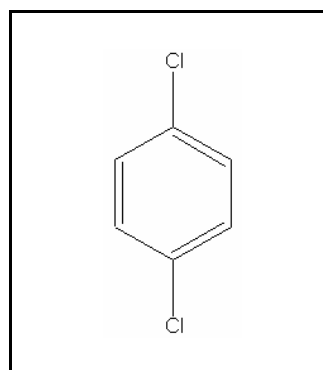




TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES

1,4-DICHLOROBENZENE

CAS RN: 106-46-7
Water Solubility: 0.00813 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 1,4-dichlorobenzene does not exceed 16 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 80 µg/L more than once every three (3) years on the average.

Calculations

Acute Aquatic Life:

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

$$\begin{aligned}\text{Lowest GMAV} &= 1,120 \text{ } \mu\text{g/L} \\ \text{SAF} &= 7.0\end{aligned}$$

$$\text{SAV} = 1,120/7.0 = 160 \text{ } \mu\text{g/L}$$

$$\text{SMC} = \text{SAV}/2 = 160/2 = \mathbf{80 \text{ } \mu\text{g/L}}$$

Chronic Aquatic Life:

$$SCV = SAV/SACR$$

$$SACR = 9.857 \text{ (Geometric mean of 18, 18, and 2.956)}$$

$$SCV = 160/9.857 = \mathbf{16 \mu g/L}$$

Calculation of ACR:

Fathead Minnow

$$MATC = 2,850 \mu g/L$$

$$ACR = 8,425/2,850 = 2.956$$

Data

Table 1. GMAVs and SMAVs for 1,4-dichlorobenzene

<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>
4,300	Bluegill <u>Lepomis macrochirus</u>	4,300		1
11,681	Fathead Minnow <u>Pimephales promelas</u>	4,200		3
	Fathead Minnow <u>Pimephales promelas</u>	30,000		4
	Fathead Minnow <u>Pimephales promelas</u>	33,700		5
	Fathead Minnow <u>Pimephales promelas</u>	3,600		6
	Fathead Minnow <u>Pimephales promelas</u>	14,200		6
	Fathead Minnow <u>Pimephales promelas</u>	11,700		6

11,000	Cladoceran <u>Daphnia magna</u>	11,000	2
1,120	Rainbow Trout <u>Oncorhynchus mykiss</u>	1,120	7

References

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3. Carlson, A.R. and P.A. Kosian 1987. Toxicity of Chlorinated Benzenes to Fathead Minnows (*Pimephales promelas*). Arch. Environ. Contam. Toxicol. 16(2):129-135
4. Curtis, M.W. and C.H. Ward 1981. Aquatic Toxicity of Forty Industrial Chemicals: Testing in Support of Hazardous Substance Spill Prevention Regulation. J. Hydrol. 51:359-367.
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6. Mayes, M.A., H.C. Alexander, and D.C. Dill 1983. A Study to Assess the Influence of Age on the Response of Fathead Minnows in Static Acute Toxicity Tests Bull. Environ. Contam. Toxicol. 31(2):139-147.
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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

June 28, 1999	Values first developed
April 25, 2001	New search for data. No new studies added.

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