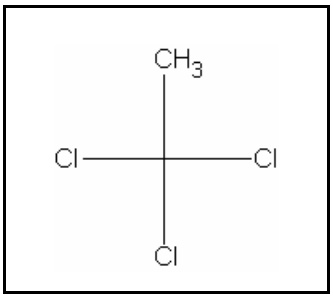
**Indiana Department of Environmental Management**
**Office of Water - Water Quality Standards Section**

# TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES

## 1,1,1-TRICHLOROETHANE

CAS RN: 71-55-6
Water Solubility: 0.1495 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 1,1,1-trichloroethane does not exceed 410 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 3,700 µg/L more than once every three (3) years on the average.

## Calculations

Acute Aquatic Life:

SAV = lowest GMAV/SAF

Lowest GMAV = 59,350 mg/L
SAF = 8.0

SAV = 59,350/8.0 = 7,419 mg/L

SMC = SAV/2 = 7,419/2 = **3,700 µg/L**

Chronic Aquatic Life:

SCV = SAV/SACR

SACR = 18
SCV = 7,419/18 = **410 μg/L**

## Data

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

| Genus Mean Acute Value (mg/L) | Species | Species Mean Acute Value (mg/L) | Acute-Chronic Ratio | Reference Number |
|---|---|---|---|---|
| 59,350 | Fathead Minnow Pimephales promelas | 52,800 | | 1 |
| | Fathead Minnow Pimephales promelas | 105,000 | | 1 |
| | Fathead Minnow Pimephales promelas | 52,900 | | 3 |
| | Fathead Minnow Pimephales promelas | 42,300 | | 3 |
| 72,000 | Bluegill Lepomis macrochirus | 72,000 | | 2 |
| >530,000 | Cladoceran Daphnia magna | >530,000 | | 4 |

## References

1. Alexander, H.C., W.M. McCarty and E.A. Bartlett 1978. Toxicity of perchloroethylene, 1,1,1-trichloroethane and methylene chloride to fathead minnows.

2. 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.

3. 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.

4. LeBlanc, G.A. 1980. Acute toxicity of priority pollutants to water flea (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
June 1, 2001 New search for data. No new studies added.

## Contact Information

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