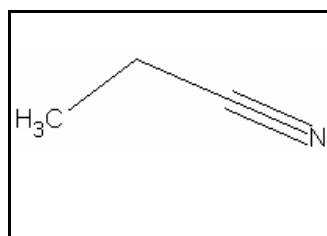




TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES

ACRYLONITRILE

CAS RN: 107-02-8
Water Solubility: 7.45 g/100 mL
Log K_{ow}: 0.231^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 acrylonitrile does not exceed 63 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 570 µg/L more than once every three (3) years on the average.

Calculations

Acute Aquatic Life:

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

$$\begin{aligned}\text{Lowest GMAV} &= 9122 \text{ } \mu\text{g/L} \\ \text{SAF} &= 8.0\end{aligned}$$

$$\text{SAV} = 9122/8.0 = 1140 \text{ } \mu\text{g/L}$$

$$\text{SMC} = \text{SAV}/2 = 1140/2 = \mathbf{570 \text{ } \mu\text{g/L}}$$

Chronic Aquatic Life:

$$SCC = SAV/SACR$$

$$SACR = 18$$

$$SCC = 1140/18 = \mathbf{63\ \mu g/L}$$

Data

Table 1. GMAVs and SMAVs for acrylonitrile

<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>
12690	Bluegill <u>Lepomis macrochirus</u>	12690		1,2,3
9122	Cladoceran <u>Daphnia magna</u>	9122		4,5
33500	Guppy <u>Poecilia reticulata</u>	33500		3
16088	Fathead Minnow <u>Pimephales promelas</u>	16088		3

References

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3. Henderson, C., Q.H. Pickering, A.E. Lemke, et al. 1961. The effect of some organic

cyanides (nitriles) on fish. Proc. 15th Ind. Waste Conf., Eng. Bull. Purdue Univ., Ser. No. 106, 65(2): 120-130.

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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

September 17, 1997 Values first developed

August 18, 2000 New search for data. No new studies added. Two studies reviewed.

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