Final Risk Evaluation for Perchloroethylene

Systematic Review Supplemental File:

Data Extraction Tables of Environmental Hazard Studies

CASRN: 127-18-4

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Environmental Hazard Data Extraction Table for Perchloroethylene (PCE)

				that were evaluate Concentration(s)	Test	Effect(s)		Data Quality
Test Species	Salt	Duration	Enu-point	Concentration(s)	Analysis	Effect(s)	References	Evaluation
	Water				Allalysis			Evaluation
Fish	water							
Rainbow trout	Fresh	96-hour	LC ₅₀ =	Not reported	Flow-	Mortality	Shubat et	High
(Oncorhynchu		70-110u1	5.84 mg	Not reported	through,	Wiortainty	al., 1982	Iligii
s mykiss)			AI/L		Measured		al., 1702	
Rainbow trout	Fresh	96-hour	$LC_{50} =$	Not reported	Flow-	Mortality	Shubat et	High
(Oncorhynchu	1 10311) iloui	4.99 mg	rvot reported	through,	Wiortanty	al., 1982	Ingii
s mykiss)			AI/L		Measured		ui., 1902	
Rainbow trout	Fresh	1-hour	$LC_{50} =$	Not reported	Flow-	Mortality	Shubat et	High
(Oncorhynchu	110011	1 110 41	~15 mg	riotreported	through,	William	al., 1982	111911
s mykiss)			AI/L		Measured		u., 1902	
Rainbow trout	Fresh	3-hour	$LC_{50} =$	Not reported	Flow-	Mortality	Shubat et	High
(Oncorhynchu		3 110 41	>11, <12	riotreported	through,	William	al., 1982	111911
s mykiss)			mg AI/L		Measured		u., 1902	
Rainbow trout	Fresh	6-hour	$LC_{50} = \sim 7$	Not reported	Flow-	Mortality	Shubat et	High
(Oncorhynchu		0 110 01	mg AI/L	roorspores	through,	1.101.00110	al., 1982	111811
s mykiss)			8		Measured		1,	
Rainbow trout	Fresh	12-hour	$LC_{50} = \sim 6$	Not reported	Flow-	Mortality	Shubat et	High
(Oncorhynchu			mg AI/L	1	through,	J	al., 1982	
s mykiss)			8		Measured		, , , , ,	
Rainbow trout	Fresh	24-hour	$LC_{50} = \sim 5$	Not reported	Flow-	Mortality	Shubat et	High
(Oncorhynchu			mg AI/L	1	through,	J	al., 1982	
s mykiss)					Measured			
Rainbow trout	Fresh	48-hour	$LC_{50} = \sim 5$	Not reported	Flow-	Mortality	Shubat et	High
(Oncorhynchu			mg AI/L	_	through,	•	al., 1982	
s mykiss)					Measured			
Rainbow trout	Fresh	72-hour	$LC_{50} = \sim 5$	Not reported	Flow-	Mortality	Shubat et	High
(Oncorhynchu			mg AI/L	_	through,		al., 1982	
s mykiss)					Measured			
Rainbow trout	Fresh	1-hour	$LC_{50} =$	Not reported	Flow-	Mortality	Shubat et	High
(Oncorhynchu			>11, <12		through,		al., 1982	
s mykiss)			mg AI/L		Measured			
Rainbow trout	Fresh	3-hour	$LC_{50} = >8,$	Not reported	Flow-	Mortality	Shubat et	High
(Oncorhynchu			<9 mg		through,		al., 1982	
s mykiss)			AI/L		Measured			
Rainbow trout		6-hour	$LC_{50} = >7,$	Not reported	Flow-	Mortality	Shubat et	High
(Oncorhynchu			<8 mg		through,		al., 1982	
s mykiss)			AI/L		Measured			
Rainbow trout		12-hour	$LC_{50} = \sim 7$	Not reported	Flow-	Mortality	Shubat et	High
(Oncorhynchu			mg AI/L		through,		al., 1982	
s mykiss)					Measured			
Rainbow trout		24-hour	$LC_{50} = >6,$	Not reported	Flow-	Mortality	Shubat et	High
(Oncorhynchu			<7 mg		through,		al., 1982	
s mykiss)			AI/L		Measured			
Rainbow trout	Fresh	48-hour	$LC_{50} = >6,$	Not reported	Flow-	Mortality	Shubat et	High
(Oncorhynchu			<7 mg		through,		al., 1982	
s mykiss)			AI/L		Measured			

				that were evaluate Concentration(s)	Test	Effect(s)		Data Quality
1 est Species		Duration	Ena-point	Concentration(s)		Effect(s)	References	Data Quanty Evaluation
	Salt Water				Analysis			Evaluation
Rainbow trout	Fresh	72-hour	$LC_{50} = >6,$	Not reported	Flow-	Mortality	Shubat et	High
(Oncorhynchu	110011	72 11041	<7 mg	riotroported	through,	wiertanty	al., 1982	111511
s mykiss)			AI/L		Measured		u., 1902	
Rainbow trout	Fresh	24-hour	$LC_{50} =$	Not reported	Flow-	Mortality	Call et al.,	High
(Oncorhynchu	1 10311	24-110u1	4.99 mg	Not reported	through,	Wiortanty	1983	Iligii
s mykiss)			AI/L		Measured		1703	
Rainbow trout	Fresh	48-hour	$LC_{50} =$	Not reported	Flow-	Mortality	Call et al.,	High
(Oncorhynchu	FIESH	40-110u1		Not reported	through,	Mortanty	1983	riigii
` '			4.99 mg		<u> </u>		1983	
s mykiss)	г 1	70.1	AI/L	37 4 1	Measured	3.6 . 11.	C 11 + 1	TT' 1
Rainbow trout	Fresh	72-hour	$LC_{50} =$	Not reported	Flow-	Mortality	Call et al.,	High
(Oncorhynchu			4.99 mg		through,		1983	
s mykiss)			AI/L		Measured			
Rainbow trout	Fresh	24-hour	$LC_{50} =$	Not reported	Flow-	Mortality	Call et al.,	High
(Oncorhynchu			6.31 mg		through,		1983	
s mykiss)			AI/L		Measured			
Rainbow trout	Fresh	48-hour	$LC_{50} =$	Not reported	Flow-	Mortality	Call et al.,	High
(Oncorhynchu			5.95 mg	_	through,	-	1983	
s mykiss)			AI/L		Measured			
Rainbow trout	Fresh	72-hour	LC ₅₀ =	Not reported	Flow-	Mortality	Call et al.,	High
(Oncorhynchu		, =	5.81 mg	- · · · · · · · · · · · · · · · · · · ·	through,	<i>j</i>	1983	8
s mykiss)			AI/L		Measured		1705	
Rainbow trout	Fresh	96-hour	$EC_{50} =$	Not reported	Flow-	Equilibrium	Call et al.,	High
	110311	90-110u1	5.38 mg	Not reported	through,	Equinorium	1979	High
(Oncorhynchu							19/9	
s mykiss)	Dec. 1	06.1	AI/L	Not 1	Nominal	Tan:11:1'	Coll -4 1	TT: _1
	Fresh	96-hour	$EC_{50} =$	Not reported	Flow-	Equilibrium	Call et al.,	High
(Oncorhynchu			4.68 mg		through,		1979	
s mykiss)			AI/L		Nominal		~ 11 1	
Rainbow trout	Fresh	<20-hour	$LC_{50} = >9,$	Not reported	Flow-	Mortality	Call et al.,	High
(Oncorhynchu			<12 mg		through,		1979	
s mykiss)			AI/L		Measured			
Rainbow trout	Fresh	<20-hour	$LC_{50} = >6,$	Not reported	Flow-	Mortality	Call et al.,	High
(Oncorhynchu			<9 mg	_	through,	-	1979	_
s mykiss)			AI/L		Measured			
Rainbow trout	Fresh	<20-hour		Not reported	Flow-	Mortality	Call et al.,	High
(Oncorhynchu			<9 mg	1	through,	,	1979	
s mykiss)			AI/L		Measured			
Rainbow trout	Fresh	>20-,<	$LC_{50} = \sim 6$	Not reported	Flow-	Mortality	Call et al.,	High
(Oncorhynchu	1 1 0 0 11	40-hour	mg AI/L	riovieponou	through,	1.101 111111	1979	111511
s mykiss)		TO-HOUI	ing AI/L		Measured		1717	
Rainbow trout	Fresh	>40	$LC_{50} = >3,$	Not remarked	Flow-	Montality	Coll of al	Hiah
	rresn	>40-,		Not reported		Mortality	Call et al.,	High
(Oncorhynchu		<60-hour			through,		1979	
s mykiss)	г 1	> 60	AI/L	3 T / 1	Measured	N.C 11.	G 11 : 1	11. 1
Rainbow trout	Fresh		$LC_{50} = >3,$	Not reported	Flow-	Mortality	Call et al.,	High
(Oncorhynchu		<80-hour	<6 mg		through,		1979	
s mykiss)			AI/L		Measured			
Rainbow trout	Fresh	96-hour		Not reported	Flow-	Mortality	Call et al.,	High
(Oncorhynchu			<6 mg		through,		1979	
s mykiss)			AI/L		Measured			
Rainbow trout	Fresh	<20-hour		Not reported	Flow-	Mortality	Call et al.,	High
(Oncorhynchu			<9 mg	<u>r</u> r	through,	 j	1979	
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Table X. On-to				that were evaluat		achloroethylen		
Test Species		Duration	End-point	Concentration(s)		Effect(s)	References	Data Quality
	Salt				Analysis			Evaluation
D 1 1 4 4	Water	<20.1	10 >2	N 4 1	El	M 4 1'4-	C 11 + 1	TT' 1
Rainbow trout		<20-nour	$LC_{50} = >3,$	Not reported	Flow-	Mortality	Call et al.,	High
(Oncorhynchu			<6 mg		through,		1979	
s mykiss)	E 1	<20.1	AI/L	N. 4 1	Measured	M 4 1'4-	C 11 4 1	11. 1
Rainbow trout		<20-nour	$LC_{50} = >3,$	Not reported	Flow-	Mortality	Call et al.,	High
(Oncorhynchu			<6 mg		through,		1979	
s mykiss)	E 1	> 20	AI/L	N. 4 1	Measured	M 4 1'4-	C 11 4 1	11. 1
Rainbow trout		>20-,	$LC_{50} = >3,$	Not reported	Flow- through,	Mortality	Call et al.,	High
(Oncorhynchu		<40-hour			<i>U</i> ,		1979	
s mykiss)	E1-	>40-,	AI/L $LC_{50} = >3,$	NI - 4	Measured Flow-	M4 - 1:4	C-11 -4 -1	TT: -1.
Rainbow trout				Not reported		Mortality	Call et al., 1979	High
(Oncorhynchu		<60-hour	<6 mg		through,		19/9	
s mykiss)	E1-	>60	AI/L $LC_{50} = >3,$	NI - 4	Measured	M4 - 1:4	C-11 -4 -1	TT: -1-
Rainbow trout		>60-, <80-hour		Not reported	Flow-	Mortality	Call et al.,	High
(Oncorhynchu		<80-nour	\mathcal{C}		through, Measured		1979	
s mykiss)	E1.	<20 1	AI/L	N-4		E:1:1:	C-11 -4 -1	TT: -1.
Rainbow trout		<20-nour	$EC_{50} = >6,$	Not reported	Flow-	Equilibrium	Call et al., 1979	High
(Oncorhynchu			<9 mg		through,		19/9	
s mykiss)	E1-	<20 h	AI/L	NI - 4	Measured	E:1:1:	C-11 -4 -1	TT: -1-
Rainbow trout		<20-nour	$EC_{50} = >6,$	Not reported	Flow-	Equilibrium	Call et al., 1979	High
(Oncorhynchu			<9 mg		through,		19/9	
s mykiss)	E 1	<20.1	AI/L	N. 4 1	Measured	E 11 '	C 11 4 1	11. 1
Rainbow trout		<20-nour	$EC_{50} = >6,$	Not reported	Flow-	Equilibrium	Call et al.,	High
(Oncorhynchu			<9 mg		through,		1979	
s mykiss) Rainbow trout	E1-	> 20	AI/L	NI - 4	Measured	E:1:1:	C-11 -4 -1	TT: -1-
		>20-,	$EC_{50} = >3,$	Not reported	Flow-	Equilibrium	Call et al., 1979	High
(Oncorhynchu		<40-hour	<6 mg AI/L		through, Measured		19/9	
s mykiss) Rainbow trout	Fresh	>40-,	$EC_{50} = >3,$	Not non out od	Flow-	E and the sines	Call et al.,	ILiah
		<60-hour		Not reported		Equilibrium	1979	High
(Oncorhynchu s mykiss)		<00-nour	<6 mg		through, Measured		19/9	
Rainbow trout	Fresh	>60-,	AI/L $EC_{50} = >3,$	Not non out od	Flow-	E avilibaiyaa	Call et al.,	High
		<80-hour	<6 mg	Not reported		Equilibrium	1979	High
(Oncorhynchu s mykiss)		~80-lloui	AI/L		through, Measured		19/9	
Rainbow trout	Eroch	06 hour	$EC_{50} = >3,$	Not reported	Flow-	Equilibrium	Call et al.,	High
(Oncorhynchu		90-110u1	<6 mg	Not reported	through,	Equilibrium	1979	High
s mykiss)			AI/L		Measured		19/9	
Rainbow trout	Fresh	<20 hour	$EC_{50} = >3,$	Not reported	Flow-	Equilibrium	Call et al.,	High
(Oncorhynchu		\20-110u1	<6 mg	Not reported	through,	Equilibrium	1979	High
s mykiss)			AI/L		Measured		19/9	
Rainbow trout	Fresh	<20 hour	$EC_{50} = >3,$	Not reported	Flow-	Equilibrium	Call et al.,	High
(Oncorhynchu		\20-110u1	<6 mg	Not reported	through,	Equilibrium	1979	High
s mykiss)			AI/L		Measured		1979	
Rainbow trout	Fresh	<20-hour	$EC_{50} = >3,$	Not reported	Flow-	Equilibrium	Call et al.,	High
(Oncorhynchu		~20-110ul	6 mg	rior reported	through,	Lquillottuill	1979	mgn
s mykiss)			AI/L		Measured		19/9	
Rainbow trout	Fresh	>20-,	$EC_{50} = >3,$	Not reported	Flow-	Equilibrium	Call et al.,	High
(Oncorhynchu		<40-hour	6 mg	rior reported	through,	Lquillottuill	1979	mgn
s mykiss)		-TO-HOUI	AI/L		Measured		17/7	
Rainbow trout	Fresh	>40-,	$EC_{50} = >3,$	Not reported	Flow-	Equilibrium	Call et al.,	High
(Oncorhynchu		<60-hour	<6 mg	rioi reported	through,	Equilibrium	1979	mgn
s mykiss)		~00-nour	AI/L		Measured		17/7	
s mykiss)	<u> </u>		AI/L		ivicasuicu		1	

Table X. On-topic aquatic toxicity studies that were evaluated for Tetrachloroethylene											
Test Species	Fresh/	Duration	End-point	Concentration(s)	Test	Effect(s)	References	Data Quality			
	Salt Water				Analysis			Evaluation			
Rainbow trout	Fresh		$EC_{50} = >3,$	Not reported	Flow-	Equilibrium	Call et al.,	High			
(Oncorhynchu		<80-hour	<6 mg		through,		1979				
s mykiss)			AI/L		Measured						
Rainbow trout	Fresh	<20-hour	$LC_{50} = >8,$	Not reported	Flow-	Mortality	Call et al.,	High			
(Oncorhynchu			<10 mg		through,		1979				
s mykiss)			AI/L		Measured						
Rainbow trout	Fresh	<20-hour	$LC_{50} = >8,$	Not reported	Flow-	Mortality	Call et al.,	High			
(Oncorhynchu			<10 mg		through,		1979				
s mykiss)			AI/L		Measured						
Rainbow trout	Fresh	<20-hour	$LC_{50} = >6,$	Not reported	Flow-	Mortality	Call et al.,	High			
(Oncorhynchu			<8 mg		through,		1979				
s mykiss)			AI/L		Measured						
Rainbow trout	Fresh	<20-hour	$LC_{50} = >6,$	Not reported	Flow-	Mortality	Call et al.,	High			
(Oncorhynchu			<8 mg		through,		1979				
s mykiss)			AI/L		Measured						
Rainbow trout	Fresh	<20-hour	$LC_{50} = >6,$	Not reported	Flow-	Mortality	Call et al.,	High			
(Oncorhynchu			<8 mg		through,		1979				
s mykiss)			AI/L		Measured						
Rainbow trout	Fresh	>20-,	$LC_{50} = \sim 6$	Not reported	Flow-	Mortality	Call et al.,	High			
(Oncorhynchu		<40-hour	mg AI/L		through,		1979				
s mykiss)					Measured						
Rainbow trout	Fresh	>20-,	$LC_{50} = >6,$	Not reported	Flow-	Mortality	Call et al.,	High			
(Oncorhynchu		<40-hour	<8 mg		through,		1979				
s mykiss)			AI/L		Measured						
Rainbow trout	Fresh	>40-,	$LC_{50} = >4,$	Not reported	Flow-	Mortality	Call et al.,	High			
(Oncorhynchu		<60-hour	<6 mg		through,		1979				
s mykiss)			AI/L		Measured						
Rainbow trout	Fresh	>40-,	$LC_{50} = >6,$	Not reported	Flow-	Mortality	Call et al.,	High			
(Oncorhynchu		<60-hour	<8 mg		through,		1979				
s mykiss)			AI/L		Measured						
Rainbow trout	Fresh	>60-,	$LC_{50} = >6,$	Not reported	Flow-	Mortality	Call et al.,	High			
(Oncorhynchu		<80-hour	<8 mg	-	through,	•	1979				
s mykiss)			AI/L		Measured						
Rainbow trout	Fresh	>60-,	$LC_{50} = >4,$	Not reported	Flow-	Mortality	Call et al.,	High			
(Oncorhynchu		<80-hour	<6 mg	-	through,	•	1979				
s mykiss)			AI/L		Measured						
Rainbow trout	Fresh	>60-,	$EC_{50} = >4,$	Not reported	Flow-	Equilibrium	Call et al.,	High			
(Oncorhynchu		<80-hour	<6 mg	•	through,	•	1979				
s mykiss)			AI/L		Measured						
Rainbow trout	Fresh	>60-,	$EC_{50} = >4,$	Not reported	Flow-	Equilibrium	Call et al.,	High			
(Oncorhynchu		<80-hour	<6 mg	1	through,	•	1979				
s mykiss)			AI/L		Measured						
Rainbow trout	Fresh	>40-,	$EC_{50} = >4,$	Not reported	Flow-	Equilibrium	Call et al.,	High			
(Oncorhynchu		<60-hour	<6 mg	1	through,	1	1979				
s mykiss)			AI/L		Measured						
Rainbow trout	Fresh	>40-,	$EC_{50} = >4,$	Not reported	Flow-	Equilibrium	Call et al.,	High			
(Oncorhynchu		<60-hour	<6 mg	1	through,	1	1979	8			
s mykiss)			AI/L		Measured						
Rainbow trout	Fresh	>20-,	$EC_{50} = \sim 6$	Not reported	Flow-	Equilibrium	Call et al.,	High			
	1 1 2011	-		1.51.5poi.66				5			
(Oncorhynchu		<40-hour	mg AI/L		through,		1979				

Test Species				that were evaluate Concentration(s)		Effect(s)		Data Quality
rest species	Salt	Duration	Ena-point	Concenti ation(s)	Analysis	Effect(s)	ixerer ences	Evaluation
	Water				Anarysis			Evaluation
Rainbow trout	Fresh		$EC_{50} = >4,$	Not reported	Flow-	Equilibrium	Call et al.,	High
(Oncorhynchu	Tresii	<40-hour		riot reported	through,	Equinorium	1979	Ingn
s mykiss)		VIO HOUI	AI/L		Measured		1575	
Rainbow trout	Fresh	<20-hour	$EC_{50} = \sim 6$	Not reported	Flow-	Equilibrium	Call et al.,	High
(Oncorhynchu	110311	20 11001	mg AI/L	riot reported	through,	Equinorium	1979	Ingn
s mykiss)			Ilig Al/L		Measured		1979	
Rainbow trout	Fresh	<20 hour	$EC_{50} = >6$,	Not reported	Flow-	Equilibrium	Call et al.,	High
(Oncorhynchu	1 10311	\20-110u1	<8 mg	Not reported	through,	Equinorium	1979	Iligii
s mykiss)			AI/L		Measured		19/9	
Rainbow trout	Fresh	<20 hour	$EC_{50} = >6$,	Not reported	Flow-	Equilibrium	Call et al.,	High
	rresn	<20-nour		Not reported	through,	Equilibrium	1979	High
(Oncorhynchu			<8 mg AI/L				19/9	
s mykiss)	Е 1	<20.1		N. 4 1	Measured	E - 11 '-	C 11 4 1	77' 1
Rainbow trout	Fresh	<20-nour	$EC_{50} = >8,$	Not reported	Flow-	Equilibrium	Call et al.,	High
(Oncorhynchu			<10 mg		through,		1979	
s mykiss)		2.1	AI/L	27	Measured	3.5 11		2.5.41
Bluegill	Fresh	24-hour	$LC_{50} = 46$	Not reported	Static,	Mortality	Buccafusco	Medium
(Lepomis			mg AI/L		Nominal		et al., 1981	
macrochirus)								
Bluegill	Fresh	96-hour	$LC_{50} = 13$	Not reported	Static,	Mortality	Buccafusco	Medium
(Lepomis			mg AI/L		Nominal		et al., 1981	
macrochirus)								
Bluegill	Fresh	1-21 day	BCF = 49	0.00343 mg AI/L	Flow-	Bioconcentratio	Barrows et	Medium
(Lepomis					through,	n	al., 1980	
macrochirus)					Measured			
Fathead	Fresh	32-day	NOAEL =	Not reported	Flow-	Mortality	Ahmad et	High
minnow			1.4 mg		through,		al., 1984	
(Pimephales			AI/L		Measured			
promelas)								
Fathead	Fresh	32-day	MATC =	Not reported	Flow-	Growth: Wet	Ahmad et	High
minnow			0.5, 1.4	1	through,	weight	al., 1984	
(Pimephales			mg AI/L		Measured			
promelas)								
Fathead	Fresh	32-day	NOAEL =	Not reported	Flow-	Growth: Wet	Ahmad et	High
minnow			0.5 mg	1	through,	weight	al., 1984	
(Pimephales			AI/L		Measured	8	,	
promelas)								
Fathead	Fresh	32-day	LOAEL =	Not reported	Flow-	Growth: Wet	Ahmad et	High
minnow			1.4 mg		through,	weight	al., 1984	5
(Pimephales			AI/L		Measured		, 1501	
promelas)			111111		casarea			
Fathead	Fresh	32-day	LC ₁₀₀ =	Not reported	Flow-	Mortality	Ahmad et	High
minnow	110011	JZ day	4.1 mg	riot reported	through,	iviolanity	al., 1984	111811
(Pimephales			AI/L		Measured		ai., 170 7	
promelas)			AI/L		ivicasuicu			
Fathead	Enach	96-hour	IC -	Not remarked	Flow-	Montality	Gairan at	Ligh
	Fresh	90-nour	$LC_{50} =$	Not reported		Mortality	Geiger et	High
minnow			13.4 mg		through,		al., 1985	
(Pimephales			AI/L		Measured			
promelas)		1					l	

Table X. On-to	opic aqı	ıatic toxic	ity studies	that were evaluate	ed for Tetr	achloroethylene	;	
Test Species	Fresh/	Duration	End-point	Concentration(s)	Test	Effect(s)	References	Data Quality
	Salt				Analysis			Evaluation
	Water							
Fathead minnow (Pimephales promelas)	Fresh	96-hour	$LC_{50} = 20.3 \text{ mg/L}$	Not reported	Flow- through, Measured	Mortality	Geiger et al., 1985	High
Fathead minnow (Pimephales promelas)	Fresh	96-hour	LC ₅₀ = 23.8 mg AI/L	Not reported	Flow- through, Not reported	Mortality	Broderius and Kahl, 1985	High
Fathead minnow (Pimephales promelas)	Fresh	96-hour	$LC_{50} = 10.8 \text{ mg}$ AI/L	Not reported	Static, Measured	Mortality	Brooke, 1987	High
Fathead minnow (Pimephales promelas)	Fresh	32-day	LC ₁₀₀ = 4.1 mg AI/L	Not reported	Flow- through, Measured	Mortality	De Foe, 1980	Medium
Fathead minnow (Pimephales promelas)	Fresh	24-hour	LC ₅₀ = 23.5 mg AI/L	Not reported	Flow- through, Measured	Mortality	Alexander et al., 1978	High
Fathead minnow (Pimephales promelas)	Fresh	48-hour	LC ₅₀ = 19.6 mg AI/L	Not reported	Flow- through, Measured	Mortality	Alexander et al., 1978	High
Fathead minnow (Pimephales promelas)	Fresh	72-hour	LC ₅₀ = 18.9 mg AI/L	Not reported	Flow- through, Measured	Mortality	Alexander et al., 1978	High
Fathead minnow (Pimephales promelas)	Fresh	96-hour	LC ₅₀ = 18.4 mg AI/L	Not reported	Flow- through, Measured	Mortality	Alexander et al., 1978	High
Fathead minnow (Pimephales promelas)	Fresh	96-hour	$LC_{50} = 21.4 \text{ mg}$ AI/L	Not reported	Static, Nominal	Mortality	Alexander et al., 1978	High
Fathead minnow (Pimephales promelas)	Fresh	24-hour	EC ₅₀ = 14.4 mg AI/L	Not reported	Flow- through, Measured	Immobilization	Alexander et al., 1978	High
Fathead minnow (Pimephales promelas)	Fresh	48-hour	EC ₅₀ = 14.4 mg AI/L	Not reported	Flow- through, Measured	Immobilization	Alexander et al., 1978	High
Fathead minnow (Pimephales promelas)	Fresh	72-hour	EC ₅₀ = 14.4 mg AI/L	Not reported	Flow- through, Measured	Immobilization	Alexander et al., 1978	High

Test Species				that were evaluate Concentration(s)		Effect(s)		Data Quality
rest species	Salt	Dui ation	Enu-point	Concenti ation(s)	Analysis	Effect(s)	Kerer ences	Evaluation
	Water				Allalysis			Evaluation
Fathead	Fresh	96-hour	EC ₅₀ =	Not non out od	Flow-	Immobilization	Alexander	High
	rresn	90-nour		Not reported		IIIIIIIOOIIIZatioii		High
minnow			14.4 mg		through,		et al., 1978	
(Pimephales			AI/L		Measured			
promelas)					_,			
Fathead	Fresh	96-hour	$LC_{50} =$	Not reported	Flow-	Mortality	Broderius	High
minnow			23.8 mg		through,		and Kahl,	
(Pimephales			AI/L		Measured		1985	
promelas)								
Flagfish	Fresh	96-hour	$LC_{50} =$	Not reported	Flow-	Mortality	Smith et	High
(Jordanella			8.43 mg		through,		al., 1991	
floridae)			AI/L		Measured			
Flagfish	Fresh	10-day	LOEC =	Not reported	Flow-	Mortality	Smith et	High
(Jordanella			3.1 mg	- · · · · · · · · · · · · · · · · · · ·	through,		al., 1991	8
floridae)			AI/L		Measured		, 1991	
Flagfish	Fresh	28-day	LOEC =	Not reported	Flow-	Mortality	Smith et	High
(Jordanella	Picsii	20-day	3.69 mg	Not reported	through,	Wiortanty	al., 1991	Iligii
`					Measured		ai., 1991	
floridae)	E 1	20.1	AI/L	N. 4 1		C -41 1	G '41 4	11. 1
Flagfish	Fresh	28-day	LOEC	Not reported	Flow-	Growth: general	Smith et	High
(Jordanella			>9.3 mg		through,		al., 1991	
floridae)			AI/L		Measured			
Japanese	Fresh	10-day	$LC_{50} = 25$	Not reported	Renewal,	Mortality	Schell,	High
medaka			mg AI/L		Nominal		1987	
(Oryzias								
latipes)								
Japanese	Fresh	10-day	$LC_{100} = 40$	Not reported	Renewal,	Mortality	Schell,	High
medaka		•	mg AI/L	-	Nominal		1987	
(Oryzias								
latipes)								
Japanese	Fresh	10-day	NOEC =	Not reported	Renewal,	Mortality	Schell,	High
medaka	110011	10	17 mg	T. Corresponde	Nominal	1,101,00110	1987	111811
(Oryzias			AI/L		Tionina		1707	
latipes)			711/12					
	Not	96-hour	NOEL =	0, 20, 40, 60, 80	Renewal,	Mortality	Snangar at	High
Japanese medaka			2.19 mg			Williamy	Spencer et al., 2002	Ingn
	reporte d		_	mg/L	Measured		ai., 2002	
(Oryzias	a		AI/L					
latipes)			LOEL =					
			4.37 mg					
			AI/L			4		
Japanese	Not	96-hour	LC50 =	0, 20, 40, 60, 80	Renewal,	Mortality	Spencer et	High
medaka	reporte		26.8 mg	mg/L	Measured		al., 2002	
(Oryzias	d		AI/L					
latipes)								
Japanese	Not	96-hour	LC95 =	0, 20, 40, 60, 80	Renewal,	Mortality	Spencer et	High
medaka	reporte		96.53 mg	mg/L	Measured		al., 2002	
(Oryzias	d		AI/L				,	
latipes)								
Japanese	Not	<17 davs	LOAEL =	0, 1.5, 3, 6, 12, 25	Static,	Reproduction:	Spencer et	unacceptable
medaka	reporte		1.5 mg	mg/L	Nominal	Hatch	al., 2002	
(Oryzias	d		AI/L	mg/L	Tommai	Hawn	u1., 2002	
	l a		AI/L					
latipes)								

				Concentration(s)				Date O1'
Test Species	Salt Water	Duration	End-point	Concentration(s)	Test Analysis	Effect(s)	References	Data Quality Evaluation
Japanese medaka (Oryzias latipes)	Fresh	96-hour	LOAEL = 10 mg AI/L	0, 10 mg/L	Static, Nominal	Growth: Weight	Spencer et al., 2006	unacceptable
Japanese medaka (Oryzias latipes)	Fresh	96-hour	LOAEL = 10 mg AI/L	0, 10 mg/L	Static, Nominal	Growth: Weight	Spencer et al., 2006	unacceptable
Japanese medaka (Oryzias latipes)	Fresh	96-hour	LOAEL = 10 mg AI/L	0, 10 mg/L	Static, Nominal	Growth: Weight	Spencer et al., 2006	unacceptable
Japanese medaka (Oryzias latipes)	Fresh	96-hour	LOAEL = 10 mg AI/L	0, 10 mg/L	Static, Nominal	Growth: Weight	Spencer et al., 2006	unacceptable
Japanese medaka (Oryzias latipes)	Fresh	96-hour	LOAEL = 10 mg AI/L	0, 10 mg/L	Static, Nominal	Growth: Weight	Spencer et al., 2006	unacceptable
Japanese medaka (<i>Oryzias</i> <i>latipes</i>)	Fresh	96-hour	LOAEL = 10 mg AI/L	0, 10 mg/L	Static, Nominal	Growth: Weight	Spencer et al., 2006	unacceptable
Japanese medaka (<i>Oryzias</i> <i>latipes</i>)	Fresh	96-hour	LOAEL = 10 mg AI/L	0, 10 mg/L	Static, Nominal	Growth: Weight	Spencer et al., 2006	unacceptable
Japanese medaka (Oryzias latipes)	Fresh	96-hour	LOAEL = 10 mg AI/L	0, 10 mg/L	Static, Nominal	Growth: Weight	Spencer et al., 2006	unacceptable
Molly (Poecilia sphenops)	Not reporte d	59-day	$\begin{array}{c} LC_{100} = \\ 0.005 \text{ mg} \\ AI/L \end{array}$	Not reported	Renewal, Nominal	Mortality	Loekle et al., 1983	Unacceptable
Sheepshead minnow (Cyprinodon variegatus)	Salt	24-hour	LC ₅₀ >52 mg AI/L	Not reported	Static, Nominal	Mortality	Heitmuller et al., 1981	Unacceptable
Sheepshead minnow (Cyprinodon variegatus)	Salt	48-hour	LC ₅₀ >52 mg AI/L	Not reported	Static, Nominal	Mortality	Heitmuller et al., 1981	Unacceptable
Sheepshead minnow (Cyprinodon variegatus)	Salt	96-hour	LC ₅₀ = >29, <52 mg AI/L	Not reported	Static, Nominal	Mortality	Heitmuller et al., 1981	Unacceptable
Sheepshead minnow (Cyprinodon variegatus)	Salt	96-hour	NOEC = 29 mg AI/L	Not reported	Static, Nominal	Mortality	Heitmuller et al., 1981	Unacceptable

Test Species				that were evaluate Concentration(s)				Data Quality
rest species	Salt	Duration	Enu-point	Concenti ation(s)	Analysis	Effect(s)	ixerer enecs	Evaluation
	Water				Allalysis			Evaluation
Sheepshead	Salt	24-hour	LC ₁₀₀ =	Not reported	Static,	Mortality	Horne et	High
minnow	Sait	24-110u1	31.63 mg	Not reported	Nominal	Wiortanty	al., 1983	Iligii
(Cyprinodon			AI/L		Nominai		ai., 1703	
variegatus)			AI/L					
	Salt	24-hour	LC ₁₀₀ =	Not non out od	Statio	Montality	Homeset	High
Sheepshead minnow	San	24-110u1		Not reported	Static, Nominal	Mortality	Horne et al., 1983	nigii
			31.63 mg AI/L		Noniniai		al., 1965	
(Cyprinodon			AI/L					
variegatus)	Colt.	06 have	$LC_{50} = 9.8$	Not non out od	Statio	Montality	Horne et	High
Sheepshead	Salt	90-nour		Not reported	Static,	Mortality		High
minnow (Comming day)			mg AI/L		Nominal		al., 1983	
(Cyprinodon								
variegatus)	G 1	06.1	T.C.	37 / 1	Ct. t.	3.6 . 11.	11	TT' 1
Inland	Salt	96-hour	$LC_{50} =$	Not reported	Static,	Mortality	Horne et	High
silverside			28.1 mg		Nominal		al., 1983	
(Menidia			AI/L					
beryllina)	1 ,							
Aquatic Inverte		40.1	T.C. 10	37 / 1	G:	3.6 . 12.	D: 1.	TT' 1
Water flea	Fresh	48-hour	$LC_{50} = 18$	Not reported	Static,	Mortality	Richter et	High
(Daphnia			mg AI/L		Measured		al., 1983	
magna)		40.1			~ .	3.5 11		1
Water flea	Fresh	48-hour	$LC_{50} = 9.1$	Not reported	Static,	Mortality	Richter et	High
(Daphnia			mg AI/L		Measured		al., 1983	
magna)	- 1	40.1	EG 0.5	37	a:	T 1 111 .1	D: 1	TT' 1
Water flea	Fresh	48-hour	$EC_{50} = 8.5$	Not reported	Static,	Immobilization	Richter et	High
(Daphnia			mg AI/L		Measured		al., 1983	
magna)	D 1	40.1	EG 7.5	NT 4 1	G:	T 1 '1' .'	D' 1	TT' 1
Water flea	Fresh	48-hour	$EC_{50} = 7.5$	Not reported	Static,	Immobilization	Richter et	High
(Daphnia			mg AI/L		Measured		al., 1983	
magna)	- I	0.4.1	T. C.	37	a:	3.6 . 11.	T D1	TT' 1
Water flea	Fresh	24-hour	$LC_{50} =$	Not reported	Static,	Mortality	LeBlanc,	High
(Daphnia			14.4 mg		Nominal		1980	
magna)	- 1	40.1	AI/L	37	a:	3.6 . 11.	T D1	TT' 1
Water flea	Fresh	48-hour	$LC_{50} =$	Not reported	Static,	Mortality	LeBlanc,	High
(Daphnia			14.4 mg		Nominal		1980	
magna)	- 1	40.1	AI/L	37	a:	3.6 . 11.	T D1	TT' 1
Water flea	Fresh	48-hour	NOEC = 8	Not reported	Static,	Mortality	LeBlanc,	High
(Daphnia			mg AI/L		Nominal		1980	
magna)		• • •	270776		- 1	~	~ " '	1
Water flea	Fresh	28-day	NOEC =	Not reported	Renewal,	Growth: Length		High
(Daphnia			0.505 mg		Measured		1980	
magna)	Б.	20.1	AI/L	37.	D .	D 1	0.11 . 1	TT' 1
Water flea	Fresh	28-day	NOEC =	Not reported	Renewal,	Reproduction:	Call et al.,	High
(Daphnia			0.505 mg		Measured	Reproductive	1980	
magna)			AI/L			success		
		40.1			~ .	(general)	~ 11 .	
Water flea	Fresh	48-hour	$LC_{50} =$	Not reported	Static,	Mortality	Call et al.,	High
(Daphnia			18.1 mg		Measured		1980	
magna)			AI/L					
Water flea	Fresh	48-hour	$EC_{50} = 8.5$	Not reported	Static,	Immobilization	Call et al.,	High
(Daphnia			mg AI/L		Measured		1980	
magna)	1							

				that were evaluate				In
Test Species		Duration	End-point	Concentration(s)		Effect(s)	References	Data Quality
	Salt				Analysis			Evaluation
	Water							
Water flea	Fresh	48-hour	$LC_{50} =$	Not reported	Static,	Mortality	Call et al.,	High
(Daphnia			9.09 mg		Measured		1980	
magna)			AI/L					
Water flea	Fresh	48-hour	$EC_{50} =$	Not reported	Static,	Immobilization	Call et al.,	High
(Daphnia			7.49 mg		Measured		1980	
magna)			AI/L					
Water flea	Fresh	2-day		0, 0.17, 0.33, 0.66,	Renewal,	Mortality	Niederlehn	High
(Ceriodaphnia			2.48751	0.99, 1.5 mg/L	Measured		er et al.,	
dubia)			mg AI/L				1998	
Water flea	Fresh	7-day		0, 0.17, 0.33, 0.66,		Mortality	Niederlehn	High
(Ceriodaphnia			0.82917	0.99, 1.5 mg/L	Measured		er et al.,	
dubia)			mg AI/L				1998	
Water flea	Fresh	7-day		0, 0.17, 0.33, 0.66,	Renewal,	Reproduction:	Niederlehn	High
(Ceriodaphnia			0.331668	0.99, 1.5 mg/L	Measured	Progeny	er et al.,	
dubia)			mg AI/L			counts/numbers	1998	
			LOEL =					
			0.663336					
			mg AI/L					
Water flea	Fresh	7-day		0, 0.17, 0.33, 0.66,		Reproduction:	Niederlehn	High
(Ceriodaphnia			0.663336	0.99, 1.5 mg/L	Measured	Progeny	er et al.,	
dubia)			mg AI/L			counts/numbers		
Brine shrimp	Salt	24-hour	$LC_{50} =$	Not reported	Aquatic-	Mortality	Sanchez-	Low
(Artemia			23.21676		not		Fortun et	
salina)			mg AI/L		reported,		al., 1997	
					Nominal			
Brine shrimp	Salt	24-hour	$LC_{50} =$	Not reported	Aquatic-	Mortality	Sanchez-	Low
(Artemia			6.63336		not		Fortun et	
salina)			mg AI/L		reported,		al., 1997	
					Nominal			
Brine shrimp	Salt	24-hour	$LC_{50} =$	Not reported	Aquatic-	Mortality	Sanchez-	Low
(Artemia			0.331668		not		Fortun et	
salina)			mg AI/L		reported,		al., 1997	
	~ 1	0.5.1	T 0.50	27	Nominal	3.5 11		
Opossum	Salt	96-hour	LC50 =	Not reported	Flow-	Mortality	Hollister et	High
shrimp			2.85 mg		through,		al., 1968	
(Americamysis			AI/L		Measured			
bahia)	G 1:	<i>c</i> 1	NOAFI	37 1	T1	3.6 . 12.	TT 11'	TT' 1
Opossum	Salt	6-day	NOAEL =	Not reported	Flow-	Mortality	Hollister et	High
shrimp			1.4 mg		through,		al., 1968	
(Americamysis			AI/L		Measured			
bahia)	C 14	7.1	LOADI	N. 4 1	E1	M 4 1'4	TT 11' 4 4	TT' 1
Opossum	Salt	7-day	LOAEL =	Not reported	Flow-	Mortality	Hollister et	High
shrimp			1.4 mg		through,		al., 1968	
(Americamysis			AI/L		Measured			
bahia)	0.1	20.1	NOATI	N-4 1	E1	M 4 114	TT-11' 4 · ·	77' 1
Opossum	Salt	28-day	NOAEL =	Not reported	Flow-	Mortality	Hollister et	High
shrimp			0.37 mg		through,		al., 1968	
(Americamysis			AI/L,		Measured			
bahia)			LOAEL =					
		l	0.67 ppm					

Table X. On-to	opic aqu	atic toxic	ity studies	that were evaluate	ed for Tetr	achloroethylene	,	
Test Species	Fresh/	Duration	End-point	Concentration(s)	Test	Effect(s)	References	Data Quality
	Salt				Analysis			Evaluation
	Water							
Opossum	Salt	28-day	NOAEL =	Not reported	Flow-	Reproduction:	Hollister et	High
shrimp			1.39 mg		through,	progeny counts/	al., 1968	
(Americamysis			AI/L		Measured	numbers		
bahia)								
Opossum	Salt	28-day	MATC =	Not reported	Flow-	Endpoint	Hollister et	High
shrimp			>0.3,		through,	reported	al., 1968	
(Americamysis			<0.67 mg		Measured	without a		
bahia)			AI/L			specific effect		
Scud	Fresh	24-hour	$LC_{100} = 60$	Not reported	Static,	Mortality	Horne et	High
(Gammarus			mg AI/L		Nominal		al., 1983	
minus)								
Scud	Fresh	96-hour	$LC_0 =$	Not reported	Static,	Mortality	Horne et	High
(Gammarus			21.6 mg		Nominal		al., 1983	
minus)	E 1	06.1	AI/L	NT 4 1	G. ··	M . 12	11 .	TT' 1
Stonefly	Fresh	96-hour	$LC_{50} = 3.6$	Not reported	Static,	Mortality	Horne et	High
(Tallaperia			mg AI/L		Nominal		al., 1983	
maria)	Fresh	06 1	LC ₅₀ =	NT-444	C4-4:-	M 1:	TT4	TT: -1.
Pond snail,	Fresn	96-hour	$100_{50} = 93.4 \text{ mg}$	Not reported	Static,	Mortality	Horne et	High
pneumonate snail (<i>Physa</i>			AI/L		Nominal		al., 1983	
heterostropha)			AI/L					
Scud	Fresh	96-hour	LC ₅₀ =	Not reported	Static,	Mortality	Horne et	High
(Gammarus	Piesii	90-110u1	28.6 mg	Not reported	Nominal	Wiortanty	al., 1983	High
minus)			AI/L		Nominai		ai., 1903	
Scud	Salt	24-hour	$LC_{100} = 21$	Not reported	Static,	Mortality	Horne et	High
(Gammarus	Sait	24 Hour	mg AI/L	rvot reported	Nominal	Wiortanty	al., 1983	IIIgii
annulatus)			mg m L		Tyonnian		u., 1903	
Scud	Salt	24-hour	LC ₁₀₀ =	Not reported	Static,	Mortality	Horne et	High
(Gammarus			24.7 mg		Nominal		al., 1983	8
annulatus)			AI/L				,	
Scud	Salt	96-hour	$LC_{50} = 9.1$	Not reported	Static,	Mortality	Horne et	High
(Gammarus			mg AI/L	1	Nominal		al., 1983	S
annulatus)								
Daggerblade	Salt	24-hour	$LC_0 = 2.5$	Not reported	Static,	Mortality	Horne et	High
grass shrimp			mg AI/L	-	Nominal		al., 1983	
(Palaemonetes								
pugio)								
Daggerblade	Salt	24-hour	$LC_0 = 2.5$	Not reported	Static,	Mortality	Horne et	High
grass shrimp			mg AI/L		Nominal		al., 1983	
(Palaemonetes								
pugio)								
Daggerblade	Salt	24-hour	$LC_{100} =$	Not reported	Static,	Mortality	Horne et	High
grass shrimp			18.85 mg		Nominal		al., 1983	
(Palaemonetes			AI/L					
pugio)	0.1	061	T.C.	37 / 1	G:	3.6		TT' 1
Calanoid	Salt	96-hour	$LC_{50} =$	Not reported	Static,	Mortality	Horne et	High
copepod			13.2 mg		Nominal		al., 1983	
(Acartia tonsa)	<u> </u>		AI/L		l]	

				Concentration(s)				Data Onalit
Test Species		Duration	Ena-point	Concentration(s)	Test	Effect(s)	References	Data Quality
	Salt				Analysis			Evaluation
Day ahaiman	Water	96-hour	LC ₅₀ =	Not non out od	Static,	Montolity	Horne et	Hiah
Bay shrimp, sand shrimp (Cragnon septemspinosa	Salt	90-nour	17.4 mg AI/L	Not reported	Nominal	Mortality	al., 1983	High
)								
Daggerblade	Salt	96-hour	$LC_{50} = 1.3$	Not reported	Static,	Mortality	Horne et	High
grass shrimp	Sait	70-noui	mg AI/L	Not reported	Nominal	Wiortanty	al., 1983	Iligii
(Palaemonetes			mg / m/L		Ttommar		ui., 1703	
pugio)								
Polychaete	Salt	96-hour	$LC_{50} = 1.3$	Not reported	Static,	Mortality	Horne et	High
worm		, , , , , , , , , , , , , , , , , , , ,	mg AI/L	- · · · · · · · · · · · · · · · · · · ·	Nominal		al., 1983	8
(Neanthes			8				,	
arenaceodenta								
ta)								
Flatworm	Fresh	7-day	$LC_{50} = 1.4$	Not reported	Renewal,	Mortality	Yoshioka et	Low
(Dugesia			mg AI/L	1	Nominal		al., 1986	
japonica)								
Flatworm	Fresh	7-day	$EC_{50} = 0.9$	Not reported	Renewal,	Limb/body part	Yoshioka et	Low
(Dugesia			mg AI/L	-	Nominal	regeneration	al., 1986	
japonica)								
Ciliate	Not	24-hour	$EC_{50} =$	Not reported	Static,	Population	Yoshioka et	Unacceptable
(Tetrahymena	reporte		100 mg		Nominal	growth rate	al., 1985	_
pyriformis)	d		AI/L					
Midge	Fresh	24-hour	$LC_{50} =$	Not reported	Static,	Mortality	Call et al.,	High
(Tanytarsus			54.6 mg		Measured		1983	
dissimilis)			AI/L					
Midge	Fresh	48-hour	$LC_{50} =$	Not reported	Static,	Mortality	Call et al.,	High
(Tanytarsus			30.8 mg		Measured		1983	
dissimilis)			AI/L					
Midge	Fresh	48-hour	$EC_{50} = 7$	Not reported	Aquatic-	Equilibrium	Call et al.,	High
(Tanytarsus			mg AI/L		not		1979	
dissimilis)					reported,			
3.41.1	Г 1	> 0 - 10	T.C.	NT 4 1	Nominal	3.6 . 11.	G 11 + 1	TT' 1
Midge	Fresh	>0, <10-	$LC_{50} =$	Not reported	Aquatic-	Mortality	Call et al.,	High
(Tanytarsus		hour	>60, <80		not		1979	
dissimilis)			mg AI/L		reported,			
N4: 1	E 1	> 0 < 10	1.0	N 4 1	Measured	M 4 1'4-	C 11 4 1	TT' 1
Midge	Fresh	The state of the s	$LC_{50} =$	Not reported	Aquatic-	Mortality	Call et al.,	High
(Tanytarsus		hour	>60, <80		not		1979	
dissimilis)			mg AI/L		reported, Measured			
Midge	Fresh	>0, <10-	LC ₅₀ =	Not reported	Aquatic-	Mortality	Call et al.,	High
(Tanytarsus	1-10811	0, <10- hour	$\sim 60 \text{ mg}$	rioi reported	not	wiortailty	1979	mgn
dissimilis)		noui	AI/L		reported,		17/7	
шьышшы			AI/L		Measured			
Midge	Fresh	>10,	LC ₅₀ =	Not reported	Aquatic-	Mortality	Call et al.,	High
(Tanytarsus	1 10311	<20-hour	$\sim 60 \text{ mg}$	riot reported	not	Tytorianty	1979	111811
dissimilis)		.20 Hour	AI/L		reported,		1717	
www.			7		Measured			

Test Species		Duration	•	Concentration(s)		Effect(s)		Data Quality Evaluation
Midge (Tanytarsus dissimilis)	Fresh	>20, <30-hour	LC ₅₀ = >40, <60 mg AI/L	Not reported	Aquatic- not reported, Measured	Mortality	Call et al., 1979	High
Midge (Tanytarsus dissimilis)	Fresh	>20, <30-hour	LC ₅₀ = >40, <60 mg AI/L	Not reported	Aquatic- not reported, Measured	Mortality	Call et al., 1979	High
Midge (Tanytarsus dissimilis)	Fresh	>30-, <40-hour	LC ₅₀ = >40, <60 mg AI/L	Not reported	Aquatic- not reported, Measured	Mortality	Call et al., 1979	High
Midge (Tanytarsus dissimilis)	Fresh	>30-, <40-hour	LC ₅₀ = >20, <40 mg AI/L	Not reported	Aquatic- not reported, Measured	Mortality	Call et al., 1979	High
Midge (Tanytarsus dissimilis)	Fresh	>30-, <40-hour	$EC_{50} = >0,$ <20 mg AI/L	Not reported	Aquatic- not reported, Measured	Equilibrium	Call et al., 1979	High
Midge (Tanytarsus dissimilis)	Fresh	>30-, <40-hour	EC ₅₀ = >0, <20 mg AI/L	Not reported	Aquatic- not reported, Measured	Equilibrium	Call et al., 1979	High
Midge (Tanytarsus dissimilis)	Fresh	>20, <30-hour	EC ₅₀ = >0, <20 mg AI/L	Not reported	Aquatic- not reported, Measured	Equilibrium	Call et al., 1979	High
Midge (Tanytarsus dissimilis)	Fresh	>20, <30-hour	EC ₅₀ = >0, <20 mg AI/L	Not reported	Aquatic- not reported, Measured	Equilibrium	Call et al., 1979	High
Midge (Tanytarsus dissimilis)	Fresh	>10, <20-hour	EC ₅₀ = >0, <20 mg AI/L	Not reported	Aquatic- not reported, Measured	Equilibrium	Call et al., 1979	High
Midge (Tanytarsus dissimilis)	Fresh	<20-hour	EC ₅₀ = >0, <20 mg AI/L	Not reported	Aquatic- not reported, Measured	Equilibrium	Call et al., 1979	High
Midge (Tanytarsus dissimilis)	Fresh	>0, <10- hour	$EC_{50} = $ $\sim 20 \text{ mg}$ AI/L	Not reported	Aquatic- not reported, Measured	Equilibrium	Call et al., 1979	High
Midge (Tanytarsus dissimilis)	Fresh	>0, <10- hour	$EC_{50} = $ $\sim 20 \text{ mg}$ AI/L	Not reported	Aquatic- not reported, Measured	Equilibrium	Call et al., 1979	High

Test Species				that were evaluate Concentration(s)	Test	Effect(s)		Data Quality
•	Salt		•		Analysis	()		Evaluation
	Water				· ·			
Midge	Fresh	>0, <10-	$EC_{50} =$	Not reported	Aquatic-	Equilibrium	Call et al.,	High
(Tanytarsus		hour	>20, <40		not		1979	
dissimilis)			mg AI/L		reported,			
					Measured			
Midge	Fresh	9-hour	$LC_{100} =$	Not reported	Aquatic-	Mortality	Call et al.,	High
(Tanytarsus			101.8		not		1979	
dissimilis)			mg/AI/L		reported, Measured			
Midge	Fresh	< 10 hour	$LC_{50} =$	Not reported	Aquatic-	Mortality	Call et al.,	High
(Tanytarsus			>60, <80	1	not	•	1979	
dissimilis)			mg AI/L		reported,			
					Measured			
Midge	Fresh	<10 hour	$EC_{50} =$	Not reported	Aquatic-	Equilibrium	Call et al.,	High
(Tanytarsus			>20, <40		not		1979	
dissimilis)			mg AI/L		reported,			
					Measured			
Algae	I		EG 0.1	37		T31	I	T
Green algae	Fresh	2-hour	$EC_{20} = 8.1$	Not reported	Static,	Fluorescence	Brack and	Unacceptable
(Chlamydomo			mg AI/L		Nominal		Frank,	
nas							1998	
reinhardtii)	E1-	72-hour	EC -	N-4 4- 1	C4-4:-	Biomass	Brack and	TT: -1.
Green algae (Chlamydomo	Fresh	/2-nour	$EC_{50} = 3.64 \text{ mg}$	Not reported	Static, Nominal	Biomass	Rottler,	High
nas			AI/L		Nominai		1994	
reinhardtii)			AI/L				1994	
Green algae	Fresh	72-hour	$EC_{10} =$	Not reported	Static,	Biomass	Brack and	High
(Chlamydomo			1.77 mg		Nominal		Rottler,	
nas			AI/L				1994	
reinhardtii)	Г 1	40.1	EC	NT / 1	Cr v;	D 1.1	TD : 1	TT' 1
Green algae	Fresh	48-hour	$EC_{50} =$	Not reported	Static,	Population	Tsai and	High
(Pseudokirchn eriella			10.54 mg AI/L		Nominal	growth rate	Chen, 2007	
subcapitata)			AI/L					
Green algae	Fresh	24-hour	NOAFI =	0, 0.01, 0.02, 0.05,	Static,	Abundance	Labra et al.,	Medium
(Pseudokirchn	1 10311	24-110u1	0.01 mg	0.2, 0.5 mg/L	Nominal	Abundance	2010	Wicdiani
eriella			AI/L	0.2, 0.3 mg/L	rvonniai		2010	
subcapitata)			LOAEL =					
succupitata)			0.02 mg					
			AI/L					
Green algae	Fresh	48-hour		0, 0.01, 0.02, 0.05,	Static,	Abundance	Labra et al.,	Medium
(Pseudokirchn			0.01 mg	0.2, 0.5 mg/L	Nominal		2010	
eriella			AI/L					
subcapitata)			LOAEL =					
			0.02 mg					
			AI/L					
Green algae	Fresh	72-hour		0, 0.01, 0.02, 0.05,	Static,	Abundance	Labra et al.,	Medium
(Pseudokirchn			0.01 mg	0.2, 0.5 mg/L	Nominal		2010	
eriella			AI/L					
subcapitata)			LOAEL =					
			0.02 mg					
			AI/L					

Table X. On-to	pic aqu	ıatic toxic	ity studies	that were evaluate	ed for Tetr	achloroethylene	<u>;</u>	
Test Species				Concentration(s)	Test	Effect(s)		Data Quality
	Salt				Analysis			Evaluation
	Water							
Green algae	Fresh	72-hour	NOAEL =	0, 0.01, 0.02, 0.05,	Static,	Damage	Labra et al.,	Medium
(Pseudokirchn			0.02 mg	0.2, 0.5 mg/L	Nominal		2010	
eriella			AI/L					
subcapitata)			LOAEL =					
1 /			0.05 mg					
			AI/L					
Green algae	Fresh	48-hour		0, 0.01, 0.02, 0.05,	Static,	Damage	Labra et al.,	Medium
(Pseudokirchn			0.02 mg	0.2, 0.5 mg/L	Nominal		2010	
eriella			AI/L	, , , , ,				
subcapitata)			LOAEL =					
,,			0.05 mg					
			AI/L					
Green algae	Fresh	24-hour		0, 0.01, 0.02, 0.05,	Static,	Damage	Labra et al.,	Medium
(Pseudokirchn	110011	2 . 110	0.02 mg	0.2, 0.5 mg/L	Nominal	2 minuge	2010	1110 010111
eriella			AI/L	0.2, 0.5 mg/L	rvommar		2010	
subcapitata)			LOAEL =					
succupitata)			0.05 mg					
			AI/L					
Blue-green	Fresh	24-hour	LOAEL =	0, 23 μL	Static,	Peroxidase	Racsi et al	Unacceptable
algae	1 10311	24-110u1	23 μL	0, 23 μΕ	Nominal	activity	2013	Опассериали
(Synechococcu			23 μΕ		rvommai	activity	2013	
s elongatus)								
Blue-green	Fresh	24 hour	LOAEL =	0, 23 μL	Static,	Abundance	Paggi et al	Unacceptable
algae	FIESH	24-110u1	23 μL	0, 23 μL	Nominal	Abulluance	2013	Onacceptable
(Synechococcu			23 μL		Nominai		2013	
s elongatus)	E1-	4 1	LOAEL =	0.221	C4-4:-	Cl-1111 A	D: -4 -1	I I
Blue-green	Fresh	4-hour		0, 23 μL	Static,	Chlorophyll A	Bacsi et al.,	Unacceptable
algae			23 μL		Nominal	concentration	2013	
(Synechococcu								
s elongatus)	г 1	24.1	NOAFI	0.22 I	G:	C1.1 1 11 A	D : . 1	TT . 1.1
Blue-green	Fresh	24-hour	NOAEL =	0, 23 μL	Static,	Chlorophyll A		Unacceptable
algae			23 μL		Nominal	concentration	2013	
(Synechococcu								
s elongatus)	F 1	4.1	NOAFI	0.22 7	~ · ·	D 11	D 1 1	**
Blue-green	Fresh	4-hour	NOAEL =	0, 23 μL	Static,	Peroxidase	-	Unacceptable
algae			23 μL		Nominal	activity	2013	
(Synechococcu								
s elongatus)								
Blue-green	Fresh	8-hour	LOAEL =	0, 23 μL	Static,	Peroxidase		Unacceptable
algae			23 μL		Nominal	activity	2013	
(Synechococcu								
s elongatus)								
Blue-green	Fresh	12-hour	LOAEL =	0, 23 μL	Static,	Peroxidase		Unacceptable
algae			23 μL		Nominal	activity	2013	
(Synechococcu								
s elongatus)								
Blue-green	Fresh	24-hour	LOAEL =	0, 23 μL	Static,	Thiobarbituric	Bacsi et al.,	Unacceptable
algae			23 μL		Nominal	acid reactive	2013	
(Synechococcu						substances		
s elongatus)								

Test Species				that were evaluate Concentration(s)	Test	Effect(s)		Data Quality
	Salt				Analysis			Evaluation
	Water							
Blue-green	Fresh	12-hour	LOAEL =	0, 23 μL	Static,	Thiobarbituric	Bacsi et al.,	Unacceptable
algae			23 μL	-	Nominal	acid reactive	2013	_
(Synechococcu						substances		
s elongatus)								
Blue-green	Fresh	8-hour	LOAEL =	0, 23 μL	Static,	Thiobarbituric	Bacsi et al.,	Unacceptable
algae			23 μL		Nominal	acid reactive	2013	
(Synechococcu						substances		
s elongatus)								
Blue-green	Fresh	4-hour	LOAEL =	0, 23 μL	Static,	Thiobarbituric		Unacceptable
algae			23 μL		Nominal	acid reactive	2013	
Synechococcu						substances		
s elongatus)								
Algae (not	Fresh	24-hour	LOAEL =	0, 0, 92 μL	Lentic,	Abundance		Unacceptable
reported)			92 μL		Nominal		2013	
Algae (not	Fresh	48-hour	LOAEL =	0, 0, 92 μL	Lentic,	Abundance		Unacceptable
reported)			92 μL		Nominal		2013	
Algae (not	Fresh	72-hour	LOAEL =	0, 0, 92 μL	Lentic,	Chlorophyll A		Unacceptable
reported)	Б. 1	40.1	92 μL	0.000	Nominal	concentration	2013	**
Algae (not	Fresh	48-hour	LOAEL =	0, 0, 92 μL	Lentic,	Thiobarbituric		Unacceptable
reported)			92 μL		Nominal	acid reactive	2013	
	- I		LOAFI	0.150 /7	Ŧ .*	substances	5	**
Algae (not	Fresh	1-day	LOAEL =	0, 150 mg/L	Lentic,	Chlorophyll A		Unacceptable
reported)			150 mg		Nominal	concentration	2015	
11 (D 1	2.1	AI/L	0 150 /F	Ŧ	C1.1 1 11 A	D : . 1	TT . 11
Algae (not	Fresh	2-day	LOAEL =	0, 150 mg/L	Lentic,	Chlorophyll A		Unacceptable
reported)			150 mg		Nominal	concentration	2015	
A1 (E1-	2 1	AI/L NOAEL =	0.150/I	T4'	Cl-111 A	D: -4 -1	I I 4 - 1-1.
Algae (not	Fresh	3-day	150 mg	0, 150 mg/L	Lentic, Nominal	Chlorophyll A concentration	2015	Unacceptable
reported)			AI/L		Nominai	concentration	2013	
Algae (not	Fresh	3-day	NOAEL =	0, 150 mg/L	Lentic,	Abundance	Paggi et al	Unacceptable
Algae (not reported)	FIESH	3-day	150 mg	0, 130 mg/L	Nominal	Abulidance	2015	Опассеріавіє
reported)			AI/L		INOIIIIIai		2013	
Algae (not	Fresh	2-day	NOAEL =	0, 150 mg/L	Lentic,	Abundance	Racsi et al	Unacceptable
reported)	1 10311	2-day	150 mg	0, 130 mg/L	Nominal	Abundance	2015	Спассеріавіс
reported)			AI/L		Nonman		2013	
Algae (not	Fresh	1-day	LOAEL =	0, 150 mg/L	Lentic,	Abundance	Bacsi et al	Unacceptable
reported)	110511	1 day	150 mg	0, 130 mg L	Nominal	110 diladilee	2015	Chacceptack
reperiou)			AI/L		1 (0111111111		2010	
Algae (not	Fresh	1-day	LOAEL =	0, 150 mg/L	Lentic,	Diversity,	Bacsi et al	Unacceptable
reported)			150 mg	,	Nominal	evenness	2015	
			AI/L					
Algae (not	Fresh	2-day	LOAEL =	0, 150 mg/L	Lentic,	Diversity,	Bacsi et al.,	Unacceptable
reported)			150 mg		Nominal	evenness	2015	1
1 /			AI/L					
Algae (not	Fresh	3-day	NOAEL =	0, 150 mg/L	Lentic,	Diversity,	Bacsi et al.,	Unacceptable
reported)			150 mg	, ,	Nominal	evenness	2015	1
			AI/L					
Algae (not	Fresh	1-day	LOAEL =	0, 150 mg/L	Lentic,	Chlorophyll A	Bacsi et al.,	Unacceptable
reported)			150 mg		Nominal	concentration	2015	1
. /			AI/L					

Test Species				that were evaluate Concentration(s)		Effect(s)		Data Quality
	Salt		. 1	(-)	Analysis			Evaluation
	Water							
Algae (not	Fresh	2-day	LOAEL =	0, 150 mg/L	Lentic,	Abundance	Bacsi et al.,	Unacceptable
reported)			150 mg	3	Nominal		2015	1
/			AI/L					
Algae (not	Fresh	3-day	NOAEL =	0, 150 mg/L	Lentic,	Abundance	Bacsi et al	Unacceptable
reported)			150 mg	3	Nominal		2015	1
1 /			AI/L					
Algae (not	Fresh	3-day	NOAEL =	0, 150 mg/L	Lentic,	Diversity,	Bacsi et al.,	Unacceptable
reported)			150 mg	, .	Nominal	Evenness	2015	1
1 /			AI/L					
Amphibians	•		•	1			•	
Wood frog	Fresh	96-hour	$EC_{50} = 7.8$	0, 2.5, 7.5, 12.5,	Renewal,	Deformation	McDaniel	High
(Lithobates			mg AI/L	20, 30, 45 mg/L	Measured		et al., 2004	8
sylvaticus)			8					
Bronze frog	Fresh	96-hour	$EC_{50} = 7.9$	0, 2.5, 7.5, 12.5,	Renewal,	Deformation	McDaniel	High
(Lithobates		, , , , , , , , , , , , , , , , , , , ,	mg AI/L	20, 30, 45 mg/L	Measured		et al., 2004	8
clamitans ssp.			8					
Clamitans)								
American toad	Fresh	96-hour	EC ₅₀ >45	0, 2.5, 7.5, 12.5,	Renewal,	Deformation	McDaniel	High
(Bufo	110511	yo nour	mg AI/L	20, 30, 45 mg/L	Nominal	Belolination	et al., 2004	111511
americanus)			mg m L	20, 30, 13 118 2	TYOMMA		Ct un, 2001	
Spotted	Fresh	96-hour	EC ₅₀ =	0, 2.5, 7.5, 12.5,	Renewal,	Deformation	McDaniel	Medium
salamander	110311	JO HOUI	14.5 mg	20, 30, 45 mg/L	Measured	Deformation	et al., 2004	Wicaram
(Ambystoma			AI/L	20, 30, 13 mg/L	Wicasarca		Ct u1., 2001	
maculatum)			711/12					
Fungi	<u>I</u>	l						
Fungi	Fresh	~30-hour	$LT_{50} =$	0, 1,900 mg/L	Static, Not	Mortality	Steiman et	Low
(Aspergillus	TTOSH	30 Hour	1,900 mg	0, 1,500 mg/L	reported	Williamty	al., 1995	Low
versicolor)			AI/L		reported		u., 1995	
Fungi	Fresh	~20-hour	$LT_{50} =$	0, 1,900 mg/L	Static, Not	Mortality	Steiman et	Low
(Aspergillus	1 10311	20 11001	1,900 mg	0, 1,500 mg/L	reported	wiortanty	al., 1995	Low
cejpii)			AI/L		reported		di., 1993	
Fungi	Fresh	~30-hour	$LT_{50} =$	0, 1,900 mg/L	Static, Not	Mortality	Steiman et	Low
(Coniothrium	1 10311	-30-110u1	1,900 mg	0, 1,500 mg/L	reported	Wiortanty	al., 1995	Low
sp.)			AI/L		reported		ai., 1773	
Fungi	Fresh	~30-hour		0, 1,900 mg/L	Static, Not	Mortality	Steiman et	Low
(Acremonium	1 10311	-30-110ui	1,900 mg	0, 1,500 mg/L	reported	Williamty	al., 1995	Low
tubakii)			AI/L		reported		ai., 1775	
Fungi Class:	Fresh	~20-hour		0, 1,900 mg/L	Static, Not	Mortality	Steiman et	Low
Basidiomycete	110311	~20 - 110u1	1,900 mg	0, 1,900 mg/L	reported	Mortanty	al., 1995	Low
•			AI/L		reported		ai., 1773	
Fungi Class:,	Fresh	~10-hour		0, 1,900 mg/L	Static, Not	Mortality	Steiman et	Low
	1.16811	~10-Hour	1,900 mg	0, 1,500 Hig/L		Mortanty		LOW
Basidiomycete			1,900 mg AI/L		reported		al., 1995	
s Fungi (<i>Phoma</i>	Fresh	~30-hour		0, 1,900 mg/L	Statia Mas	Montality	Staimer at	Low
putaminum)	rresn	~50-nour	$LT_{50} = 1,900 \text{ mg}$	0, 1,900 mg/L	Static, Not reported	Mortality	Steiman et al., 1995	Low
	ī	•	i i yiiii ma	i	CENOTTEO			i