

TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES FOR 2,4-DIMETHYLPHENOL

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 acenaphthene does not exceed 21 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 140 µg/L more than once every three (3) years on the average.

Calculations:

Acute Aquatic Life:

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

$$\text{Lowest GMAV} = 2231 \text{ } \mu\text{g/L}$$

$$\text{SAF} = 8.0$$

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

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

Chronic Aquatic Life:

$$\text{SCV} = \text{SAV/SACR}$$

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

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

Calculation of ACR's

Fathead Minnows

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

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

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

$$\text{ACR} = 16800/2475 = 6.79$$

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Notes:

NONE

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
16799	Fathead Minnow <u>Pimephales promelas</u>	16799	6.79	2,4,6
2231	Cladoceran <u>Daphnia magna</u>	2231		3,5

References:

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2. Geiger, D.L., C.F. Northcott, and D.J. Call 1985. Acute Toxicities of Organic Chemicals to Fathead Minnows (Pimephales promelas). Vol II. Center for Lake Superior Environmental Studies. University of Wisconsin-Superior. 326 pp.
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.

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