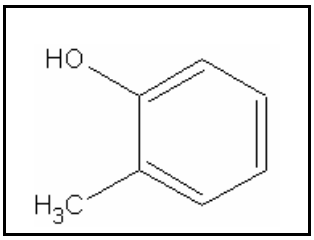
Indiana Department of Environmental Management
Office of Water - Water Quality Standards Section

TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES

2-METHYLPHENOL

CAS RN: 95-48-7
Water Solubility: <0.1 g/100 mL at 19 C
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-methylphenol does not exceed 67 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 600 µg/L more than once every three (3) years on the average.

Calculations

Acute Aquatic Life:

SAV = lowest GMAV/SAF

Lowest GMAV = 8,400 µg/L
SAF = 7.0

SAV = 8,400/7.0 = 1,200 µg/L

SMC = SAV/2 = 1,200/2 = **600 µg/L**

Chronic Aquatic Life:

SCV = SAV/SACR

SACR = 18

SCV = 1,200/18 = **67 μg/L**

Data

Table 1. GMAVs and SMAVs for 2-methylphenol

Genus Mean Acute Value (μg/L)	Species	Species Mean Acute Value (μg/L)	Acute-Chronic Ratio	Reference Number
14,392	Fathead Minnow Pimephales promelas	12,550		1
	Fathead Minnow Pimephales promelas	13,420		1
	Fathead Minnow Pimephales promelas	18,200		2
	Fathead Minnow Pimephales promelas	14000		3
18,850	Guppy Poecilia reticulata	18,850		1
23,250	Goldfish Carassius auratus	23,250		1
13,164	Cladoceran Daphnia magna	>94,000		2
	Cladoceran Daphnia magna	9,600		4

	Cladoceran Daphnia magna	9,800	4
	Cladoceran Daphnia magna	8,600	4
	Cladoceran Daphnia magna	23,800	4
	Cladoceran Daphnia magna	23,100	4
	Cladoceran Daphnia magna	15,100	4
	Cladoceran Daphnia pulex	10,800	4
	Cladoceran Daphnia pulex	8,500	4
20,780	Bluegill Lepomis macrochirus	20,780	1
8,400	Rainbow Trout Oncorhynchus mykiss	8,400	2

References

1. Pickering,Q.H. and C.Henderson 1966. Acute Toxicity of Some Important Petrochemicals to Fish. J. Water Pollut. Control Fed. 38(9):1419-1429 .

2. Degraeve,G.M., D.L.Geiger, J.S.Meyer, and H.L.Bergman 1980. Acute and Embryo-Larval Toxicity of Phenolic Compounds to Aquatic Biota. Arch. Environ. Contam. Toxicol. 9(5):557-568.

3. Geiger,D.L., S.H.Poirier, L.T.Brooke, and D.J.Call 1986. Acute Toxicities of Organic Chemicals to Fathead Minnows (Pimephales promelas), Vol. 3. Center for Lake Superior Environmental Studies, University of Wisconsin, Superior, WI:328 p.

4. Canton, J.H., and D.M.M. Adema 1978. Reproducibility of short-term and reproduction toxicity experiments with Daphnia magna and comparison of the sensitvity of Daphnia magna with Daphnia pulex and Daphnia cucullata in short-term experiments. Hydrobiologia 59: 135-140.

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 30, 1999 Values first developed
May 15, 2001 New search for data. No new studies added.

Contact Information

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