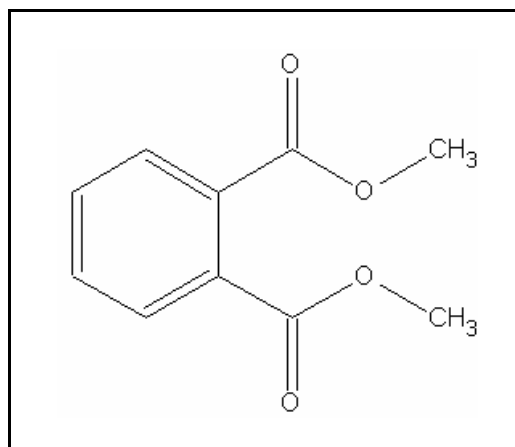




TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES

DIMETHYL PHTHALATE

CAS RN: 131-11-3
Water Solubility: <0.1 g/100 mL
Log K_{ow}:



Standard

The procedures described in the Tier II methodology indicate that, except possibly where a locally important species is very sensitive, aquatic organisms should not be affected unacceptably if the four (4) day average concentration of dimethyl phthalate does not exceed 1,000 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 2,800 µg/L more than once every three (3) years on the average.

Calculations

Acute Aquatic Life:

$$\text{SAV} = \text{lowest GMAV/SAF}$$

$$\begin{aligned}\text{Lowest GMAV} &= 38,919 \text{ } \mu\text{g/L} \\ \text{SAF} &= 7.0\end{aligned}$$

$$\text{SAV} = 38,919/7.0 = 5,560 \text{ } \mu\text{g/L}$$

$$\text{SMC} = \text{SAV}/2 = 5,560/2 = \mathbf{2,800 \text{ } \mu\text{g/L}}$$

Chronic Aquatic Life:

$$SCV = SAV/SACR$$

$$SACR = 5.8 \text{ (geometric mean of 3.5, 3.1, and 18)}$$

$$SCV = 5,560/5.8 = \mathbf{1,000 \mu g/L}$$

Calculation of ACR's

Rainbow Trout

$$MATC = 16,000 \mu g/L$$

$$ACR = 56,000/16,000 = 3.5$$

Daphnia magna

$$MATC = 14,900 \mu g/L$$

$$ACR = 45,900/14,900 = 3.1$$

Data

Table 1. GMAVs and SMAVs for dimethyl phthalate

<u>Genus Mean Acute Value ($\mu g/L$)</u>	<u>Species</u>	<u>Species Mean Acute Value ($\mu g/L$)</u>	<u>Acute- Chronic Ratio</u>	<u>Reference Number</u>
39,000	Fathead Minnow <u>Pimephales promelas</u>	39,000		1
56,000	Rainbow Trout <u>Oncorhynchus mykiss</u>	56,000	3.5	1,4
50,000	Bluegill <u>Lepomis macrochirus</u>	50,000		1,2
38,919	Cladoceran <u>Daphnia magna</u>	45,900	3.1	1,4
	Cladoceran <u>Daphnia magna</u>	33,000		3

References:

1. Adams, W.J., G.R. Biddinger, K.A. Robillard, and J.W. Gorsuch 1995. A Summary of the Acute Toxicity of 14 Phthalate Esters to Representative Aquatic Organisms. Environ. Toxicol. Chem. 14(9):1569-1574.
2. Buccafusco, R.J., S.J. Ells, and G.A. LeBlanc 1981. Acute toxicity of priority pollutants to bluegill (*Lepomis macrochirus*). Bull. Environ. Contam. Toxicol. 24(5): 446-452.
3. LeBlanc, G.A. 1980. Acute toxicity of priority pollutants to Daphnia magna. Bull. Environ. Contam. Toxicol. 24(5): 684-691.
4. Rhodes, J.E., W.J. Adams, G.R. Biddinger, K.A. Robillards, and J.W. Gorsuch 1995. Chronic toxicity of 14 phthalate esters to Daphnia magna and rainbow trout (Oncorhynchus mykiss). Environ. Toxicol. Chem. 11: 1967-1976.

Acronyms/Abbreviations

CAS RN	Chemical Abstract Service Registry Number
K _{ow}	Octanol-Water Partition Coefficient
P (superscript)	Predicted value
SAV	Secondary Acute Value
GMAV	Genus Mean Acute Value
SAF	Secondary Acute Factor
SMC	Secondary Maximum Concentration
SCC	Secondary Continuous Concentration
SACR	Secondary Acute-Chronic Ratio

FT	Flow-through
S	Static
U	Unmeasured
M	Measured
EVISTRA	Evaluation and Interpretation of Suitable Test Results in AQUIRE (EPA quality checking method/database)

Revision History

August 12, 1999 Values first developed

April 3, 2001 New search for data. One study added. New chronic value calculated.

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