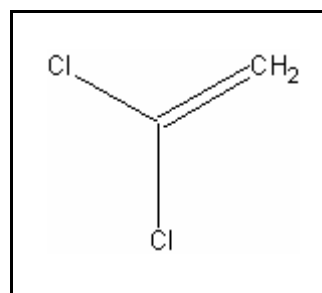




TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES

1,1-DICHLOROETHYLENE

CAS RN: 75-35-4
Water Solubility: 6,735 mg/L
Log K_{ow}: 2.37^P



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 1,1-dichloroethylene does not exceed 210 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 1,900 µg/L more than once every three (3) years on the average.

Calculations

Acute Aquatic Life:

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

$$\begin{aligned}\text{Lowest GMAV} &= 30,272 \text{ } \mu\text{g/L} \\ \text{SAF} &= 8.0\end{aligned}$$

$$\text{SAV} = 30,272/8.0 = 3,784 \text{ } \mu\text{g/L}$$

$$\text{SMC} = \text{SAV}/2 = 3,784/2 = \mathbf{1,900 \text{ } \mu\text{g/L}}$$

Chronic Aquatic Life:

$$SCV = SAV/SACR$$

$$SACR = 18$$

$$SCV = 3,784/18 = \mathbf{210 \mu g/L}$$

Data

Table 1. GMAVs and SMAVs for 1,1-dichloroethylene

<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>
127,593	Bluegill <u>Lepomis macrochirus</u>	74,000		1
	Bluegill <u>Lepomis macrochirus</u>	220,000		2
135,099	Fathead Minnow <u>Pimephales promelas</u>	169,000		3
	Fathead Minnow <u>Pimephales promelas</u>	108,000		3
30,272	Cladoceran <u>Daphnia magna</u>	11,600		3
	Cladoceran <u>Daphnia magna</u>	79,000		4

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. Dawson, G.W., A.L. Jennings, D. Drozdowski, and E. Rider 1977. The Acute Toxicity of 47 Industrial Chemicals to Fresh and Saltwater Fishes J. Hazard. Mater. 1(4):303-318.
3. Dill, D.C., W.M. McCarty, H.C. Alexander, and E.A. Bartlett 1980. Toxicity of 1,1-Dichloroethylene (Vinylidene Chloride) to Aquatic Organisms. Ecol. Res. Ser., EPA-600/3-80-057, Environ. Res. Lab., U.S. Environ. Prot. Agency, Duluth, MN: 17 p.
4. 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)
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Revision History

June 22, 1999	Values first developed
April 24, 2001	New search for data. No new studies added.

Contact Information

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