

OHIO EPA AQUATIC LIFE WATER QUALITY CRITERION FACT SHEET

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Chemical Name: Acetonitrile (Methyl cyanide) Developed by: Chris J. SkalskiCAS # 75-05-8 Data Retrieval Date: 1-27-98Internal Code # Fact Sheet Preparation Date: 3-01-06ACUTE DATA

<u>SPECIES</u>	<u>EC₅₀/LC₅₀ (µg/l)</u>	<u>TEST TYPE^a</u>	<u>DURATION (HOURS)</u>	<u>SMAV^b (µg/l)</u>	<u>GMAV^b (µg/l)</u>	<u>REFERENCE NUMBER</u>
Cladoceran <i>Daphnia magna</i>	3,600,000	R,U	48	3,600,000	3,600,000	1
Bluegill <i>Lepomis macrochirus</i>	1,850,000	S,U	96	1,850,000	1,850,000	2
Fathead Minnow <i>Pimephales promelas</i>	1,640,000	F,M	96	1,640,000	1,640,000	3
	1,000,000	S,U	96			2
	>100,000	S,U	96			4
Guppy <i>Poecilia reticulata</i>	1,650,000	S,U	96	1,650,000	1,650,000	2
Oligochaete <i>Lumbriculus variegatus</i>	>100,000	S,U	96	>100,000	>100,000	4
Amphipod <i>Gammarus fasciatus</i>	>100,000	S,U	96	>100,000	>100,000	4
Snail <i>Helisoma trivolvis</i>	>100,000	S,U	96	>100,000	>100,000	4
Amphipod <i>Hyalella azteca</i>	>100,000	S,U	96	>100,000	>100,000	4
Flatworm <i>Dugesia tigrina</i>	>100,000	S,U	96	>100,000	>100,000	4
Isopod <i>Asellus intermedius</i>	>100,000	S,U	96	>100,000	>100,000	4

^a S = static; F= flow through; R = renewal; U = unmeasured; M = measured.^b SMAV = Species Mean Acute Value; GMAV = Genus Mean Acute Value.

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<u>SPECIES</u>	<u>CHRONIC VALUE</u> <u>(µg/l)</u>	<u>METHOD</u>	<u>SMCV^a</u> <u>(µg/l)</u>	<u>GMCV^a</u> <u>(µg/l)</u>	<u>REFERENCE</u> <u>NUMBER</u>
Cladoceran	160,000-320,000	Life Stage	226,274	226,274	1
<i>Daphnia magna</i>	226,274				

^a SMCV = Species Mean Chronic Value; GMCV = Genus Mean Chronic Value.

REFERENCES

1. Tong, Z., Z. Huailan and J. Hongjun. 1996. Chronic Toxicity of Acrylonitrile and Acetonitrile to *Daphnia magna* in 14-d and 21-d Toxicity Tests. Bull. Environ. Contam. Toxicol. 57(4):655-659.
2. Henderson, C., Q.H. Pickering and A.E. Lemke. 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.
3. Brook, L.T., D.J. Call, D.L. Geiger and C.E. Northcott. 1984. Acute Toxicities of Organic Chemicals to Fathead Minnows (*Pimephales promelas*), Vol. 1. Center for Lake Superior Environmental Studies, Univ. Of Wisconsin, Superior, WI:414 p.
4. Ewell, W.S., J.W. Gorsuch, R.O. Kringle, K.A. Robillard and R.C. Spiegel. 1986. Simultaneous Evaluation of the Acute Effects of Chemicals on Seven Aquatic Species. Environ. Toxicol. Chem. 5(9):831-840.

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Chemical Name: Acetonitrile (Methyl cyanide) Developed by: Chris J. SkalskiCAS # 75-05-8 Data Retrieval Date: 1-27-98Internal Code # Fact Sheet Preparation Date: 3-01-06CALCULATION OF ACUTE AQUATIC VALUE (AAV)^a

Data Requirement <u>OAC 3745-1-36(A)(1)</u>	<u>SPECIES</u>	GMAV ($\mu\text{g/l}$)
(b)	Bluegill	1,850,000
(c)	Fathead Minnow	1,640,000
(d)	<i>Daphnia magna</i>	3,600,000

Secondary Acute Factor (SAF) = 8.0

Secondary Acute Value (SAV) = Lowest GMAV $\div$ SAF
 $= 1,640,000 \div 8.0$
 $= 205,000 = 210,000 \mu\text{g/l}$

Tier II Acute Aquatic Value (AAV) = SAV $\div$ 2
 $= 205,000 \div 2$
 $= 102,500 = 100,000 \mu\text{g/l}$

CALCULATION OF CHRONIC AQUATIC VALUE (CAV)^a

Experimentally determined Acute-Chronic Ratios (ACRs):

<u>SPECIES</u>	ACUTE VALUE ($\mu\text{g/l}$)	CHRONIC VALUE ($\mu\text{g/l}$)	ACUTE-CHRONIC RATIO	SPECIES MEAN ACR
Cladoceran	3,600,000	226,274	15.91	15.91
<i>Daphnia magna</i>				

Secondary Acute-Chronic Ratio (SACR) = $\sqrt[3]{(15.91)(18)(18)} = 17.27$

Chronic Aquatic Value (CAV) = SAV $\div$ SACR
 $= 205,000 \div 17.27$
 $= 11,870 = 12,000 \mu\text{g/l}$

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