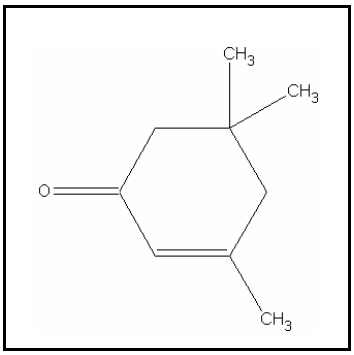
Indiana Department of Environmental Management
Office of Water Quality - Water Quality Standards Section

TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES

ISOPHORONE



CAS RN: 78-59-1
Water Solubility: 1.2 g/100 mL
Log K_{ow}: 2.22^{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 isophorone does not exceed 830 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 7,500 µg/L more than once every three (3) years on the average.

Calculations

Acute Aquatic Life:

SAV = lowest GMAV/SAF

Lowest GMAV = 120,000 µg/L
SAF = 8.0
SAV = 120,000/8.0 = 15,000 µg/L
SMC = SAV/2 = 15,000/2 = **7,500 µg/L**

Chronic Aquatic Life:

SCV = SAV/SACR

SACR = 18

SCV = 15,000/18 = **830 μg/L**

Data

Table 1. GMAVs and SMAVs for isophorone

Genus Mean Acute Value (μg/L)	Species	Species Mean Acute Value (μg/L)	Acute-Chronic Ratio	Reference Number
220,000	Bluegill Lepomis macrochirus	220,000		1
103,000	Fathead Minnow Pimephales promelas	255,000		2
192,289	Fathead Minnow Pimephales promelas	145,000		2
120,000	Cladoceran Daphnia magna	120,000		3

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. 26(4): 446-452.

2. Cairns, M. and A. Nebeker 1982. Toxicity of acenaphthene and isophorone to early life stages of fathead minnows. Arch. Environ. Contam. Toxicol. 11: 703-707.

3. 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)

Revision History

October 19, 1998 Values first developed
May 16, 2001 New search for data. No new studies added.

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