



TIER II ACUTE AND CHRONIC AQUATIC LIFE VALUES

BORON

CAS RN: 7440-42-8

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 boron does not exceed 360 µg/L more than once every three (3) years on the average and if the one (1) hour average concentration does not exceed 3200 µg/L more than once every three (3) years on the average.

Calculations

Acute Aquatic Life:

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

$$\text{Lowest GMAV} = 141,000 \text{ } \mu\text{g/L}$$

$$\text{SAF} = 21.9$$

$$\text{SAV} = 141,000/21.9 = 6438 \text{ } \mu\text{g/L}$$

$$\text{SMC} = \text{SAV}/2 = 6438/2 = \mathbf{3,200 \text{ } \mu\text{g/L}}$$

Chronic Aquatic Life:

$$SCC = SAV/SACR$$

$$SACR = 18$$

$$SCC = 6438/18 = \mathbf{360 \mu g/L}$$

Data

Table 1. GMAVs and SMAVs for boron

<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>
141,000	Cladoceran <u>Daphnia magna</u>	141,000		1

References

1. Maier, K.J. and A.W. Knight 1991. The toxicity of waterborne boron to *Daphnia magna* and *Chironomus decorus* and the effects of hardness and sulfate on boron toxicity. Arch. Environ. Contam. Toxicol. 20: 282-287.

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

May 28, 1997 Values first developed
August 23, 2000 New search for data. No new studies added.

Contact Information

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