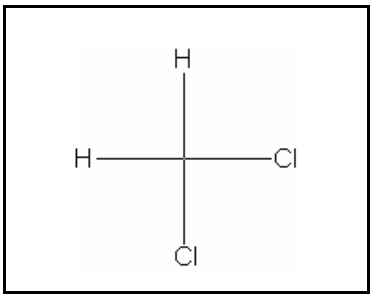
Indiana Department of Environmental Management
Office of Water - Water Quality Standards Section

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^{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 methylene chloride does not exceed 1,500 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 14,000 µg/L more than once every three (3) years on the average.

Calculations

Acute Aquatic Life:

SAV = lowest GMAV/SAF

Lowest GMAV = 220,000 µg/L
SAF = 8.0

SAV = 220,000/8.0 = 27,500 mg/L

SMC = SAV/2 = 27,500/2 = **14,000 µg/L**

Chronic Aquatic Life:

SCV = SAV/SACR

SACR = 18

SCV = 27,500/18 = **1,500 μg/L**

Data

Table 1. GMAVs and SMAVs for methylene chloride

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

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

Contact Information

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