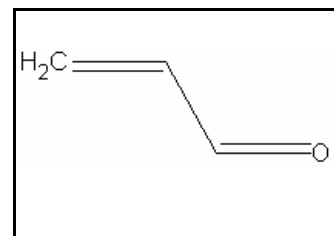




TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES

ACROLEIN

CAS RN: 107-02-8
Water Solubility: 21.25 g/100 mL
Log K_{ow} :



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 0.19 $\mu\text{g/L}$ more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 0.85 $\mu\text{g/L}$ more than once every three (3) years on the average.

Calculations

Acute Aquatic Life:

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

$$\text{Lowest GMAV} = 7 \mu\text{g/L}$$

$$\text{SAF} = 4.1$$

$$\text{SAV} = 7/4.1 = 1.707 \mu\text{g/L}$$

$$\text{SMC} = \text{SAV}/2 = 1.707/2 = \mathbf{0.85 \mu\text{g/L}}$$

Chronic Aquatic Life:

$$SCC = SAV/SACR$$

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

$$SCC = 1.707/9.185 = \mathbf{0.19 \mu g/L}$$

Calculation of ACR's

Daphnia magna

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

$$ACR = LC_{50}/MATC = 57/23.83 = 2.392$$

Data

Table 1. GMAVs and SMAVs for acrolein

<u>Genus Mean Acute Value ($\mu g/L$)</u>	<u>Species</u>	<u>Species Mean Acute Value ($\mu g/L$)</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 <u>Catostomus commersoni</u>	14		4
>151	Snail <u>Aplexa hypnorum</u>	>151		4
>151	Midge	>151		4

Tanytarsus dissimilis

7

Xenopus

7

4

Xenopus laevis

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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

April 7, 1999 Values first developed
August 18, 2000 New search for data. No new studies added.

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