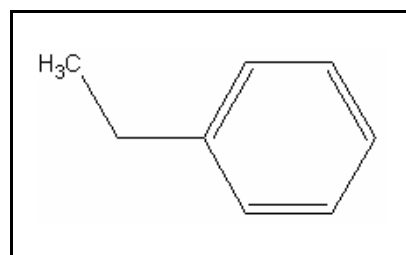




TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES

ETHYL BENZENE

CAS RN: 100-41-4
Water Solubility: 0.0206 g/100 mL
Log K_{ow}: 3.13



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 ethyl benzene does not exceed 110 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 1,000 µg/L more than once every three (3) years on the average.

Calculations

Acute Aquatic Life:

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

$$\begin{aligned}\text{Lowest GMAV} &= 14,000 \text{ } \mu\text{g/L} \\ SAF &= 7.0\end{aligned}$$

$$SAV = 14,000/7.0 = 2,000 \text{ } \mu\text{g/L}$$

$$SMC = SAV/2 = 2/2 = \mathbf{1,000 \text{ } \mu\text{g/L}}$$

Chronic Aquatic Life:

$$SCV = SAV/SACR$$

$$SACR = 18$$

$$SCV = 2000/18 = \mathbf{110 \mu g/L}$$

Data

Table 1. GMAVs and SMAVs for ethyl benzene

<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>
114,900	Bluegill <u>Lepomis macrochirus</u>	150,000		1
	Bluegill <u>Lepomis macrochirus</u>	88,000		4
24,220	Fathead Minnow <u>Pimephales promelas</u>	12,100		2
	Fathead Minnow <u>Pimephales promelas</u>	48,500		5
75,000	Cladoceran <u>Daphnia magna</u>	75,000		3
14,000	Rainbow Trout <u>Oncorhynchus mykiss</u>	14,000		4
210,000	Channel Catfish <u>Ictalurus punctatus</u>	210,000		4
94,400	Goldfish <u>Carassius auratus</u>	94,400		5
97,100	Guppy <u>Poecilia reticulata</u>	97,100		5

References

1. Buccafusco, R.J., S.J. Ells and G.A. Blanc 1981. Acute toxicity of priority pollutants to bluegill (Lepomis macrochirus). Bull. Environ. Contam. Toxicol. 26(4): 446-452.
2. Geiger, D.H., S.H. Poirer, L.T. Brooks 1986. Acute toxicities for Organic Chemicals to Fathead Minnows (Pimephales promelas). Vol III. Center for Lake Superior Environmental Studies, University of Wisconsin-Superior.
3. LeBlanc, G.A. 1980. Acute toxicity of priority pollutants to water flea (Daphnia magna). Bull. Environ. Contam. Toxicol. 24: 684-691.
3. Mayer, F.L. and M.R. Ellersieck 1986. Manual of acute toxicity: Interpretation and data base for 410 chemicals and 66 species of freshwater animals. Fish and Wildlife Service. Resource Publication 160.
5. Pickering, O.H. and C.H. Henderson 1966. Acute toxicity of some important petrochemicals to fish. J. Water Pollut. Control Fed. 38(9): 1419-1429.

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
May 16, 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