

OHIO EPA SURFACE WATER QUALITY CRITERION FACT SHEET

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Chemical Name: Xylene (total)Developed by: Chris J. SkalskiCAS # 1330-20-7Data Retrieval Date: 4-17-01Internal Code # ---Fact Sheet Preparation Date: 3-01-06Reviewed by: Bob HeitzmanACUTE 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	3,820	F,M	48	3,820	3,820	1
<i>Daphnia magna</i>	3,185	S,U	48			4
	8,494	S,U	48			4
	9,555	S,M	48			4
	1,870	S,M	48			5
	1,390	S,M	48			5
	3,530	S,M	48			5
	5,000	S,M	48			5
	4,730	S,M	48			5
	5,030	S,M	48			5
Cladoceran	2,948	S,U	48	2,948	2,948	6
<i>Ceriodaphnia dubia</i>						
Rainbow Trout	8,050	F,M	96	8,050	8,050	1
<i>Oncorhynchus mykiss</i>	7,600	R,M	96			2
	8,400	R,M	96			2
	2,600	R,M	96			2
	8,200	S,U	96			7
Fathead Minnow	16,100	F,M	96	15,615	15,615	1
<i>Pimephales promelas</i>	16,400	F,M	96			3
	16,400	F,M	96			3
	16,000	F,M	96			3
	13,400	F,M	96			3
	26,700	S,U	96			8
	28,770	S,U	96			8
	42,000	S,U	96			9
Snail	>22,400	F,M	96	>22,400	>22,400	1
<i>Aplexa hypnorum</i>						
Guppy	12,000	R,M	96	14,748	14,748	2
<i>Poecilia reticulata</i>	12,900	R,M	96			2
	8,800	R,M	96			2
	34,730	S,U	96			8

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

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<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>
Goldfish	16,100	F,M	96	16,515	16,515	1
<i>Carassius auratus</i>	16,940	F,M	96			12
	36,810	S,U	96			8
Bluegill	16,100	F,M	96	15,899	15,899	1
<i>Lepomis macrochirus</i>	15,700	F,M	96			11
	24,500	S,M	96			11
	20,870	S,U	96			8
	13,500	S,U	96			7
White Sucker	16,100	F,M	96	16,100	16,100	1
<i>Catostomus commersoni</i>						
Carp	780,000	R,M	96	780,000	780,000	10
<i>Cyprinus carpio</i>						
Copepod	99,500	S,U	96	99,500	99,500	13
<i>Diaptomus forbesi</i>						

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

<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>
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No Chronic Data Available

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

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REFERENCES

1. Holcombe, G.W., G.L. Phipps, A.H. Sulaiman and A.D. Hoffman. 1987. Simultaneous Multiple Species Testing: Acute Toxicity of 13 Chemicals to 12 Diverse Freshwater Amphibian, Fish, and Invertebrate Families. Arch. Environ. Contam. Toxicol. 16:697-710.
2. Galassi, S., M. Mingazzini, L. Vigano, D. Cesareo and M.L. Tosato. 1988. Approaches to Modeling Toxic Responses of Aquatic Organisms to Aromatic Hydrocarbons. Ecotoxicol. Environ. Saf. 16(2):158-169.
3. Geiger, D.L., L.T. Brooke and D.J. Call. 1990. Acute Toxicities of Organic Chemicals to Fathead Minnows (*Pimephales promelas*), Vol. 5. Center for Lake Superior Environmental Studies, Univ. of Wisconsin, Superior, WI:332 p.
4. Bobra, A.M., W.Y. Shiu and D. Mackay. 1983. A Predictive Correlation for the Acute Toxicity of Hydrocarbons and Chlorinated Hydrocarbons to the Water Flea (*Daphnia magna*). Chemosphere 12(9-10):1121-1129.
5. MacLean, M.M. and K.G. Doe. 1989. The Comparative Toxicity of Crude and Refined Oils to *Daphnia magna* and *Artemia*. Environment Canada, EE-111, Dartmouth, Nova Scotia: 64p.
6. Rose, R.M., M.S.J. Warne and R.P. Lim. 1998. Quantitative Structure-Activity Relationships and Volume Fraction Analysis for Nonpolar Narcotic Chemicals to the Australian Cladoceran *Ceriodaphnia*. Arch. Environ. Contam. Toxicol. 34(3):248-252.
7. Mayer, F.L. Jr. and M.R. Ellersieck. 1986. Manual of Acute Toxicity: Interpretation and Data Base for 410 Chemicals and 66 Species of Freshwater Animals. Fish and Wildlife Service, U.S.D.I., Resource Publication 160, Washington, D.C.:506 p.
8. Pickering, Q.H. and C. Henderson. 1966. Acute Toxicity of Some Important Petrochemicals to Fish. J. Water Pollut. Control Fed. 38(9):1419-1429.
9. Mattson, V.R., J.W. Arthur and C.T. Walbridge. 1976. Acute Toxicity of Selected Organic Compounds to Fathead Minnows. Ecol. Res. Ser. EPA-600/3-76-097, Environ. Res. Lab., U.S. EPA, Duluth, MN: 12 p.
10. Rao, T.S., M.S. Rao and S.B.S. Prasad. 1975. Median Tolerance Limits of Some Chemicals to the Fresh Water Fish *Cyprinus carpio*. Indian J. Environ. Health 17(2):140-146.
11. Bailey, H.C., D.H.W. Liu and H.A. Javitz. 1985. Time/Toxicity Relationships in Short-Term Static, Dynamic, and Plug-Flow Bioassays. In: R.C. Bahner and D.J. Hansen (Eds), Aquatic Toxicology and Hazard Assessment, 8th Symposium, ASTM STP 891, Philadelphia, PA:193-212.
12. Brenniman, G., R. Hartung and W.J. Weber, Jr. 1976. A Continuous Flow Bioassay Method to Evaluate the Effects of Outboard Motor Exhausts and Selected Aromatic Toxicants on Fish. Water Res. 10(2):165-169.
13. Saha, M.K. and S.K. Konar. 1983. Acute Toxicity of Some Petroleum Pollutants to Plankton and Fish. Environ. Ecol. 1(1):117-119.

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<u>Data Requirement</u> <u>OAC 3745-1-36(A)(1)</u>	<u>SPECIES</u>	<u>GMAV</u> <u>(µg/l)</u>
(a)	Rainbow Trout	8,050
(b)	Bluegill	15,899
(c)	Guppy	14,748
(d)	<i>Ceriodaphnia dubia</i>	2,948
(g)	Snail	> 22,400

Secondary Acute Factor (SAF) = 6.1

Secondary Acute Value (SAV) = Lowest GMAV ÷ SAF
 = 2,948 ÷ 6.1
 = 483 = 480 µg/l

Tier II Acute Aquatic Value (AAV) = SAV ÷ 2
 = 483 ÷ 2
 = 242 = 240 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>
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None Available

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

Chronic Aquatic Value (CAV) = SAV ÷ SACR
 = 483 ÷ 18
 = 27 µg/l

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