased degradation rate from 0.018/h to 0.050/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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3350322			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Benzyl butyl phthalate			
Confidentiality, Type, Guideline	None; 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	Membrane bioreactor containing sludge was fed mixed leachate.; mixed leachate: Carbon/nitrogen ratio adjusted to 6. Feed BBP 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: 0.059/h, 0.047/h, 0.025/h for SRT 90 d, 15 d, 5 d, respectively			
Analytical Method and Analytical Details	solid phase extraction technique (SPE) followed by their analyses using GC and GC/MS.; Analytical details are referenced			
Transformation Products, Statistics, and Kinetics	not reported; R2 0.993, 0.995, 0.945 for SRT 90 d, 15 d, 5 d, respectively.; Increased SRT from 5 to 90 days resulted in increased degradation rate from 0.025/h to 0.059/h			
Reference Substance and Reference Substance Results	not applicable; not applicable			
<b>EVALUATION</b>				
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>			<b>High</b>	



<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3350322			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Benzyl butyl phthalate			
Confidentiality, Type, Guideline	None; 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	Membrane bioreactor containing sludge was fed mixed leachate.; mixed leachate: Carbon/nitrogen ratio adjusted to 3 Feed BBP 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: 0.013/h, 0.011/h, 0.006/h for SRT 90 d, 15 d, 5 d, respectively			
Analytical Method and Analytical Details	solid phase extraction technique (SPE) followed by their analyses using GC and GC/MS.; Analytical details are referenced			
Transformation Products, Statistics, and Kinetics	not reported; R2 0.973, 0.967, 0.982 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 0.013/h			
Reference Substance and Reference Substance Results	not applicable; not applicable			
<b>EVALUATION</b>				
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3350322			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Benzyl butyl phthalate			
Confidentiality, Type, Guideline	None; 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	Membrane bioreactor containing sludge was fed mixed leachate.; mixed leachate: Carbon/nitrogen ratio adjusted to 10. Feed BBP 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: 0.041/h, 0.036/h, 0.011/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 0.995, 0.982, 0.948 for SRT 90 d, 15 d, 5 d, respectively.; Increased SRT from 5 to 90 days resulted in increased degradation rate from 0.011/h to 0.041/h			
Transformation Products, Statistics, and Kinetics	not applicable; not applicable			
Reference Substance and Reference Substance Results				
<b>EVALUATION</b>				
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3350322			
<b>EVALUATION</b>				
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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3350322			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Benzyl butyl phthalate			
Confidentiality, Type, Guideline	None; 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	Membrane bioreactor containing sludge was fed mixed leachate.; mixed leachate: Carbon/nitrogen ratio adjusted to 6. Feed BBP 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: 0.053/h, 0.039/h, 0.023/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 0.999, 0.990, 0.929 for SRT 90 d, 15 d, 5 d, respectively.; Increased SRT from 5 to 90 days resulted in increased degradation rate from 0.023/h to 0.053/h			
Transformation Products, Statistics, and Kinetics	not applicable; not applicable			
Reference Substance and Reference Substance Results				
<b>EVALUATION</b>				
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3350322			
		<b>EVALUATION</b>		
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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3350322			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Benzyl butyl phthalate			
Confidentiality, Type, Guideline	None; 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	Membrane bioreactor containing sludge was fed mixed leachate.; mixed leachate: Carbon/nitrogen ratio adjusted to 3. Feed BBP 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: 0.011/h, 0.007/h, 0.005/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 0.972, 0.935, 0.983 for SRT 90 d, 15 d, 5 d, respectively.; Increased SRT from 5 to 90 days resulted in increased degradation rate from 0.005/h to 0.011/h			
Transformation Products, Statistics, and Kinetics	not applicable; not applicable			
Reference Substance and Reference Substance Results				
<b>EVALUATION</b>				
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3350322			
		<b>EVALUATION</b>		
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.
<b>Overall Quality Determination</b>		<b>High</b>		



<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	3022721

EXTRACTION	
Parameter	Data
CASRN and Test Material	NR; butylbenzyl 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 were mixed 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	0.05 ± 0.08 mg/kg in surface soil (mean) and 0.05 ± 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>Low</b>		

<b>Study Citation:</b>	Cheng, Z., Li, H. H., Yu, L., Yang, Z. B., Xu, X. X., Wang, H. S., Wong, M. H. (2018). Phthalate esters distribution in coastal mariculture of Hong Kong, China. Environmental Science and Pollution Research 25(18):17321-17329.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	4728634

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
Confidentiality, Type, Guideline	None; Experimental; Experimental
Solvent, Reactivity, Storage, Stability	NA; NA; NA; NA
Radiolabel, Source, State, Purity	NA; NA; NA; NA Notes: BBP
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 (Lutjanus campechanus) (n = 26), orange spotted grouper (Epinephelus coioides) (n = 26), and snubnose pompano (Trachinotus blochii) (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: <0.1 (MS), <0.1 (NS), <0.01 (snubnose pompano), 0.01 (orange-spotted grouper), 0.04 (red snapper); Site M2: <0.1 (MS), <0.1 (NS), 0.04 (snubnose pompano), 0.02 (orange-spotted grouper), 0.02 (red snapper); Site H1: <0.1 (MS), <0.1 (NS), 0.05 (orange-spotted grouper), 0.06 (red snapper); Site H2: <0.1 (MS), <0.1 (NS), 0.01 (orange-spotted grouper); Site H3: <0.1 (MS), <0.1 (NS), 0.03 orange-spotted grouper), 0.04 (red snapper); Site H4: <0.1 (MS), <0.1 (NS), 0.07 (snubnose pompano), 0.02 (orange-spotted grouper), <0.01 (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	High	The chemical of interest was identified by name.
	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.
	Metric 6:	Testing Conditions	Medium	No environmental conditions were reported.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Cheng, Z., Li, H. H., Yu, L., Yang, Z. B., Xu, X. X., Wang, H. S., Wong, M. H. (2018). Phthalate esters distribution in coastal mariculture of Hong Kong, China. Environmental Science and Pollution Research 25(18):17321-17329.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	4728634			
Domain		Metric	EVALUATION Rating	Comments
	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.
<b>Overall Quality Determination</b>			<b>Medium</b>	

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	1322127

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl 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 to prepare 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 <sup>3</sup> . 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: -4 to -28 ng/m <sup>2</sup> /day (negative value indicates deposition into water)
Analytical Method and Analytical Details	GC-MS (Agilent 6890 N GC-5973 quadrupole mass selective detector); Instrument limit of detection: 1.8 pg. Method limits: sea water (dissolved): 5 pg/L, sea water (total suspended matter): 2 pg/L; air (vapor): 2 pg/m <sup>3</sup> ; air (particle): 2 pg/m <sup>3</sup>
Transformation Products, Statistics, and Kinetics	Not reported; Errors for flux measurements were 45%. BBP concentration range in North Sea: < detection limit-6.6 ng/L. Average vapor phase conc.: 0.02 ng/m <sup>3</sup> ; average particle phase conc.: 0.05 ng/m <sup>3</sup> ; 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	ECHA, (2009). Data on manufacture, import, export, uses and releases of benzyl butyl phthalate (BBP) as well as information on potential alternatives to its use.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	7325021

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; butyl benzyl 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	97-100% reduction; effluent concentrations <0.05-<2 ug/L; effluent sludge concentrations of <0.4-0.7 mg/kg sludge
Analytical Method and Analytical Details	NR; NR
Transformation Products, Statistics, and Kinetics	NR; NR; 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	ECHA, (2009). Data on manufacture, import, export, uses and releases of benzyl butyl phthalate (BBP) as well as information on potential alternatives to its use.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	7325021			
		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.
<b>Overall Quality Determination</b>		<b>Low</b>		

\* Related References: Cites: Hoffmann. 1996. Massestrømsanalyse for phthalater [Substance flow analysis forphthalates]. Miljøprojekt nr. 320. Danish Environmental Protection Agency, Copenhagen.(In Danish)



<b>Study Citation:</b>	Fausser, 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.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	679494

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl 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 of 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	Influent/effluent removal % (8-day mean): 33.3%. Inlet total (µg/L): 0.39±0.30; outlet total (µg/L): 0.13±0.09.
Analytical Method and Analytical Details	High-resolution GC/MS; DCM extracts were analyzed.
Transformation Products, Statistics, and Kinetics	Not Reported; Uncertainty reported for inlet and outlet concentrations.; t(1/2) of total BBP removal: 79.1 hours
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			

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3350189			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; BBP			
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: 11 hoursSRT: 12 - 27 dCycle time: 3 hr; Not reported			
System Type Design	Sequencing batch reactor system: grit chamber, primary settling tank (thickener, excess sludge, digester, sludge drying bed), bioselector, aeration basin, 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:Sorption: approx. 5%Biotransformation: approx. 85%Effluent: approx. 10%November - March percentage removal: approx. 40% to 100%April - October percentage removal: approx. 80 to 100%			
Analytical Method and Analytical Details	Varian 450 GC with Varian 240 MS; LOD 0.216 ug/L, LOQ 0.342 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; 83% recovery			
Transformation Products, Statistics, and Kinetics	Not reported; Not reported; Not applicable			
Reference Substance and Reference Substance Results	Not reported; Not reported			
<b>EVALUATION</b>				
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Gao, D., Li, Z., Wen, Z., Ren, N. (2014). Occurrence and fate of phthalate esters in full-scale domestic wastewater treatment plants and their impact on receiving waters along the Songhua River in China. Chemosphere 95:24-32.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	1987643

EXTRACTION	
Parameter	Data
CASRN and Test Material	Not reported; Butyl benzyl 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: BBP
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	BBP was not detected in WWTP #1; BBP was not detected in the influent of WWTP #2 and #3, however, was found to have accumulated in the wastewater after treatment
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 (ng/mL): nd-5.67, mean = 3.66; Effluent (ng/mL): nd-17.03, mean = 8.3; Sludge (ng/g): nd-6890.2, mean = 2712.4; occurrence receiving surface water: nd-4.39, mean = 2.49 ng/L, sediment nd-96.32, mean 62.36 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Gao, D., Li, Z., Wen, Z., Ren, N. (2014). Occurrence and fate of phthalate esters in full-scale domestic wastewater treatment plants and their impact on receiving waters along the Songhua River in China. Chemosphere 95:24-32.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	5432997

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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	98% 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 29.8 ug/L reduced to 0.7 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		



<b>Study Citation:</b>	Jacobs, L. W., Zabik, M. J. (1983). Importance of sludge-borne organic chemicals for land application programs. :418.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	5490434			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; butylbenzylphthalate			
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 Details	Sewage sludge samples were collected form 204 municipal wastewater treatment plants in Michigan.; not applicable; not applicable			
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 141 of 234 samples at 0.0469-12,800 mg/kg dry weight			
Analytical Method and Analytical Details	GC; extracted with methylene chloride			
Transformation Products, Statistics, and Kinetics	not applicable; mean 552 mg/kg dry weight; median 59.1 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Jacobs, L. W., Zabik, M. J. (1983). Importance of sludge-borne organic chemicals for land application programs. :418.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>Uninformative</b>		

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	5576760

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl 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: ca. 1-2 ng/L (June), ca. 1-10 ng/L (December); Sediment: ca. 1-12 ng/g (June), 1-11 ng/g (December)
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				

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>Low</b>		

<b>Study Citation:</b>	Liu, H.,ui, Liang, Y., Zhang, D.,an, Wang, C., Liang, H., Cai, H. (2010). Impact of MSW landfill on the environmental contamination of phthalate esters. Waste Management 30(8-9):1569-1576.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	1336447

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; butyl benzyl phthalate
Confidentiality, Type, Guideline	No; Experimental; Experimental
Solvent, Reactivity, Storage, Stability	n-hexane (for the standards); Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, Purity	NA; Dr. Ehrenstorfer GmbH (Germany); Not Reported; Not Reported Notes: Test substance extracted from leachate, surface water, groundwater, topsoil, overbarden samples
Test Method Details, Test Condition Details, and Test Consistency Details	Groundwater, surface water, leachate, and soil samples collected from the Landfill area in Wuhan city, China, were extracted and pretreated according to EPA Method 3535 and 8061a for liquid samples, or spiked with internal standards, extracted and concentrated for the soil samples.; raw (fresh) leachate pH = 7.4–7.82, COD = 7,138–24,856 mg/L, and BOD5 = 1,000–5,000 mg/L; Not Reported
System Type Design	Landfill established in 2003; 23.4 hm2 covered with wastes
Sampling Frequency and Sampling Details	Leachate (n = 5) Surface water (n = 4) Groundwater (n = 8) Topsoil (n = 4) Overbarden (n = 2) Collected in December 2007; Not Reported
Test Temperature	ambient
Results Details	BBP was not detected in all samples from: the landfill leachate (n = 5), adjacent surface water (n = 4), and groundwater (n = 8); LOD range 22 to 341 ng/L. BBP detected in topsoil at 19.7 (mean), nd–61.4 ug/kg (range) and detection frequency of 75% (n=4) and in the overbarden 90.5 (mean), nd–180.9 ug/kg (range), and detection frequency 50% (n=2)
Analytical Method and Analytical Details	Agilent 6890N gas chromatography with FID detector; DB-5MS capillary column (30 m × 250 mm × 0.25 mm) (Agilent, USA) for chromatographic separation
Transformation Products, Statistics, and Kinetics	Not Reported; Not Reported; Not Reported
Reference Substance and Reference Substance Results	For all the samples, a procedural blank and spiked sample consisting of all reagents was run to check for interference and cross contamination.; 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.
Domain 2: Test Design	Metric 3:	Study Controls	High	A concurrent negative control, or blank group, toxicity control, and positive control were included (where applicable).
	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	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	N/A	This metric does not apply to this study type.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Liu, H.,ui, Liang, Y., Zhang, D.,an, Wang, C., Liang, H., Cai, H. (2010). Impact of MSW landfill on the environmental contamination of phthalate esters. Waste Management 30(8-9):1569-1576.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	1336447			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 7:	Testing Consistency	N/A	This metric does not apply to this study type.
	Metric 8:	System Type and Design	N/A	This metric does not apply to this study type.
Domain 4: Test 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	Low	There were differences between the assessment methodology and the intended outcome assessment (multi-media concentrations were reported for test substance; partitioning and fate processes were not assessed).
	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 in the measurements and statistical techniques and between study groups (if applicable) were reported in the study.
	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	The analytical methods used were suitable for detection and quantification of the target chemical.
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical methods were clearly described and address the dataset(s); kinetic calculations were not performed.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	The study results were reasonable; however, partitioning and fate processes were not quantified.
	Metric 18:	QSAR Models	N/A	A QSAR model was not reported.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	3016266

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butyl benzyl 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	BBP Conc (µg/kg) Soil1: 1±0 Chinese cabbage/leafy: 20±0 Soil2: 1±0 Garlic bolt/leafy: 30±6 Soil3: 1±0 Asparagus lettuce/stem: 27±6 Soil4: 1±0 Crown daisy chrysanthemum/leafy: 33±6 Soil5: 1±0 Pakchoi/leafy: ND Soil6: 1±0 Bovine heart shaped cabbage/leafy: ND- Soil7: 1±0 Ternip/root: 30±6 Soil8: <1 Pakchoi/leafy: ND Soil9: 1±0 Celery/leafy: 10±0 Soil10: 1±0 Spinach/leafy: 3±0 Soil12: 1±0 Cayenne/solanaceous: ND Soil13: <1 Pakchoi/leafy: 30±6 Soil14: 1±0 Florists chrysanthemum leaf/leafy: 30±10 Soil15: 1±0 Pakchoi/leafy: 30±6 Soil16: 1±0 Chinese cabbage/leafy: ND Soil17: 1±0 Garlic bolt/leafy: ND Soil18: <1 Chinese cabbage/leafy: 23±0 Soil19: <1 Pakchoi/leafy: 23±0
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.
	Metric 4: Test Substance Stability	High	Sample storage conditions and processing were reported and appropriate.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	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.				
<b>OECD Harmonized Template:</b>	Miscellaneous				
<b>HERO ID:</b>	3016266				
Domain		Metric	EVALUATION Rating		Comments
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		



<b>Study Citation:</b>	Midwest Research Institute, (1984). Performance evaluation of full-scale hazardous waste incinerators - Volume I (excutive summary) contract no. 68-02-3177 (43).
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	1269556

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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	Destruction or Removal Efficiency (DRE) was determined for selected pollutants in a Ross System incinerator at Ross Incineration Services, Inc. (plant B), in Grafton, Ohio; Residence time: 6.2 - 6.7 secHeat input: 60 - 87E6 kJ/hrExcess oxygen in stack: 10.4 - 10.7%; Waste feed heating value: 19,710 - 20,400 kJ/kg (liquid organic), 4,090-4520 kJ/kg (aqueous)Moisture: 35 - 48% (liquid organic), 94 - 97% (aqueous)
System Type Design	Rotary kiln, main combustion chamber, water spray, quench, packed towers, electrified scrubber
Sampling Frequency and Sampling Details	NR, 3 sample runs collected.; Liquid and solid feed collected as grab samples. Stack effluent collected by modified method 5 (MM5): XAD-2 resin traps with particulate filter
Test Temperature	1117 - 1154°C
Results Details	DRE: 99.9938, 99.92, and 99.9923
Analytical Method and Analytical Details	GC/ECD (waste feeds); GC/MS (MM5 gas samples); Waste feeds mixed with tetraglyme and reagent water prior to analysis. Traps were Soxhlet-extracted with methylene chloride, dried with anhydrous sodium sulfate, concentrated using Kuderna-Danish evaporation, with N2.
Transformation Products, Statistics, and Kinetics	Not reported; Linear regression comparison to DRE and starting concentration; no compounds below 200 ug/g in waste feed achieved DRE > 99.99%, correlation coefficient for regression line: - 0.84; Not reported
Reference Substance and Reference Substance Results	MM5 blank samples; Values blank corrected

EVALUATION				
Domain	Metric		Rating	Comments
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High	The chemical of interest was identified by name.
	Metric 2:	Test Substance Purity	High	Sample source was reported.
Domain 2: Test Design	Metric 3:	Study Controls	High	Field blanks were included and results were blank corrected.
	Metric 4:	Test Substance Stability	Medium	Sample processing was reported for some samples, 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	High	The system stages and appropriate 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Midwest Research Institute, (1984). Performance evaluation of full-scale hazardous waste incinerators - Volume I (excutive summary) contract no. 68-02-3177 (43).			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	1269556			
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 was appropriate for determining DRE.
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate and sampled feed and effluents.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	No significant sources of uncertainty were identified. Study is very thorough.
	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 methods were appropriate; extraction efficiencies were reported. Limits of detection were not reported explicitly.
	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, although the study authors noted their purpose was not to determine operational parameters effects on DRE, only normal DRE under standard conditions.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Monsanto, (1986). Saflex Landfill Disposal Assessment with Cover Letter dated 072287.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	1359205			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; Saflex materials (estimates run for benzyl butyl phthalate)			
Confidentiality, Type, Guideline	No; Estimation, landfill leaching potential; Estimation, landfill leaching potential			
Solvent, Reactivity, Storage, Stability	NA; NA; NA; NA			
Radiolabel, Source, State, Purity	NA; Monsanto; NR; NA Notes: Samples of Saflex were treated with NaOAc, HOAc, HCl, and NaOH as leaching media to determine constituents; SR samples treated with HoAC, HCl, and NaOAc had 0.28, 0.34, and 0.28 mg/L detected, respectively. Other detected compounds were 2-ethyl-2-hexanol, benzene methanol, and di-n-hexyladipate.			
Test Method Details, Test Condition Details, and Test Consistency Details	U.S. EPA Vertical-Horizontal Spread model: used to determine if a hazardous constituent leaches from waste into groundwater and will be transported to a downgradient drinking well. Model inputs are set by EPA (waste site dimensions, aquifer characteristics, etc.); CY = C0 (Erf (CY'/4Y))(Erf (X/4AY))CY = receptor well constituent concentrationC0 = initial leachate constituent concentrationY' = Width of a single trench (12 m)Y = Distance to receptor well (152.4 m)X = trench length (12 m)A = transverse dispersity (2 m); Not Reported			
System Type Design	Not Reported			
Sampling Frequency and Sampling Details	Not Reported; Not Reported			
Test Temperature	Not Reported			
Results Details	Concentrationat a 500 ft distant well or surface water discharge: 0.02 mg/L (reduced 17 x from 0.34 mg/L)			
Analytical Method and Analytical Details	Not Reported; 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 by name.
	Metric 2:	Test Substance Purity	N/A	Not applicable to model studies.
Domain 2: Test Design	Metric 3:	Study Controls	N/A	Not applicable to model studies.
	Metric 4:	Test Substance Stability	N/A	Not applicable to model studies.
Domain 3: Test Conditions	Metric 5:	Test Method Suitability	High	The model is an established transport model developed by EPA.
	Metric 6:	Testing Conditions	Medium	Most model equation inputs were reported, some may have been omitted.
	Metric 7:	Testing Consistency	N/A	Not applicable to model studies.
	Metric 8:	System Type and Design	N/A	Not applicable to model studies.
Domain 4: Test Organisms				
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1986). Saflex Landfill Disposal Assessment with Cover Letter dated 072287.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	1359205			
<b>EVALUATION</b>				
Domain	Metric	Rating	Comments	
	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 model and equation was appropriate for determining leaching potential, however it is not clear what removal mechanisms are considered based on the equation.
	Metric 12:	Test Substance Purity	N/A	Not applicable to model studies.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Low	Uncertainty and variability was not explicitly addressed.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Not applicable.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	N/A	Not applicable to model studies.
	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	Some aspects of the model were not reported and were unable to be verified.
	Metric 18:	QSAR Models	N/A	Not applicable.
<b>Overall Quality Determination</b>		<b>Medium</b>		

<b>Study Citation:</b>	Monsanto, (1983). Phosphate and phthalate ester treatability under laboratory conditions simulating the Delaware river waste treatment plant.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	1359281			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Butyl benzyl phthalate			
Confidentiality, Type, Guideline	None; Experimental; Experimental			
Solvent, Reactivity, Storage, Stability	ethanol stock during days 17-28; NR; NR; NR			
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: Applied as a commercial mixture of phosphate and phthalate esters, Santicizer 154, Pydraul 50e, and Santicizer 711.			
Test Method Details, Test Condition Details, and Test Consistency Details	Laboratory-scale continuous flow activated sludge systems spiked with commercial mixtures of phosphate and phthalate esters to determine removal efficiencies.; Inoculum: primary clarifier effluent and activated sludge from the Delaware River Waste Treatment plant.Detection time: 39.5 - 42.3 hrMean cell residence time: 7.9 - 68.8 dDOC: 1280 - 1820 mg/L (influent), 150 - 580 mg/L (effluent); 20-25 mL Mixed liquor suspended solids removed daily, filtered, and returned to system effluent. Systems run for 6 days and fed 10 mg/L of each of the individual esters as commercial mixtures on day 7. Re-fed 1.000 gm of each mixture on day 17.			
System Type Design	300 mL continuous flow activated sludge with 5500 mg/L activated sludge, effluent filtered and supplemented with 100 mg/L ATP and pumped into the unit at 7 mL/hr.			
Sampling Frequency and Sampling Details	Twice weekly; 20 mL Influent and 500 mL effluent samples collected			
Test Temperature	Not reported			
Results Details	Effluent concentrations below detection before day 17 addition of higher concentration test substance. Influent: 1.02 ppm (day 24), 1.45 ppm (day 31) Effluent: 0.041 ppm (day 24), 0.023 ppm (day 31) Removal efficiency: 96% (day 24), 98% (day 31)			
Analytical Method and Analytical Details	GC/MS in selected ion monitoring mode; Aqueous and sludge samples extracted with methylene chloride and concentrated.			
Transformation Products, Statistics, and Kinetics	Not reported; Not reported; Not reported			
Reference Substance and Reference Substance Results	Control system maintained similarly without test substance feed.; Significant levels of phosphate esters were not observed.			
<b>EVALUATION</b>				
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	High	A control system was included, and background concentrations were generally negligible.
	Metric 4:	Test Substance Stability	Medium	Test substance starting concentrations were reported, but minimal details on solvents or storage were included. Some substances were commercial mixtures, of which the non-active ingredients were 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	Some test conditions, including temperature, were not reported. Minimal system description was provided.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Monsanto, (1983). Phosphate and phthalate ester treatability under laboratory conditions simulating the Delaware river waste treatment plant.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	1359281			
Domain		Metric	EVALUATION	
			Rating	Comments
	Metric 7:	Testing Consistency	High	Test conditions were consistent for the duration of the test.
	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	Medium	Sampling frequency was appropriate, however sample methods and preparation were described briefly and may be reported in greater depth elsewhere.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Test substances applied as a mixture, may impact removal efficiency.
	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; extraction efficiency and limits of detection were not reported. Raw data was reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	Statistical and kinetic calculations were not applied.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The results were reasonable based on the method, but were not compared to previous results. Test substances applied as a mixture and at too low concentrations at the beginning of the test.
	Metric 18:	QSAR Models	N/A	Not applicable.
<b>Overall Quality Determination</b>			<b>High</b>	

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

EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; butyl benzyl 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): 62; activated sludge (AS): 94; trickling filter (TF): 70; oxygen activated sludge (OAS): 84; aerated lagoon (AL): 93; activated sludge and trickling filter (AS/TF): 80/93; tertiary (T): 86			
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: 57% @ 2-560 ug/L (POTW 1-40); 22% @ 1-110 ug/L (POTW 51-60); effluent concentrations: 11% @ 1-34 ug/L (POTW 1-40); 10% @ 1-2200 ug/L (POTW 51-60); sludge concentrations: 43% @ 2-45,000 ug/L (POTW 1-40); 17% @ 160-1090 ug/L (POTW 51-60); average/median concentration in influent: 12/3 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.

Continued on next page ...				
----------------------------	--	--	--	--

...continued from previous page

<b>Study Citation:</b>		(1982). Fate of Priority Pollutants in Publicly Owned Treatment Works, Volume I.		
<b>OECD Harmonized Template:</b>		Miscellaneous		
<b>HERO ID:</b>		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.
<b>Overall Quality Determination</b>			<b>High</b>	



<b>Study Citation:</b>	Oppenheimer, J., Stephenson, R., Burbano, A., Liu, L. (2007). Characterizing the passage of personal care products through wastewater treatment processes. Water Environment Research 79(13):2564-2577.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	1410400

EXTRACTION				
Parameter		Data		
CASRN and Test Material		85-68-7; Butylbenzyl phthalate		
Confidentiality, Type, Guideline		None; 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		Municipal treatment facilities; Plant D: municipal with significant industrial component, primary treatment: no chemicals, secondary treatment: nitrification/denitrification, secondary aeration: diffused air, filters: granular MF/RO, disinfection: chlorine; Plant F municipal with light industrial component, primary treatment: none, secondary treatment: extended aeration nitrification/denitrification, secondary aeration: surface air, filters: deep bed, disinfection: UV		
System Type Design		Plant D: SRT ca. 7-20 days; Plant F: SRT ca. 20-30 days		
Sampling Frequency and Sampling Details		Sampling events in October, November and January; Influent and effluent samples collected.		
Test Temperature		Seasonal: 18.9 to 25.8°C		
Results Details		Removal from tertiary filters were ND, -24, >4% at plant F and ND at plant D		
Analytical Method and Analytical Details		Solid phase extraction followed by GC/MS; MDL: 0.13 µg/L		
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	Low	The source and purity of the standard was not reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	N/A	The metric is not applicable to this type of study.
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this type of study.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The metric met the criteria for high confidence for this type of study.
	Metric 6:	Testing Conditions	High	The metric met the criteria for high confidence for this type of study.
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to this type of study.
	Metric 8:	System Type and Design	High	The metric met the criteria for high confidence for this type of study.
Domain 4: Test Organisms				
Continued on next page ...				

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Oppenheimer, J., Stephenson, R., Burbano, A., Liu, L. (2007). Characterizing the passage of personal care products through wastewater treatment processes. Water Environment Research 79(13):2564-2577.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	1410400			
		EVALUATION		
Domain	Metric	Rating	Comments	
	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 study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The metric met the criteria for high confidence for this type of study.
	Metric 12:	Test Substance Purity	High	The metric met the criteria for high confidence 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 this type of study.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	The metric met the criteria for medium confidence for this type of study.
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	The metric is not applicable to this type of study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	N/A	The metric is not applicable to this type of study.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this type of study.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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	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; SC sediment spiked with 2.5, 1.0, 0.5, and 0.25 mg/kg. SC samples spiked with 2.5 mg/kg were analyzed after storage at 4 and -20C.			
Details	not applicable			
System Type Design	not applicable; not applicable			
Sampling Frequency and Sampling Details	not reported			
Test Temperature	Recovery from spiked sediment (at 2.5 mg/kg) = 63% (SC), 71% (KS), and 68% (DD), mean recovery = 67% and recovery from spiked homogenate (at 2.5 mg/kg) = 70%; overall recovery at 4 and -20°C = 80%; recoveries in SC sediment at 5.0, 2.0, 1.0, and 0.5 mg/kg = 69, 58, 49, and 43%, respectively.			
Results Details	GC-MS; Not Reported			
Analytical Method and Analytical Details	not reported; Mean recovery in SC: significant differences in recoveries P<0.05; regression coefficient significantly different from zero P<0.05;			
Transformation Products, Statistics, and Kinetics	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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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 moni-toring 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.
<b>Overall Quality Determination</b>			<b>Uninformative</b>	

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	5348332			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; BBP			
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 Details	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 was removed by 98% in the effluents of both plants			
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	5348332			
Domain		Metric	EVALUATION Rating	Comments
	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	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.

<b>Study Citation:</b>	Rakkestad, K. E., Dye, C. J., Yttri, K. E., Holme, J. A., Hongslo, J. K., Schwarze, P. E., Becher, R. (2007). Phthalate levels in Norwegian indoor air related to particle size fraction. Journal of Environmental Monitoring 9(12):1419-1425.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	675388

**EXTRACTION**

Parameter	Data
CASRN and Test Material	85-68-7; butyl benzyl phthalate
Confidentiality, Type, Guideline	No; Experimental; Experimental
Solvent, Reactivity, Storage, Stability	acetonitrile (for the standards); Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, Purity	NA; Standards from LCGC-Promochem (Boras, Sweden); Not Reported; Analytical grade (for the standards) Notes: Test substance obtained from dust samples
Test Method Details, Test Condition Details, and Test Consistency Details	Sampler equipped with a PM10 inlet, providing a 50% cut-off for particles with an EAD (equivalent aerodynamic diameter) of 10 mm, and another sampler was equipped with a PM2.5 inlet, providing a 50% cut-off for particles with an EAD of 2.5 mm. Filters extracted in 4 mL acetonitrile by ultrasonic bath agitation, concentrated and analyzed. PM10 and PM2.5 are defined as particulate matter with an equivalent aerodynamic diameter of 10 mm and 2.5 mm, respectively.; Not Reported; Not Reported
System Type Design	Not Reported
Sampling Frequency and Sampling Details	Date samples collected: 01.10.03–01.12.03; 14 selected Norwegian indoor sites
Test Temperature	room temperature assumed
Results Details	BBP was observed as 3 to 27 percent (average 10%) of total phthalate concentration measured in indoor particulate matter with PM10 and not detected to 31 percent (average 11%) in PM2.5.
Analytical Method and Analytical Details	HPLC/HRMS-TOF method; Methodological detection limits ranged from 0.04–0.2 ng/m <sup>3</sup>
Transformation Products, Statistics, and Kinetics	Not Reported; Not Reported; Not Reported
Reference Substance and Reference Substance Results	field blank samples, HPLC pump corrections, and spiked samples with 100 ng deuterium labelled d4-DBP and d4-DnOP were used; 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.
Domain 2: Test Design	Metric 3: Study Controls	High	A concurrent negative control, or blank group, toxicity control, and positive control were included (where applicable).
	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	High	The test method was suitable for the test substance.
	Metric 6: Testing Conditions	N/A	This metric does not apply to this study type.
	Metric 7: Testing Consistency	N/A	This metric does not apply to this study type.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Rakkestad, K. E., Dye, C. J., Yttri, K. E., Holme, J. A., Hongslo, J. K., Schwarze, P. E., Becher, R. (2007). Phthalate levels in Norwegian indoor air related to particle size fraction. Journal of Environmental Monitoring 9(12):1419-1425.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	675388			
		EVALUATION		
Domain	Metric	Rating	Comments	
	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	Low	There were differences between the assessment methodology and the intended outcome assessment (concentration not reported for test substance only relative abundance compared to the total phthalate concentration).
	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 in the measurements and statistical techniques and between study groups (if applicable) were reported in the study.
	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	The 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(s).
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	The study results were reasonable; however, specific quantitative results for the concentrations of the target were not presented.
	Metric 18:	QSAR Models	N/A	A QSAR model was not reported.
<b>Overall Quality Determination</b>		<b>High</b>		



<b>Study Citation:</b>	Roslev, P., Vorkamp, K., Aarup, J., Frederiksen, K., Nielsen, P. H. (2007). Degradation of phthalate esters in an activated sludge wastewater treatment plant. Water Research 41(5):969-976.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	675406

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; BBP
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	90.2% kg/day loss of test material; Influent concentration: 37.87±28.82 ug/L Effluent concentration: 3.13±1.17 ug/L Dewatered sludge concentration: 3.41±1.26 mg/kg dw
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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Roslev, P., Vorkamp, K., Aarup, J., Frederiksen, K., Nielsen, P. H. (2007). Degradation of phthalate esters in an activated sludge wastewater treatment plant. Water Research 41(5):969-976.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
Continued on next page ...				

---

**...continued from previous page**

---

<b>Study Citation:</b>	Roslev, P., Vorkamp, K., Aarup, J., Frederiksen, K., Nielsen, P. H. (2007). Degradation of phthalate esters in an activated sludge wastewater treatment plant. Water Research 41(5):969-976.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	675406

---

		EVALUATION	
Domain	Metric	Rating	Comments
<b>Overall Quality Determination</b>		<b>High</b>	

---

<b>Study Citation:</b>	Salaudeen, T., Okoh, O., Agunbiade, F., Okoh, A. (2018). Fate and impact of phthalates in activated sludge treated municipal wastewater on the water bodies in the Eastern Cape, South Africa. Chemosphere 203(Elsevier):336-344.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	4728386

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Benzyl 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; 99.0% Notes: BBP
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 = 85.30% and final effluent = 84.88% (Adelais), in secondary effluent = 71.90% and final effluent = 87.23% (Alice), and in secondary effluent = 38.47% and final effluent = 42.53% (Seymour)
Analytical Method and Analytical Details	GC-MS; LOD = 1.01 µg/L for BBP; 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: 33.71 µg/L, effluent: 5.10 µg/L, sludge: 76.36 µg/g (Adelaide); influent: 27.57 µg/L, effluent: 3.52 µg/L, sludge: 449.36 µg/g (Alice); influent: 7.21 µg/L, effluent: 4.14 µg/L, sludge: 383.00 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Salaudeen, T., Okoh, O., Agunbiade, F., Okoh, A. (2018). Fate and impact of phthalates in activated sludge treated municipal wastewater on the water bodies in the Eastern Cape, South Africa. Chemosphere 203(Elsevier):336-344.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	5490290

Parameter		EXTRACTION		
CASRN and Test Material	85-68-7; Benzyl butyl phthalate			
Confidentiality, Type, Guideline	None; Experimental; Experimental			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	Not Reported; AccuStandard, Inc.; NR; 99.0%			
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 <sup>-1</sup> 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: 26.82 ±10.04 µg/L, Mean Final Effluent: 3.00 ±1.45 µg/L, Mean Sludge: 449.4 ±99.6 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 N <sub>2</sub> at 30°C.			
Transformation Products, Statistics, and Kinetics	Not reported; Regression analysis. Regression coefficient 0.993 BBP. 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; 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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	5490290			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Benzyl butyl phthalate			
Confidentiality, Type, Guideline	None; Experimental; Experimental			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	Not Reported; AccuStandard, Inc.; NR; 99.0%			
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: 44.60 ±10.42 μg/L, Mean Final Effluent: 6.00 ±2.56 μg/L, Mean Sludge: 322.5 ±32 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 BBP. 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; Not Reported			
<b>EVALUATION</b>				
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.
Continued on next page ...				



...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	5490290			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Benzyl butyl phthalate			
Confidentiality, Type, Guideline	None; Experimental; Experimental			
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR			
Radiolabel, Source, State, Purity	Not Reported; AccuStandard, Inc.; NR; 99.0%			
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 and drying bed, 1.0-2 ML/d, Influent TDS 380.61 ±42.5 mg/L, Effluent TDS 389.83 ±30.8 mg/L, Influent turbidity 129.43 ±36.2 NTU, Effluent turbidity 6.49 ±4.6 NTU, Influent TSS 49.07 ±17.5 mg/L, Effluent TSS 1.53 ±10.6 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: 15.48 ±4.68 μg/L, Mean Final Effluent: 3.70 ±0.55 μg/L, Mean Sludge: 448.38 ±87.9 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 BBP. 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; Not Reported			
<b>EVALUATION</b>				
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	4728707			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Butyl benzyl 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: BBP			
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 in flow 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	-25.1% removal based on % change of mean inflow (9.20 ppm) and outflow (6.89 ppm) concentrations after primary treatment; 92.3% removal based on % change of mean inflow (16.92 ppm) and outflow (1.29 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			
<b>EVALUATION</b>				
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.				
<b>OECD Harmonized Template:</b>	Miscellaneous				
<b>HERO ID:</b>	4728707				
Domain		Metric	EVALUATION 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.	
<b>Overall Quality Determination</b>			<b>Medium</b>		

<b>Study Citation:</b>	Stephenson, R. (2007). Fate of pharmaceuticals and personal care products through wastewater treatment processes.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	5919305			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; Benzyl butyl phthalate			
Confidentiality, Type, Guideline	None; Experimental; full-scale and pilot-scale WWTP removal efficiency; Experimental; full-scale and pilot-scale WWTP removal efficiency			
Solvent, Reactivity, Storage, Stability	NA; NR; Refrigerated; NR			
Radiolabel, Source, State, Purity	NA; WWTPs in southwestern United States; Liquid; NA			
Test Method Details, Test Condition Details, and Test Consistency Details	Several wastewater treatment plants in the southwestern United States were monitored to determine aqueous test substance removal efficiency.; Facility A: polymer ferric primary treatment, high purity O2 activated sludge secondary treatment, SRT = 0.5 - 1.5 days, no filters, no disinfectionFacility B: no chemical primary treatment, modified Ludzack Ettinger process with nitrification/denitrification secondary treatment, SRT = 3-5 days, deep bed filter, chlorine disinfectionFacility C: no chemical primary treatment, activated sludge secondary treatment, SRT = 4-6 days, deep bed filters, UV disinfectionFacility D: no chemical primary treatment, nitrification/denitrification secondary treatment, SRT = 7-20 days, granular microfiltration/reverse-osmosis filters, chlorine disinfectionFacility E: no primary treatment, nitrification/denitrification secondary treatment, SRT = 11-16, no filters, UV disinfectionFacility F: no primary treatment, nitrification/denitrification, SRT = 20-30 days, deep bed filters, UV disinfectionMBR 1 (located at facility E): nitrification/denitrification, SRT = 14 daysMBR 2 : SRT = 15 days; Not Reported			
System Type Design	Not Reported			
Sampling Frequency and Sampling Details	3 sampling campaigns for most facilities; Samples collected as 24-h time-weighted composites. Samples collected in summer and winter months.			
Test Temperature	NR			
Results Details	Frequently detected, good removal. SRT 80% = 5 days, percent removal at Facility A: 52%, >94%, >95% Facility B: NA (effluent > influent, could not calculate removal efficiency), 20%, NA Facility C: >92%, >95%, >93% Facility D: >82%, >84%, >91% Facility E: ND, 95% Facility F: 96%, 93%, >94% MBR 1 (located at facility E): 97%, >97%, >96% MBR 2 : ND, >96%			
Analytical Method and Analytical Details	GC/MS in selective ion monitoring mode; detection limit: 0.13 ug/mL; Samples extracted by SPE, eluted with acetone, dried over Na2SO4.			
Transformation Products, Statistics, and Kinetics	NA; Student’s t test to determine SRT 80%; NA			
Reference Substance and Reference Substance Results	Field blanks; Below the detection limit			
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 WWTPs monitored in the study were reported generally.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Field blanks were included and were within an acceptable range.
	Metric 4:	Test Substance Stability	Medium	Sample storage conditions were reported generally.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was appropriate for the test substance.
	Metric 6:	Testing Conditions	High	WWTP operational stages and conditions were reported.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Stephenson, R. (2007). Fate of pharmaceuticals and personal care products through wastewater treatment processes.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	5919305			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 7:	Testing Consistency	High	Samples were collected and analyzed consistently.
	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	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 was appropriate for determining waste water treatment removal.
	Metric 12:	Test Substance Purity	High	Sampling methods were described and appropriate.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Uncertainty and variability were 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	High	The analytical method was reported and appropriate; limits of detection and raw data was reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods for determining SRT 80% were described and applied appropriately.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable based on the method.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	2519056

EXTRACTION	
Parameter	Data
CASRN and Test Material	85-68-7; Butylbenzyl 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	BBP concentrations in WWTP inputs = $4.0 \pm 3.4$ ug/L, output = $0.16 \pm 0.15$ ug/L; removal efficiencies estimated by differences between WWTP input and output concentrations.; Wastewater fluxes entering ranged from 270 to 532 m <sup>3</sup> /d during 2010–2011; transit time inside was ca. 17 hours.; The annual mean decrease between inputs and outputs for biological oxygen demand (BOD <sub>5</sub> ), 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 m <sup>3</sup> 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	96.0% removal efficiency by degradation and decantation
Analytical Method and Analytical Details	GC/MS; MDL corresponded to the concentration of a signal/noise ratio of 9 (DEHP detected in the blanks $\leq 10$ ng); limits of quantification (LOQ) corresponded to average blank values. When they were below IDLs, the MDLs were considered.
Transformation Products, 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.

Continued on next page ...



...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Vikelsøe, J., Thomsen, M., Carlsen, L. (2002). Phthalates and nonylphenols in profiles of differently dressed soils. Science of the Total Environment 296(1-3):105-116.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	789658

EXTRACTION				
Parameter	Data			
CASRN and Test Material	85-68-7; benzylbutyl phthalate			
Confidentiality, Type, Guideline	No; Experimental field study; Experimental field study			
Solvent, Reactivity, Storage, Stability	NA; NA; Glass bottles provided with PTFE-lined screw caps, frozen, and stored at -20 deg C; NA			
Radiolabel, Source, State, Purity	NA; soil samples; NA; NA			
Test Method Details, Test Condition Details, and Test Consistency Details	Samples collected at different depths from eight differently dressed, fertilised andcultured fields and run-off from a sewage sludge storage facility; Danish agriculture fields; Not Reported			
System Type Design	samples spiked with 1 mg [D4]DBP, [D4]BBP and [D4]DEHP dissolved in ethanol, and extracted with dichloromethane			
Sampling Frequency and Sampling Details	1 sample was taken once in 1996 and again in 1998; Sampled at 2 positions 5–10 m apart 50 cm long			
Test Temperature	NA for fields samples			
Results Details	0.09, 0.12, 0.38, 0.06, 0.06, 0.01, 29, 32, and 5.8 ug/kg dry weight for uncultured, manured 40 years, manured 5 years, artificially fertilised, low sludge, normal sludge, high sludge, high sludge 2 years later, and runoff, respectively.			
Analytical Method and Analytical Details	gas chromatograph-high-resolution mass spectrometer ionisation electron impact; Not Reported			
Transformation Products, Statistics, and Kinetics	NR; 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 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.
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 stability, homogeneity, preparation, and storage conditions were reported.
Domain 3: Test Conditions	Metric 5:	Test Method Suitability	Medium	The test method was suitable for the test substance with minor deviations but these deviations or omissions were not likely to have a substantial impact on study result
	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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Vikelsøe, J., Thomsen, M., Carlsen, L. (2002). Phthalates and nonylphenols in profiles of differently dressed soils. Science of the Total Environment 296(1-3):105-116.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	789658			
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	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, 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.
	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	High	Reported values were consistent with related physical chemical properties
	Metric 18:	QSAR Models	N/A	A QSAR model was not reported.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Wu, J., Ma, T., Zhou, Z., Yu, N.,a, He, Z., Li, B., Shi, Y., Ma, D. (2019). Occurrence and fate of phthalate esters in wastewater treatment plants in Qingdao, China. Human and Ecological Risk Assessment 25(6):1547-1563.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	5442818			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Butyl benzyl 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: BBP			
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 maintained for 1.0 min, increased to 180C at a rate of 20C/min with 10 min holding time, and increased to 300°C at 2°C/min and maintained for 10 min			
Results Details	Removal % Chengyang: 73.91, Licun: 74.86, 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			
<b>EVALUATION</b>				
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Wu, J., Ma, T., Zhou, Z., Yu, N.,a, He, Z., Li, B., Shi, Y., Ma, D. (2019). Occurrence and fate of phthalate esters in wastewater treatment plants in Qingdao, China. Human and Ecological Risk Assessment 25(6):1547-1563.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Wu, Q., Lam, J. C. W., Kwok, K. Y., Tsui, M. M. P., Lam, P. K. S. (2017). Occurrence and fate of endogenous steroid hormones, alkylphenol ethoxylates, bisphenol A and phthalates in municipal sewage treatment systems. Journal of Environmental Sciences 61(Elsevier):49-58.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	4728656			
<b>EXTRACTION</b>				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	85-68-7; Butyl benzyl 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: BBP			
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. 10%; CEPT: ca. -15%; AS: ca. 60%; SF: ca. 50%; Cl2: ca. -10; UV: ca. -25%; RO: ca. 99%			
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			
<b>EVALUATION</b>				
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 Supporting Information (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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Wu, Q., Lam, J. C. W., Kwok, K. Y., Tsui, M. M. P., Lam, P. K. S. (2017). Occurrence and fate of endogenous steroid hormones, alkylphenol ethoxylates, bisphenol A and phthalates in municipal sewage treatment systems. Journal of Environmental Sciences 61(Elsevier):49-58.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	4728656			
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 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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	3072185

EXTRACTION	
Parameter	Data
CASRN and Test Material	83-68-7; Butylbenzyl 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; 97% Notes: BBP
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 BBP concentration 4.1±0.3 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% BBP 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; ±4%; Sum of squares of deviations 1841.85, 300.69, 26.28, 1281.40; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 613.95, 150.35, 13.14, 640.70 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.

Continued on next page ...



...continued from previous page

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3072185			
EXTRACTION				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	83-68-7; Butylbenzyl 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; 97% Notes: BBP			
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 BBP concentration 4.1±0.3 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	52% BBP 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; ±3%; Sum of squares of deviations 1841.85, 300.69, 26.28, 1281.40; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 613.95, 150.35, 13.14, 640.70 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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3072185			
EXTRACTION				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	83-68-7; Butylbenzyl 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; 97% Notes: BBP			
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 BBP concentration 4.1±0.3 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	60% BBP 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; ±2%; Sum of squares of deviations 1841.85, 300.69, 26.28, 1281.40; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 613.95, 150.35, 13.14, 640.70 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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3072185			
EXTRACTION				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	83-68-7; Butylbenzyl 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; 97% Notes: BBP			
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 BBP concentration 4.1±0.3 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	50% BBP 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; ±3%; Sum of squares of deviations 1841.85, 300.69, 26.28, 1281.40; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 613.95, 150.35, 13.14, 640.70 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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3072185			
EXTRACTION				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	83-68-7; Butylbenzyl 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; 97% Notes: BBP			
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 BBP concentration 4.1±0.3 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	57% BBP 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; ±3%; Sum of squares of deviations 1841.85, 300.69, 26.28, 1281.40; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 613.95, 150.35, 13.14, 640.70 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.
Continued on next page ...				



...continued from previous page

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3072185			
EXTRACTION				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	83-68-7; Butylbenzyl 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; 97% Notes: BBP			
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 BBP concentration 4.1±0.3 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	40% BBP 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; ±3%; Sum of squares of deviations 1841.85, 300.69, 26.28, 1281.40; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 613.95, 150.35, 13.14, 640.70 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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3072185			
EXTRACTION				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	83-68-7; Butylbenzyl 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; 97% Notes: BBP			
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 BBP concentration 4.1±0.3 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	49% BBP 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; ±3%; Sum of squares of deviations 1841.85, 300.69, 26.28, 1281.40; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 613.95, 150.35, 13.14, 640.70 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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3072185			
EXTRACTION				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	83-68-7; Butylbenzyl 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; 97% Notes: BBP			
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 BBP concentration 4.1±0.3 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	53% BBP 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; ±5%; Sum of squares of deviations 1841.85, 300.69, 26.28, 1281.40; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 613.95, 150.35, 13.14, 640.70 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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3072185			
EXTRACTION				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	83-68-7; Butylbenzyl 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; 97% Notes: BBP			
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 BBP concentration 4.1±0.3 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	44% BBP 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; ±3%; Sum of squares of deviations 1841.85, 300.69, 26.28, 1281.40; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 613.95, 150.35, 13.14, 640.70 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.
Continued on next page ...				



...continued from previous page

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3072185			
EXTRACTION				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	83-68-7; Butylbenzyl 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; 97% Notes: BBP			
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 BBP concentration 4.1±0.3 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	48% BBP 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; ±3%; Sum of squares of deviations 1841.85, 300.69, 26.28, 1281.40; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 613.95, 150.35, 13.14, 640.70 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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3072185			
EXTRACTION				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	83-68-7; Butylbenzyl 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; 97% Notes: BBP			
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 BBP concentration 4.1±0.3 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	49% BBP 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; ±3%; Sum of squares of deviations 1841.85, 300.69, 26.28, 1281.40; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 613.95, 150.35, 13.14, 640.70 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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	3072185			
EXTRACTION				
<b>Parameter</b>	<b>Data</b>			
CASRN and Test Material	83-68-7; Butylbenzyl 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; 97% Notes: BBP			
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 BBP concentration 4.1±0.3 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	60% BBP 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; ±2%; Sum of squares of deviations 1841.85, 300.69, 26.28, 1281.40; degree of freedom 3, 2, 2, 2; mean square (SS/Df) 613.95, 150.35, 13.14, 640.70 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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	Xiaoyan, T., Suyu, W., Yang, Y., Ran, T., Yunv, D., Dan, A., Li, L. (2015). Removal of six phthalic acid esters (PAEs) from domestic sewage by constructed wetlands. Chemical Engineering Journal 275:198-205.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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.
<b>Overall Quality Determination</b>		<b>High</b>		

<b>Study Citation:</b>	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.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	102787

Parameter		EXTRACTION		
CASRN and Test Material		85-68-7; Butyl benzyl 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/m3; 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: >MDL to 0.26 ng/L with 0.01 to 0.03 ng/L total suspended matter; avg concentration in air: 0.02 ng/m3 (vapor) with 0.05 ng/m3 particulate; salinity: 27.8-34.9‰; 3.8-6.3°C; Particle-associated fraction: 78%		
Reference Substance and Reference Substance Results		Not reported; Not applicable		
Domain		EVALUATION		
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, 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 monitored, reported, and appropriate for the method.	
Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.	

Continued on next page ...



...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	102787			
EVALUATION				
Domain		Metric	Rating	Comments
	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 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 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 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.
	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.
<b>Overall Quality Determination</b>			<b>High</b>	

<b>Study Citation:</b>	Zeng, F., Cui, K., Xie, Z., Liu, M., Li, Y., Lin, Y., Zeng, Z., Li, F. (2008). Occurrence of phthalate esters in water and sediment of urban lakes in a subtropical city, Guangzhou, South China. <i>Environment International</i> 34(3):372-380.
<b>OECD Harmonized Template:</b>	Miscellaneous
<b>HERO ID:</b>	698257

EXTRACTION	
Parameter	Data
CASRN and Test Material	Not Reported; Butyl benzyl phthalate
Confidentiality, Type, Guideline	None; Environmental monitoring of both sediment and water; Environmental monitoring of both sediment and water
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; monitoring study of 15 urban lakes in Guangzhou city; NR; NR Notes: Analytical standards from Dr. Ehrenstorfer (Augsburg, Germany)
Test Method Details, Test Condition Details, and Test Consistency	NA; 15 urban lakes in Guangzhou city. Water DOC and sediment TOC in the urban lake of this area were investigated and ranged from 1.13 to 6.87%, 0.281 to 3.76 mg L <sup>-1</sup> , with the average value of 3.34%, 1.97 mg L <sup>-1</sup> , respectively.; To eliminate randomness, each sample consisted of 5 subsamples collected within a surface area of 100×100 m, about 20 m far from the shore, and were well mixed.
Details	NR
System Type Design	NR
Sampling Frequency and Sampling Details	Not Reported; 30 samples, 15 water and sediment samples each, collected from May 10–15, 2005. Water samples were collected in 10 L pre-cleaned glass bottles using a frame that allows the bottle to be opened underwater to avoid the collection of the surface microlayer. The samples were stored at 4±2 °C in a cooler. Sediments were collected using a stainless steel grab sampler. The top 10-cm layer of sediments was scooped, using a pre-cleaned stainless steel scoop, into solvent rinsed glass jars. The samples were cooled in a refrigerator (0 °C) during transport to the laboratory where they were stored at –20 °C.
Test Temperature	mean air temperature of 21.8 °C for Guangzhou area of about 7500 sq. km
Results Details	Dissolved phase: concentration lower than MDL; Detectable frequency 0%. Sediment phase: ND-0.28 ug/g dw (0.080 Mean), Detectable frequency 73%.
Analytical Method and Analytical Details	GC-MS; For each batch of 10 field samples, a procedural blank, a spiked blank, a spiked matrix sample, a spiked matrix duplicate, and a sample duplicate were processed.
Transformation Products, Statistics, and Kinetics	NR; Not Reported; 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 definitively.
	Metric 2:	Test Substance Purity	N/A	Not applicable: Monitoring study
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 stability, homogeneity, preparation, and storage conditions were reported (e.g., mixing temperature, stock concentration, stirring methods, centrifugation or filtration), 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.

Continued on next page ...

...continued from previous page

<b>Study Citation:</b>	Zeng, F., Cui, K., Xie, Z., Liu, M., Li, Y., Lin, Y., Zeng, Z., Li, F. (2008). Occurrence of phthalate esters in water and sediment of urban lakes in a subtropical city, Guangzhou, South China. Environment International 34(3):372-380.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	698257			
		EVALUATION		
Domain	Metric	Rating	Comments	
	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	Medium	There were minor differences between the assessment methodology and the intended outcome assessment; concentrations in soil and water measured, but partition coefficients were not calculated.
	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	Low	Sources of variability and uncertainty in the measurements and statistical techniques and between study groups (if applicable) were reported in the 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	The target chemical concentration, 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.
<b>Overall Quality Determination</b>		<b>Medium</b>		

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	5433212			
EXTRACTION				
Parameter	Data			
CASRN and Test Material	Not Reported; butyl benzyl 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: BBP			
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 ~40% of samples: 0.39-3.62 ng/L (from table) in seawater; 87.2% detection in sediment (concentrations 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; 30.8% and 24.7% of total PAE in seawater and sediment, respectively; risk quotient values for BBP in water and sediment were 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 name.
	Metric 2:	Test Substance Purity	N/A	The study did not require concurrent control groups.
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.
Continued on next page ...				

...continued from previous page

<b>Study Citation:</b>	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.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	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 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**

<b>Study Citation:</b>	Zheng, Z., He, P., Shao, L., Lee, D. (2007). Phthalic acid esters in dissolved fractions of landfill leachates. Water Research 41(20):4696-4702.		
<b>OECD Harmonized Template:</b>	Miscellaneous		
<b>HERO ID:</b>	698282		
<b>EXTRACTION</b>			
<b>Parameter</b>	<b>Data</b>		
CASRN and Test Material	85-68-7; BBP		
Confidentiality, Type, Guideline	None; Field Study; Field Study		
Solvent, Reactivity, Storage, Stability	Water samples: eluted from SPE with methylene chloride and acetone as elution solvents before being condensedSoil samples: eluted from column with acetone/n-hexane mixture as elution solvents before being condensed; NR; Water samples: 4L brown glass amber bottles at 4°CSoil samples: aluminum foil bags at 4°C; NR		
Radiolabel, Source, State, Purity	NA; Groundwater, surface water, leachate, and soil samples from MSW landfill in Wuhan, China; Liquid and solid samples; NA Notes: Source and purity of internal standards not reported		
Test Method Details, Test Condition Details, and Test Consistency	5 leachate samples, 8 ground water samples, 4 surface water samples, and 6 soil samples were collected from various sites in a MSW landfill; samples collected December 2007 from a MSW landfill in Wuhan, China; Not Reported		
Details			
System Type Design	Not applicable		
Sampling Frequency and Sampling Details	single sampling; sampling methods Not reported leachate pH 7.4-7.82; COD 7138-24856 mg/L; BOD5 1000 - 5000 mg/L		
Test Temperature	Not reported		
Results Details	leachate (average): n.d. µg/Lsurface water (average): n.d. µg/Lgroundwater (average): n.d. µg/Ltopsoil (average): 19.7 µg/kgoverburden (average): 90.5 µg/kg		
Analytical Method and Analytical Details	gas chromatography with FID detector; limits of detection not reported; extraction recover 61.7-97.8%		
Transformation Products, Statistics, and Kinetics	Not reported; leachate (range, n=5): n.d. ug/Lsurface water (range, n=4): n.d. ug/Lgroundwater (range, n=8): n.d. ug/Ltopsoil (range, n=4): n.d. - 61.4 ug/kgoverburden (range, n=2): n.d. - 180.9 ug/kg; Not applicable		
Reference Substance and Reference Substance Results	Not applicable; Not applicable		
<b>EVALUATION</b>			
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, and purity is not applicable for field studies. The source and purity of internal standards was not reported but is not expected to have a significant impact on study results.
Domain 2: Test Design			
Metric 3:	Study Controls	N/A	Field studies do not require concurrent control groups.
Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were 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.
Continued on next page ...			

...continued from previous page

<b>Study Citation:</b>	Zheng, Z., He, P., Shao, L., Lee, D. (2007). Phthalic acid esters in dissolved fractions of landfill leachates. Water Research 41(20):4696-4702.			
<b>OECD Harmonized Template:</b>	Miscellaneous			
<b>HERO ID:</b>	698282			
		EVALUATION		
Domain	Metric	Rating	Comments	
	Metric 6:	Testing Conditions	Medium	Some sample parameters were reported for liquid samples, but were not reported for solid samples; sufficient data was reported to determine that these omissions are not likely to have a substantial influence on study results.
	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				
	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 reported the use of sampling methods that address the outcomes of interest and used widely accepted methods for the media being analyzed.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Ranges were reported in the study and considered 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 concentrations, extraction percentage range, and mass balance were reported; analytical methods were suitable although limits of detection were not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods were appropriate for the 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.
<b>Overall Quality Determination</b>		<b>High</b>		

## 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 <sub>oa</sub>	Octanol-Air partition coefficient
K <sub>oc</sub>	Organic carbon-water partition coefficient
K <sub>ow</sub>	Octanol-Water partition coefficient
L/d	Liters per day
LOD	Limit of Detection
LOQ	Limit of Quantification
lw	Lipid weight
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 <sup>3</sup>	Milligrams per cubic meter
MRL	Method Reporting Limit
MS	Mass Spectrometry
n	Sample Size
N/A	Not applicable
ND	Non-Detection
ng/L	Nanograms per Liter

Continued on next page ...



## ...continued from previous page

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