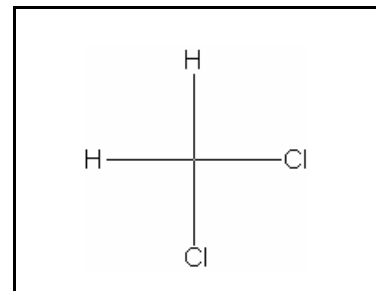




## TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES

### METHYLENE CHLORIDE

CAS RN: 75-09-2  
Water Solubility: 1.32 g/100 mL  
Log  $K_{ow}$ : -0.764<sup>P</sup>



#### 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 methylene chloride does not exceed 1,500  $\mu\text{g/L}$  more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 14,000  $\mu\text{g/L}$  more than once every three (3) years on the average.

#### Calculations

##### Acute Aquatic Life:

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

$$\begin{aligned}\text{Lowest GMAV} &= 220,000 \mu\text{g/L} \\ \text{SAF} &= 8.0\end{aligned}$$

$$\text{SAV} = 220,000/8.0 = 27,500 \text{ mg/L}$$

$$\text{SMC} = \text{SAV}/2 = 27,500/2 = \mathbf{14,000 \mu\text{g/L}}$$

### Chronic Aquatic Life:

$$SCV = SAV/SACR$$

$$SACR = 18$$

$$SCV = 27,500/18 = \mathbf{1,500 \mu g/L}$$

### **Data**

Table 1. GMAVs and SMAVs for methylene chloride

<u>Genus Mean Acute Value (mg/L)</u>	<u>Species</u>	<u>Species Mean Acute Value (mg/L)</u>	<u>Acute- Chronic Ratio</u>	<u>Reference Number</u>
270.3	Fathead Minnow <u>Pimephales promelas</u>	270.3		1,3
220	Bluegill <u>Lepomis macrochirus</u>	220		2
608.3	Cladoceran <u>Daphnia magna</u>	608.3		4,5

### **References**

1. Alexander, H.C., W.M. McCarty and E.A. Bartlett 1978. Toxicity of perchloroethylene, trichloroethylene, 1,1,1-trichloroethane and methylene chloride to fathead minnows. Bull. Environ. Contam. Toxicol. 20: 344-352.
2. Buccafusco, R.J., S.J. Ells, G.A. LeBlanc 1981. Acute toxicity of priority pollutants to bluegill (Lepomis macrochirus). Bull. Environ. Contam. Toxicol. 26(4): 446-452.
3. Geiger, D.L., C.E. Northcott, D.J. Call 1986. Acute toxicities of organic chemicals to Fathead Minnows (Pimephales promelas). Center for Lake Superior Environmental Studies. University of Wisconsin-Superior Volume III.

4. Kuhn, R.M., Pattard, K. Pernak, and A. Winter 1989. Results of the harmful effects of selected water pollutants (anilines, phenols, aliphatic compounds) to Daphnia magna. Water Res. 23(4): 495-499.
5. LeBlanc, G.A. 1980. Acute toxicity of priority pollutants to water flea (Daphnia magna). Bull. Environ. Contam. Toxicol. 24: 684-691.

### Acronyms/Abbreviations

CAS RN	Chemical Abstract Service Registry Number
K <sub>ow</sub>	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

January 28, 1997      Values first developed  
July 17, 2001        New search for data. No new studies added.

## Contact Information

David B. Kallander  
Water Quality Standards Section  
Indiana Department of Environmental Management  
100 North Senate Ave., P.O. Box 6015  
Indianapolis, IN 46206-6015  
(317) 233-2472  
Email: [dkalland@dem.state.in.us](mailto:dkalland@dem.state.in.us)