

~~CRIT-010~~ 33 CRIT-00997
-04034 -00998

TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES FOR
1,2-DICHLOROETHANE

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 1,2-dichloroethane does not exceed 860 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 7,300 µg/L more than once every three (3) years on the average.

Calculations:

Acute Aquatic Life:

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

$$\text{Lowest GMAV} = 117,499 \mu\text{g/L}$$

$$SAF = 8.0$$

$$SAV = 117,499/8.0 = 14,687 \mu\text{g/L}$$

$$SMC = SAV/2 = 14,687/2 = 7,300 \mu\text{g/L}$$

Chronic Aquatic Life:

$$SCV = SAV/SACR$$

$$SACR = 17 \text{ (Geometric mean of 18, 18, 14)}$$

$$SCV = 14,687/17 = 860 \mu\text{g/L}$$

Calculation of ACR's

Fathead Minnows

$$NOEC = 11,000 \mu\text{g/L}$$

$$LOEC = 21,000 \mu\text{g/L}$$

$$CV = \text{Geometric Mean of 11,000 and 21,000} = 15,199$$

$$ACR = 207,846/15,199 = 14$$

Table 1. GMAVs and SMAVs for 1,2-dichloroethane

<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>
337,876	Cladoceran <u>Daphnia magna</u>	324,000		1
	Cladoceran <u>Daphnia magna</u>	220,000		2
	Cladoceran <u>Daphnia magna</u>	1,430,000		3
	Cladoceran <u>Daphnia magna</u>	270,000		4
	Cladoceran <u>Daphnia magna</u>	160,000		4
117,499	Fathead Minnow <u>Pimephales promelas</u>	118,000		5
	Fathead Minnow <u>Pimephales promelas</u>	117,000		6
198,000	Rainbow Trout <u>Oncorhynchus mykiss</u>	198,000		3

References:

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complex effluents. In: Aquatic Toxicology and Hazard Assessment: Fifth Conference, J.G. Pearson, R.B. Foster and W.E. Bishop (Eds.). ASTM Special Technical Publication 766, Philadelphia, PA.

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Last Modified:
November 24, 1998