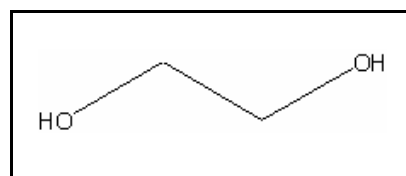




TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES

ETHYLENE GLYCOL

CAS RN: 107-21-1
Water Solubility: ≥ 10 g/100 mL at 17.5 C
Log K_{ow} : -1.37^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 ethylene glycol does not exceed 240,000 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 2,200,000 µg/L more than once every three (3) years on the average.

Calculations

Acute Aquatic Life:

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

$$\begin{aligned}\text{Lowest GMAV} &= 34,440,000 \text{ } \mu\text{g/L} \\ SAF &= 8.0\end{aligned}$$

$$SAV = 34,440,000/8.0 = 4,305,000 \text{ } \mu\text{g/L}$$

$$SMC = SAV/2 = 4,305,000/2 = \mathbf{2,200,000 \text{ } \mu\text{g/L}}$$

Chronic Aquatic Life:

$$SCV = SAV/SACR$$

$$SACR = 18$$

$$SCV = 4,305,000/18 = \mathbf{240,000 \mu g/L}$$

Notes:

Cowgill et al. (1985) was not used since the data obtained in this study varied by greater than 10 from Pillard (1995) and ancillary information from another study.

Data

Table 1. GMAVs and SMAVs for ethylene glycol

<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>
34,440,000	Cladoceran <u>Ceriodaphnia dubia</u>	34,440,000		1
41,000,000	Rainbow Trout <u>Oncorhynchus mykiss</u>	41,000,000		2
59,751,000	Fathead Minnow <u>Pimephales promelas</u>	59,751,000		1,4

References

1. Pillard, D.A. 1995. Comparative toxicity of formulated glycol deicers and pure ethylene and propylene glycol to Ceriodaphnia dubia and Pimephales promelas. Environ. Toxicol. Chem. 14(2): 311-315.
2. Johnson, W.W. and M.T. Finley 1980. Handbook of acute toxicity of chemicals to fish and aquatic invertebrates. Resour. Publ. 137, Fish and Wildlife Service, U.S.D.I., Washington, D.C. 98 p.
3. Mayes, M.A., H.C. Alexander, and D.C. Dill 1983. A study to assess the influence of

age on the response of fathead minnows in static acute toxicity tests. Bull. Environ. Contam. Toxicol. 31(2): 139-147.

References Not Used:

1. Cowgill, U.M., I.T. Yakahashi, and S.L. Applegath 1985. A comparison of the effect of four benchmark chemicals on Daphnia magna and Ceriodaphnia dubia affinis tested at two different temperatures. Environ. Toxicol. Chem. 4(3): 415-422.

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

August 21, 1997	Values first developed
May 16, 2001	New search for data. No new studies added.

Contact Information

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