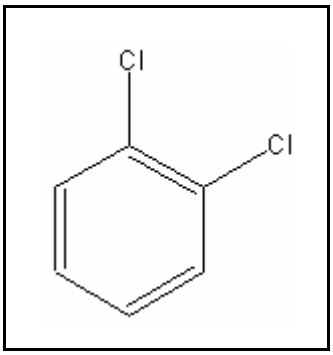
Indiana Department of Environmental Management
Office of Water - Water Quality Standards Section

TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES

1,2-DICHLOROBENZENE

CAS RN: 95-50-1
Water Solubility: 0.008396 g/100 mL
Log K_{ow}: 3.433



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 1,2-dichlorobenzene does not exceed 14 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 130 µg/L more than once every three (3) years on the average.

Calculations

Acute Aquatic Life:

SAV = lowest GMAV/SAF

Lowest GMAV = 1580 µg/L
SAF = 6.1

SAV = 1580/6.1 = 259 µg/L

SMC = SAV/2 = 259/2 = **130 µg/L**

Chronic Aquatic Life:

SCV = SAV/SACR

SACR = 18

SCV = 259/18 = **14 μg/L**

Notes:

Canton et al. (1985) was not used since the Daphnid data point from this study varied from LeBlanc (1980) by a factor greater than 10.

Data

Table 1. GMAVs and SMAVs for 1,2-dichlorobenzene

Genus Mean Acute Value (μg/L)	Species	Species Mean Acute Value (μg/L)	Acute-Chronic Ratio	Reference Number
12,296	Bluegill Lepomis macrochirus	5,600		1
	Bluegill Lepomis macrochirus	27,000		4
1,580	Rainbow Trout Oncorhynchus mykiss	1,580		2
12,000	Midge Tanytarsus dissimilis	12,000		2
2,400	Cladoceran Daphnia magna	2,400		6
23,233	Fathead Minnow Pimephales promelas	57,000		3
	Fathead Minnow Pimephales promelas	9,470		5

References

1. 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.

2. Call, D.T., L.J. Brooke, N. Ahmad, et al. 1983. Toxicity and metabolism studies with EPA priority pollutants and related chemicals in freshwater organisms. U.S. EPA 600/383-095.

3. Curtis, M.W., T.L. Copeland, and C.H. Ward 1979. The acute toxicity of 47 industrial chemicals to fresh and saltwater fishes. J. Haz. Mat. 1(4): 303-318.

4. Dawson, G.W., A.L. Jennings, D. Drozdowski, et al. 1977. The acute toxicity of 47 chemicals to fresh and saltwater fishes. J. Haz. Mat. 1: 303-318.

5. Geiger, D.L., S.H. Poirier, L.T. Brook et al. 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 pp.

6. LeBlanc, G.A. 1980. Acute toxicity of priority pollutants to Daphnia magna. Bull. Environ. Contam. Toxicol. 24(5): 684-691.

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 24, 2001 New search for data. No new studies added.

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