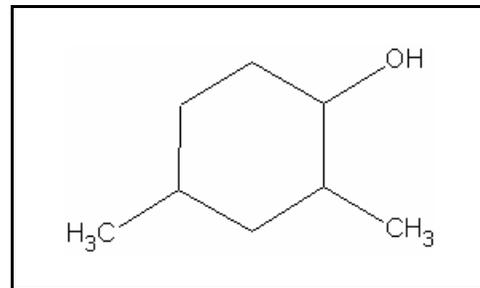




TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES

2,4-DIMETHYLPHENOL

CAS RN: 105-67-9
Water Solubility: 0.787 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 2,4-dimethylphenol does not exceed 21 $\mu\text{g/L}$ more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 140 $\mu\text{g/L}$ more than once every three (3) years on the average.

Calculations

Acute Aquatic Life:

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

$$\begin{aligned}\text{Lowest GMAV} &= 2231 \mu\text{g/L} \\ \text{SAF} &= 8.0\end{aligned}$$

$$\text{SAV} = 2231/8.0 = 278.9 \mu\text{g/L}$$

$$\text{SMC} = \text{SAV}/2 = 278.9/2 = \mathbf{140 \mu\text{g/L}}$$

Chronic Aquatic Life:

$$SCV = SAV/SACR$$

$$SACR = 13.01 \text{ (Geometric mean of 18, 18, 6.79)}$$

$$SCV = 278.9/13.01 = 21 \mu\text{g/L}$$

Calculation of ACR's

Fathead Minnows

$$NOEC = 1970 \mu\text{g/L}$$

$$LOEC = 3110 \mu\text{g/L}$$

$$CV = \text{Geometric Mean of 1970 and 3110} = 2475$$

$$ACR = 16800/2475 = 6.79$$

Data

Table 1. GMAVs and SMAVs for 2,4-dimethylphenol

<u>Genus Mean Acute Value ($\mu\text{g/L}$)</u>	<u>Species</u>	<u>Species Mean Acute Value ($\mu\text{g/L}$)</u>	<u>Acute- Chronic Ratio</u>	<u>Reference Number</u>
7800	Bluegill <u>Lepomis macrochirus</u>	7800		1
17,222	Fathead Minnow <u>Pimephales promelas</u>	16,600		2
	Fathead Minnow <u>Pimephales promelas</u>	17,000	6.79	4,6
	Fathead Minnow <u>Pimephales promelas</u>	18,100		7
2231	Cladoceran	2231		3,5

Daphnia magna

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3. LeBlanc, G.A. 1980. Acute toxicity of priority pollutants to water flea (Daphnia magna). Bull. Environ. Contam. Toxicol. 24: 684-691.
4. Phipps, G.L., G.W. Holcombe, J.T. Fiandt 1981. Acute toxicity of phenol and substituted phenols to fathead minnows. Bull. Environ. Contam. Toxicol. 26: 585-593.
5. Randall, T.L. and P.V. Knopp 1980. Detoxification of specific organic substances by wet oxidation. J. Water Pollut. Control Fed. 52(8): 2117-2130.
6. Holcombe, G.W., G.L. Phipps and J.T. Fiandt 1982. Effects of phenol, 2,4-dimethylphenol and pentachlorophenol on embryo, larval and early-juvenile fathead minnows (Pimephales promelas). Arch. Environ. Toxicol. 11: 73-78.
7. Broderius, S.J., M.D. Kahl, and M.D. Hoglund 1995. Use of joint toxic response to define the primary mode of toxic action for diverse industrial organic chemicals. Environ. Toxicol. Chem. 9: 1591-1605.

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

December 30, 1998 Values first developed

April 2, 2001 New search for data. Fathead minnow data added. No change in criteria.

Contact Information

David B. Kallander
Water Quality Standards Section
Indiana Department of Environmental Management
100 North Senate Ave., P.O. Box 6015
Indianapolis, IN 46206-6015
(317) 233-2472
Email: dkalland@dem.state.in.us