

OHIO EPA SURFACE WATER QUALITY CRITERION FACT SHEET

Page 1 of 3

Chemical Name: Antimony Developed by: Chris J. SkalskiCAS # 7440-36-0 Data Retrieval Date: 9-23-97Internal Code # 7 Fact Sheet Preparation Date: 3-01-06ACUTE DATA

<u>SPECIES</u>	<u>EC₅₀/LC₅₀</u> <u>(µg/l)</u>	<u>TEST TYPE^a</u>	<u>DURATION</u> <u>(HOURS)</u>	<u>SMAV^b</u> <u>(µg/l)</u>	<u>GMAV^b</u> <u>(µg/l)</u>	<u>REFERENCE</u> <u>NUMBER</u>
Cladoceran	9,000	S,U	48	14,360	14,360	1
<i>Daphnia magna</i>	10,100 ^c	S,U	48			2
	14,000 ^c	S,U	48			2
	14,000	S,U	48			2
	23,500	S,U	48			2
	423,450 ^e	S,U	48			3
	>530,000 ^e	S,U	48			4
Oligochaete	678,000	R,U	96	678,000	678,000	7
<i>Tubifex tubifex</i>						
Bluegill	>440,000 ^d	S,U	96			5
<i>Lepomis macrochirus</i>						
Fathead Minnow	22,700	F,M	96	21,833	21,833	2
<i>Pimephales promelas</i>	21,000	F,M	96			2
	12,000	S,U	96			6
	20,000	S,U	96			6
	9,000	S,U	96			6
	17,000	S,U	96			6
	>80,000	S,U	96			6
	>80,000	S,U	96			6

^a S = static; F= flow through; R = renewal; U = unmeasured; M = measured.^b SMAV = Species Mean Acute Value; GMAV = Genus Mean Acute Value; SMCV = Species Mean Chronic Value; GMCV = Genus Mean Chronic Value.^c Data not used to calculate the SMAV because the test organisms were fed.^d Data not used to calculate an SMAV because undissolved chemical was present.^e Data not used to calculate the SMAV because the values varied by over an order of magnitude from the other data for this species. Antimony trioxide was used in references 3,4,5,6, and 7 and appears to be less soluble compared to other antimony salts such as antimony chloride, as documented in reference #6.

OHIO EPA SURFACE WATER QUALITY CRITERION FACT SHEET

Page 2 of 3

Chemical Name: Antimony Developed by: Chris J. SkalskiCAS # 7440-36-0 Data Retrieval Date: 9-23-97Internal Code # 7 Fact Sheet Preparation Date: 3-01-06CHRONIC DATA

<u>SPECIES</u>	<u>CHRONIC VALUE</u> <u>(µg/l)</u>	<u>METHOD</u>	<u>SMCV^b</u> <u>(µg/l)</u>	<u>GMCV^b</u> <u>(µg/l)</u>	<u>REFERENCE</u> <u>NUMBER</u>
Cladoceran	4,160 - 7,050	Life Cycle	5,416	5,416	2
<i>Daphnia magna</i>	5,416				
Fathead Minnow	1,130 - 2,310	Embryo-Larval	1,616	1,616	2
<i>Pimephales promelas</i>	1,616				

REFERENCES

1. Bringman, G. And R. Kuhn. 1959. Comparative Water Toxicology Investigations on Bacteria, Algae, and Daphnids. Ges. Ind. 80:115.
2. Kimball, G. 1978. The Effects of Lesser Known Metals and One Organic to Fathead Minnows (*Pimephales promelas*) and *Daphnia magna*. Manuscript, Dep. of Entomology, Fisheries and Wildlife, Univ. of Minnesota, Minneapolis, MN:88 p.
3. Khangarot, B.S. and P.K. Ray. 1989. Investigation of Correlation Between Physicochemical Properties of Metals and Their Toxicity to the Water Flea *Daphnia magna* Straus. Ecotoxicol. Environ. Saf. 18(2):109-120.
4. LeBlanc, G.A. 1980. Acute toxicity of Priority Pollutants to Water Flea (*Daphnia magna*). Bull. Environ. Contam. Toxicol. 24(5):684-691.
5. Buccafusco, R.J., S.J. Ells and G.A. LeBlanc. 1981. Acute toxicity of Priority Pollutants to Bluegill (*Lepomis macrochirus*). Bull. Environ. Contam. Toxicol. 26(4):446-452.
6. Tarzwell, C.M. and C. Henderson. 1960. Toxicity of Less Common Metals to Fishes. Ind. Wastes 5:12.
7. Khangarot, B.S. 1991. Toxicity of Metals to a Freshwater Tubificid Worm, *Tubifex tubifex* (Muller). Bull. Environ. Contam. Toxicol. 46:906-912.

OHIO EPA SURFACE WATER QUALITY CRITERION FACT SHEET

Page 3 of 3

Chemical Name: Antimony Developed by: Chris J. SkalskiCAS # 7440-36-0 Data Retrieval Date: 9-23-97Internal Code # 7 Fact Sheet Preparation Date: 3-01-06CALCULATION OF ACUTE AQUATIC VALUE (AAV)^a

<u>Data Requirement</u> <u>OAC 3745-1-36(A)(1)</u>	<u>SPECIES</u>	<u>GMAV</u> <u>(µg/l)</u>
(c)	Fathead Minnow	21,833
(d)	<i>Daphnia magna</i>	14,360
(g)	Oligochaete	678,000

Secondary Acute Factor (SAF) = 8.0

Secondary Acute Value (SAV) = Lowest GMAV ÷ SAF
 = 14,360 ÷ 8.0
 = 1,795 = 1,800 µg/l

Tier II Acute Aquatic Value (AAV) = SAV ÷ 2
 = 1,795 ÷ 2
 = 898 = 900 µg/l

CALCULATION OF CHRONIC AQUATIC VALUE (CAV)^a

Experimentally determined Acute-Chronic Ratios (ACRs):

<u>SPECIES</u>	<u>ACUTE VALUE</u> <u>(µg/l)</u>	<u>CHRONIC VALUE</u> <u>(µg/l)</u>	<u>ACUTE-CHRONIC</u> <u>RATIO</u>	<u>SPECIES MEAN</u> <u>ACR</u>
Cladoceran <i>Daphnia magna</i>	18,138	5,416	3.35	3.35
Fathead Minnow <i>Pimephales promelas</i>	21,833	1,616	13.51	13.51

Secondary Acute-Chronic Ratio (SACR) = $\sqrt[3]{(3.35)(13.51)(18)} = 9.34$

Chronic Aquatic Value (CAV) = SAV ÷ SACR
 = 1,795 ÷ 9.34
 = 192 = 190 µg/l

^aSee Ohio Administrative Code 3745-1-36 effective February 22, 2002.