OHIO EPA SURFACE WATER QUALITY CRITERION FACT SHEET

Chemical Name: Naphthalene Developed by: Chris J. Skalski
CAS # 91-20-3 Data Retrieval Date: 4-17-01
Internal Code # 93 Fact Sheet Preparation Date: 3-01-06
Reviewed by: Bob Heitzman

ACUTE DATA

SPECIES	EC_{50}/LC_{50} (µg/l)	TEST TYPE[a]	DURATION (HOURS)	SMAV[b] (µg/l)	GMAV[b] (µg/l)	REFERENCE NUMBER
Cladoceran	1,600	S,M	48	5,774	4,795	22
Daphnia magna	2,160	S,M	48			1
	2,194	S,U	48			2
	2,550	S,M	48			22
	3,400[d]	S,M	48			3
	4,100[d]	S,M	48			3
	4,730	S,U	48			4
	8,570[c]	S,U	48			5
	8,600	S,U	48			6
	16,663	S,U	48			7
	22,600	S,U	48			8
	24,100	S,U	48			16
Cladoceran	4,663	S,U	48	3,982		9
Daphnia pulex	3,400	S,M	48			24
	1,000[e]	S,M	96			10
Rainbow Trout	1,600	F,M	96	1,600	2,270	12
Oncorhynchus mykiss	1,800	S,U	96			13
	2,600	S,U	96			13
	4,400	S,U	96			13
	4,500[c]	S,U	96			13
	5,500	S,U	96			13
	6,100	S,U	96			13
Coho Salmon	2,100[d]	F,M	96	3,220		14
Oncorhynchus kisutch	3,220	F,M	96			15
Fathead Minnow	1,990	S,M	96	6,656	6,656	1
Pimephales promelas	6,080	F,M	96			18
	6,140	F,M	96			19
	6,140[c]	F,M	96			15
	7,900	F,M	96			12

[a] S = static; F= flow through; U = unmeasured; M = measured.
[b] SMAV = Species Mean Acute Value; GMAV = Genus Mean Acute Value.
[c] Duplicate data not used to calculate the SMAV.
[d] Data not used to calculate the SMAV because the test organisms were fed during the test.
[e] Data not used to calculate the SMAV because 48-hour data are available.

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SPECIES	EC_{50}/LC_{50} (µg/l)	TEST TYPE[a]	DURATION (HOURS)	SMAV[b] (µg/l)	GMAV[b] (µg/l)	REFERENCE NUMBER
Midge	12,200	S,U	96	14,450	14,450	20
Tanytarsus dissimilis	12,600	S,U	96			21
	13,700	S,U	96			20
	20,700	S,U	96			21
Midge	2,810	S,M	48	2,810	2,810	1
Chironomus tentans						
Copepod	67,800	S,U	96	67,800	67,800	17
Diaptomus forbesi						
Dragonfly	1,000-2,500[c]	S,U	96			25
Somatochlora cingulata						
Mosquitofish	150,000	S,U	96	150,000	150,000	11
Gambusia affinis						
Frog	2,100	F,M	96	2,100	2,100	23
Xenopus laevis	2,100	F,M	96			23

[a] S = static; F = flow through; U = unmeasured; M = measured.
[b] SMAV = Species Mean Acute Value; GMAV = Genus Mean Acute Value.
[c] Data not used to calculate an SMAV because a definitive LC_{50} was not determined.

CHRONIC DATA

SPECIES	CHRONIC VALUE (µg/l)	METHOD	SMCV[a] (µg/l)	GMCV[a] (µg/l)	REFERENCE NUMBER
Fathead Minnow	450-850	Embryo-larval	618	618	12
Pimephales promelas	618				

[a] SMCV = Species Mean Chronic Value; GMCV = Genus Mean Chronic Value.

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CALCULATION OF ACUTE AQUATIC VALUE (AAV)[a]

Data Requirement OAC 3745-1-36(A)(1)	SPECIES	GMAV (µg/l)
(a)	Salmonid	2,270
(b)	Fathead Minnow	6,656
(c)	Frog	2,100
(d)	*Daphnia sp.*	4,795
(f)	Midge	2,810

Secondary Acute Factor (SAF) = 6.1

Secondary Acute Value (SAV) = Lowest GMAV ÷ SAF
= 2,100 ÷ 6.1
= 344 = 340 µg/l

Tier II Acute Aquatic Value (AAV) = SAV ÷ 2
= 344 ÷ 2
= 172 = 170 µg/l

CALCULATION OF CHRONIC AQUATIC VALUE (CAV)[a]

Experimentally determined Acute-Chronic Ratios (ACRs):

SPECIES	ACUTE VALUE (µg/l)	CHRONIC VALUE (µg/l)	ACUTE-CHRONIC RATIO	SPECIES MEAN ACR
Fathead Minnow *Pimephales promelas*	7,900	618	12.78	12.78

Secondary Acute-Chronic Ratio (SACR) = $\sqrt[3]{(12.78)(18)(18)} = 16.06$

Chronic Aquatic Value (CAV) = SAV ÷ SACR
= 344 ÷ 16.06

= 21 μg/l

[a]See Ohio Administrative Code 3745-1-36 effective February 22, 2002.