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TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES FOR ACROLEIN

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 acrolein does not exceed 0.25 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 1.1 µg/L more than once every three (3) years on the average.

Calculations:

Acute Aquatic Life:

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

$$\text{Lowest GMAV} = 14 \mu\text{g/L}$$

$$\text{SAF} = 6.1$$

$$\text{SAV} = 14/6.1 = 2.295 \mu\text{g/L}$$

$$\text{SMC} = \text{SAV}/2 = 2.295/2 = 1.1 \mu\text{g/L}$$

Chronic Aquatic Life:

$$\text{SCV} = \text{SAV/SACR}$$

$$\text{SACR} = 9.185 \text{ (Geometric mean of 2.392, 18, and 18)}$$

$$\text{SCV} = 2.295/9.185 = 0.25 \mu\text{g/L}$$

Calculation of ACR's

Daphnia magna

$$\text{MATC} = 23.83 \mu\text{g/L (geometric mean of LOEC and NOEC)}$$

$$\text{ACR} = \text{LC}_{50}/\text{MATC} = 57/23.83 = 2.392$$

Notes:

NONE

Table 1. GMAVs and SMAVs for acrolein

<u>Genus Mean Acute Value (µg/L)</u>	<u>Species</u>	<u>Species Mean Acute Value (µg/L)</u>	<u>Acute- Chronic Ratio</u>	<u>Reference Number</u>
54.50	Bluegill <u>Lepomis macrochirus</u>	54.50		1,4
15.13	Fathead Minnow <u>Pimephales promelas</u>	15.13		2,3,4,10
68.83	Cladoceran <u>Daphnia magna</u>	68.83	2.392	4,5,7,9
36.45	Rainbow Trout <u>Oncorhynchus mykiss</u>	19.54		4,8,10
	Coho Salmon <u>Oncorhynchus kisutch</u>	68		6
14	White Sucker	14		4
>151	Snail <u>Aplexa hypnorum</u>	>151		4

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