

Appendix E

Toxicological Data from the Environmental Protection Agency's Biological Evaluation for the Registration of Malathion

Terrestrial*Birds***Table 6-3 from the BE. Available Median Lethal Doses (oral) for Birds Exposed to Malathion**

Species Tested	% ai	LD ₅₀ (mg a.i./kg-bw)	Confidence Intervals (where available)	Reference MRID or ECOTOX number
Mallard Duck (<i>Anas platyrhynchos</i>)	95	1485*	(1020-2150)	MRID 00160000; Hudson <i>et. al.</i> 1984 (ECOTOX 50386)
Mallard Duck (<i>Anas platyrhynchos</i>)	96	>2250	NA	MRID 48963307
Ring-Necked Pheasant (<i>Phasianus colchicus</i>)	95	167*	(120-231)	MRID 00160000
Ring-Necked Pheasant ¹ (<i>Phasianus colchicus</i>)	96	136*	108-170	MRID 48963305
Sharp tailed grouse (<i>Tympanuchus phasianellus</i>)	tech	220*	(171-240)	Crabtree, D.G., 1965, Denver Wildlife Res. Center, USFWS as cited in RED
Northern Bobwhite Quail (<i>Colinus virginianus</i>)	96	361*	298-440	MRID 48153114
Canary (<i>Serinus canaria</i>)	96	>2400	NA	MRID 48571805
Horned lark (<i>Eremophila alpestris</i>)	95	403*	(247-658)	MRID 00160000
Domestic chicken (<i>Gallus domesticus</i>)	97.7	524.8*	NR	Gupta and Paul, 1971 (ECOTOX 36916)
Domestic chicken (<i>Gallus domesticus</i>)	50	281	NR	McDonald et al. 1964 (ECOTOX 162524)

Table 6-5 from the BE. Median Lethal Concentrations Resulting from Sub-acute Dietary Exposures

Species Tested	% ai	LC ₅₀ (mg a.i./kg-diet)	Confidence Intervals (where available)	Reference MRID or ECOTOX
Ring-Necked Pheasant (<i>Phasianus colchicus</i>)	95	2639	2220-3098	MRID 00022923; Hill <i>et al.</i> 1975 (ECOTOX 35243)
Ring-Necked Pheasant (<i>Phasianus colchicus</i>)	96	2505	2074-3025	MRID 48963301
Northern Bobwhite Quail (<i>Colinus virginianus</i>)	95	3497	2959-4011	MRID 00022923
Northern Bobwhite Quail (<i>Colinus virginianus</i>) ¹	96	2022*	1565-2612	MRID 48153106
Japanese Quail (<i>Coturnix japonica</i>)	95	2962	2453-3656	MRID 00022923
Japanese Quail (<i>Coturnix japonica</i>)	100	2128	1780-2546	MRID 00062489; Heath <i>et al.</i> 1972 (ECOTOX 35214)
Japanese Quail (<i>Coturnix japonica</i>)	95	2968	NA	MRID 40910905 Hill <i>et al.</i> 1986 (ECOTOX 50181)
Mallard Duck (<i>Anas platyrhynchos</i>)	95	>5000	NA	MRID 00022923
Mallard Duck (<i>Anas platyrhynchos</i>)	96	>5850	NA	MRID 48963303

Table 6-6 of the BE. Growth Effects in Birds Exposed to Malathion (Acute)

Test species	Growth Effect	NOEC/ LOEC (mg/kg-diet)	Test material	Source
Ring-necked pheasant	Decreased body wt gain from day 0-5 at ≥551 ppm-diet; Overall body wt gain reductions at ≥1010	304/ 551	TGAI	MRID 48963301
Mallard duck	Decreased body wt gain from day 0-5, reduced body wt	1845 / 3170	TGAI	MRID 48963303

Test species	Growth Effect	NOEC/ LOEC (mg/kg-diet)	Test material	Source
Japanese quail	Increased liver wt (61 d)	NA/100	TGAI	Cecil <i>et al.</i> 1974 (Ecotox 35083)
Domestic chicken	No effect on wt	100/NA	NR	Pym <i>et al.</i> 1984 (Ecotox 38417)
Domestic chicken	No effect on wt	≥100/NA	NR	McDonald <i>et al.</i> 1964 (Ecotox 162521)
Domestic chicken	Decreased body wt (90 days)	400/800	NR	Varshneya <i>et al.</i> 1986 & 1988 (Ecotox 89120, 90699)
	Effects on liver wt	NA/ 400		

Table 6-6 of the BE. Growth Effects in Birds Exposed to Malathion (Chronic)

Test species	Growth Effect	NOEC/ LOEC	Test material (mg/kg-diet)	Source
Northern Bobwhite quail	Decreased body wt (@ 2wks and test termination day 161)	350/1200	TGAI	MRID 43501501
Mallard duck	Decreased body wt (test termination day 161)	1200/2400	TGAI	MRID 42782101
Domestic chicken	Effects on weight gain (252 d duration)	237.5/475	TGAI	Lillie <i>et al.</i> 1973 (Ecotox 37706)
Test species	Growth Effect	NOEC/ LOEC mg/kg-bw (all acute duration)	Test material (mg/kg-diet)	Source
Ring-necked pheasant	No effect on body wt	218.5 / NA	TGAI	Day <i>et al.</i> 1995 (Ecotox 63276)
	Effects on thymus and spleen organ weights (3 d)	87.4/ 218.5		
Ring-necked pheasant	Decreased average female body wt from days 0-3	63/ 105	TGAI	MRID 48963305

Test species	Growth Effect	NOEC/ LOEC	Test material (mg/kg-diet)	Source
Canary	Decreased (NS) in average female body weight (wt) from day 0-14; No effect on male or overall (combined sex) body wt.	300 / 600	TGAI	MRID 48571805

NA = not available (effects at all doses/concentration tested, or no effect at all doses/concentrations tested); NR = not reported; NS = not statistically different from control

Terrestrial Invertebrates

Table 10-2 from the BE. 48-hr Mortality of Malathion (TGAI) to *Apis mellifera*.

Observations of mortality and sublethal effects				
Dose (µg ai/bee)	No. bees	2.25/3 hours Number dead (% mortality)	24 hours Number dead (% mortality)	48 hours Number dead (% mortality)
Negative control	30	0 (0%)	0 (0%)	0 (0%)
Acetone control	30	2 (7%)	2 (7%)	2 (7%)
0.025	30	0 (0%)	0 (0%)	2 (7%)
0.05	30	0 (0%)	0 (0%)	1 (3%)
0.10	30	1 (3%)	2 (7%)	5 (17%); 1L
0.20	30	0 (0%); 2L	12 (40%); 1I; 1L	16 (53%); 1L
0.40	30	10 (33%); 5I, 2L	30 (100%)	30 (100%)
0.80	30	22 (73%); 4I; 2L	30 (100%)	30 (100%)

I – immobile; L - lethargic

Table 10-7 from the BE. Available Honey Bee (*Apis mellifera*) Toxicity Data from Guideline Studies (Acute Contact and Oral).

% AI	LD ₅₀ /LC ₅₀ (µg a.i./bee)	MRID	CLASSIFICATION	COMMENTS
TGAI	0.27 (contact)	05001991	Acceptable	Results appear to be the 1964 study as reported in MRID 05004151. Slope = 8.5; 24-hr
	0.38 (oral)			
	0.25 (contact)	05004151	Acceptable	Results are weighted means of mean values reported for two tests conducted in 1964 and three tests conducted in 1965. Slope = 8.3; 24-hr
	0.38 (oral)			Results based on test conducted in 1964. Slope = 3.5; 24-hr
	0.709 (contact)	0001999	Acceptable	96-hr value; slope = 8.04
	0.46 (contact)	05008990	Acceptable	72-hr values
	0.156 (contact)	49270301	Acceptable	48-hr; 95% C.I. = 0.1-0.2 µg/bee
	1.66 (oral)	49270302	Acceptable	48-hr
42%	0.3662 (contact)	49051205	Acceptable	48-hr values
	0.9635 (oral)			

Aquatic*Fish and Aquatic-Phase Amphibians***Table 2-3 from the BE. Available 96-hr Median Lethal Concentration (LC₅₀) Data for Fish and Amphibians Exposed to Malathion as TGAI or Formulation**

Order	Species Name	Common Name	LC ₅₀ Value (µg/L)	Test Material	Reference No.
Anura	<i>Euphlyctis hexadactylus</i>	True Frog	0.59	Formulation	E11521
Salmoniformes	<i>Oncorhynchus mykiss</i>	Rainbow Trout	4.1	TGAI	MRID 40089001; E6797
Perciformes	<i>Morone saxatilis</i>	Striped Bass	12	TGAI	E15472
Perciformes	<i>Lepomis macrochirus</i>	Bluegill	20	TGAI	MRID 40089001; E6797
Gasterosteiformes	<i>Gasterosteus aculeatus</i>	Three-spined stickleback	20.9*	TGAI	MRID 48998006
Salmoniformes	<i>Oncorhynchus tshawytscha</i>	Chinook Salmon	23	Formulation	E522
Perciformes	<i>Morone saxatilis</i>	Striped Bass	24.5	Unknown ²	E11334
Perciformes	<i>Lepomis macrochirus</i>	Bluegill	30	TGAI	MRID 40089001; E6797
Salmoniformes	<i>Oncorhynchus mykiss</i>	Rainbow Trout	33	TGAI	MRID 48078003
Cyprinodontiformes	<i>Cyprinodon variegatus</i>	Sheepshead Minnow	33	TGAI	MRID 41174301
Perciformes	<i>Lepomis macrochirus</i>	Bluegill	40	TGAI	MRID 40089001; E6797

Order	Species Name	Common Name	LC ₅₀ Value (µg/L)	Test Material	Reference No.
Perciformes	<i>Tilapia sp.</i>	Tilapia	45.99	Formulation	E157374
Perciformes	<i>Lepomis macrochirus</i>	bluegill sunfish	48*	TGAI	MRID 47540304
Cyprinodontiformes	<i>Cyprinodon variegatus</i>	Sheepshead Minnow	51	TGAI	E5074
Cyprinodontiformes	<i>Cyprinodon variegatus</i>	Sheepshead Minnow	51.9*	TGAI	MRID 49055701
Perciformes	<i>Lepomis macrochirus</i>	Bluegill	53	Formulation	MRID 49051202
Perciformes	<i>Lepomis macrochirus</i>	Bluegill	55	TGAI	MRID 40089001; E6797
Cyprinodontiformes	<i>Cyprinodon variegatus</i>	Sheepshead Minnow	55	TGAI	MRID 41252101
Perciformes	<i>Lepomis microlophus</i>	Redear Sunfish	62	TGAI	MRID 40089001; E6797
Perciformes	<i>Morone saxatilis</i>	Striped Bass	64	TGAI	E15472
Perciformes	<i>Sander vitreus</i>	Walleye	64	TGAI	MRID 40089001; E6797
Perciformes	<i>Morone saxatilis</i>	Striped Bass	65	Unknown	E11334
Perciformes	<i>Morone saxatilis</i>	Striped Bass	66	TGAI	E15472
Salmoniformes	<i>Oncorhynchus mykiss</i>	Rainbow Trout	66	TGAI	MRID 40089001; E6797

Order	Species Name	Common Name	LC ₅₀ Value (µg/L)	Test Material	Reference No.
Salmoniformes	<i>Oncorhynchus tshawytscha</i>	Chinook Salmon	68.4	Formulation	E2159
Salmoniformes	<i>Salvelinus namaycush</i>	Lake Trout, Siscowet	76	TGAI	MRID 40089001; E6797
Gasterosteiformes	<i>Gasterosteus aculeatus</i>	Threespine Stickleback	76.9	Formulation	E522
Osteoglossiformes	<i>Notopterus notopterus</i>	Asiatic Knifefish	77	TGAI	E4022
Salmoniformes	<i>Oncorhynchus mykiss</i>	Rainbow Trout	80	TGAI	MRID 40089001; E6797
Cyprinodontiformes	<i>Fundulus heteroclitus</i>	Mummichog	80	Unknown	E628
Anguilliformes	<i>Anguilla rostrata</i>	American Eel	82	Unknown	E628
Perciformes	<i>Lepomis macrochirus</i>	Bluegill	84	TGAI	MRID 40089001; E6797
Perciformes	<i>Lepomis macrochirus</i>	Bluegill	87	TGAI	MRID 40089001; E6797
Salmoniformes	<i>Oncorhynchus mykiss</i>	Rainbow Trout	94	TGAI	MRID 40089001; E6797
Gasterosteiformes	<i>Gasterosteus aculeatus</i>	Threespine Stickleback	94	Formulation	E522
Perciformes	<i>Morone saxatilis</i>	Striped Bass	100	TGAI	E15472

Order	Species Name	Common Name	LC ₅₀ Value (µg/L)	Test Material	Reference No.
Salmoniformes	<i>Oncorhynchus mykiss</i>	Rainbow Trout	100	TGAI	MRID 40089001; E6797
Salmoniformes	<i>Salmo trutta</i>	Brown Trout	101	TGAI	MRID 40089001; E6797
Perciformes	<i>Lepomis macrochirus</i>	Bluegill	103	TGAI	MRID 40089001; E6797
Perciformes	<i>Lepomis macrochirus</i>	Bluegill	110	TGAI	MRID 40089001; E6797
Characiformes	<i>Nannostomus unifasciatus</i>	Online Pencilfish	111	Formulation	E162408
Cyprinodontiformes	<i>Gambusia affinis</i>	Western Mosquitofish	112.2	Formulation	E5806
Siluriformes	<i>Clarias batrachus</i>	Walking Catfish	125	Formulation	E120903
Atheriniformes	<i>Menidia menidia</i>	Atlantic Silverside	125	Unknown	E628
Perciformes	<i>Lepomis cyanellus</i>	Green Sunfish	130*	TGAI	MRID 49364101
Salmoniformes	<i>Oncorhynchus mykiss</i>	Rainbow Trout	138	TGAI	MRID 40089001; E6797
Perciformes	<i>Oreochromis niloticus</i>	Nile Tilapia	140	Unknown	E3296
Salmoniformes	<i>Salvelinus namaycush</i>	Lake Trout, Siscowet	142	TGAI	MRID 40089001; E6797

Order	Species Name	Common Name	LC ₅₀ Value (µg/L)	Test Material	Reference No.
Perciformes	<i>Lepomis cyanellus</i>	Green Sunfish	146	TGAI	MRID 40089001; E6797
Salmoniformes	<i>Oncorhynchus mykiss</i>	Rainbow Trout	152	TGAI	E12182
Cypriniformes	<i>Danio rerio</i>	Zebra Danio	155	Unknown	E12047
Perciformes	<i>Oreochromis mossambicus</i>	Mozambique Tilapia	165	Formulation	E118389
Perciformes	<i>Oreochromis mossambicus</i>	Mozambique Tilapia	165	Formulation	E11603
Perciformes	<i>Lepomis cyanellus</i>	Green Sunfish	170	TGAI	MRID 40089001; E6797
Salmoniformes	<i>Oncorhynchus kisutch</i>	Silver Salmon	170	TGAI	MRID 40089001; E6797
Salmoniformes	<i>Oncorhynchus mykiss</i>	Rainbow Trout	170*	TGAI	MRID 47540302
Salmoniformes	<i>Oncorhynchus clarkii</i>	Cutthroat Trout	174	TGAI	MRID 40089001; E6797
Perciformes	<i>Lepomis cyanellus</i>	Green Sunfish	175	TGAI	MRID 40089001; E6797
Salmoniformes	<i>Oncorhynchus kisutch</i>	Silver Salmon	177	TGAI	MRID 40089001; E6797
Anura	<i>Pseudacris triseriata</i>	Striped, Northern Chorus Frog	200	TGAI	MRID 40089001; E6797

Order	Species Name	Common Name	LC ₅₀ Value (µg/L)	Test Material	Reference No.
Salmoniformes	<i>Oncorhynchus mykiss</i>	Rainbow Trout	200	TGAI	MRID 40089001; E6797
Salmoniformes	<i>Oncorhynchus clarkii</i>	Cutthroat Trout	230	TGAI	MRID 40089001; E6797
Salmoniformes	<i>Oncorhynchus clarkii</i>	Cutthroat Trout	237	TGAI	MRID 40089001; E6797
Characiformes	<i>Paracheirodon axelrodi</i>	Neon	247	Formulation	E162408
Perciformes	<i>Micropterus salmoides</i>	Largemouth Bass	250	TGAI	MRID 40089001; E6797
Cyprinodontiformes	<i>Fundulus majalis</i>	Striped Killifish	250	Unknown	E628
Characiformes	<i>Hyphessobrycon erythrostigma</i>	Bleeding Heart Tetra	252	Formulation	E162408
Perciformes	<i>Perca flavescens</i>	Yellow Perch	263	TGAI	MRID 40089001; E6797
Salmoniformes	<i>Oncorhynchus clarkii</i>	Cutthroat Trout	270	TGAI	MRID 40089001; E6797
Salmoniformes	<i>Oncorhynchus clarkii</i>	Cutthroat Trout	280	TGAI	MRID 40089001; E6797
Perciformes	<i>Micropterus salmoides</i>	Largemouth Bass	285	TGAI	MRID 40089001; E6797
Salmoniformes	<i>Oncorhynchus mykiss</i>	Rainbow Trout	290	Formulation	MRID 47540308

Order	Species Name	Common Name	LC ₅₀ Value (µg/L)	Test Material	Reference No.
Cyprinodontiformes	<i>Gambusia affinis</i>	Western Mosquitofish	300	Unknown	E20475
Salmoniformes	<i>Salmo salar</i>	Atlantic Salmon	313.6	TGAI	E16946
Perciformes	<i>Lepomis macrochirus</i>	Bluegill	336.6	TGAI	E77525
Cyprinodontiformes	<i>Jordanella floridae</i>	Flagfish	349	TGAI	E995
Cypriniformes	<i>Leuciscus cephalus</i>	Chub	361.4	Formulation	E104602
Cyprinodontiformes	<i>Fundulus heteroclitus</i>	Mummichog	400	Unknown	E628
Anura	<i>Bufo woodhousei</i> ssp. <i>fowleri</i>	Fowler's Toad	420	TGAI	MRID 40089001; E6797
Perciformes	<i>Oreochromis mossambicus</i>	Mozambique Tilapia	444	Formulation	E118389; E11603
Cypriniformes	<i>Puntius sophore</i>	Pool Barb	495	Formulation	E765
Perciformes	<i>Channa punctata</i>	Snake-Head Catfish	522	Formulation	E765
Mugiliformes	<i>Mugil cephalus</i>	Striped Mullet	550	Unknown	E628
Perciformes	<i>Trichogaster pectoralis</i>	Snake-Skinned Gourami	560	Formulation	E118389
Perciformes	<i>Oreochromis niloticus</i>	Nile Tilapia	604.2	Formulation	E161048
Cypriniformes	<i>Cyprinus carpio</i>	Common Carp	710	Formulation	E6999

Order	Species Name	Common Name	LC ₅₀ Value (µg/L)	Test Material	Reference No.
Salmoniformes	<i>Oncorhynchus kisutch</i>	Silver Salmon	720*	TGAI	MRID 49479003
Cypriniformes	<i>Labeo rohita</i>	Rohu	750	Formulation	E154643
Cypriniformes	<i>Danio rerio</i>	Zebra Danio	759	Unknown	E93401
Perciformes	<i>Channa punctata</i>	Snake-Head Catfish	874	Unknown	E17200
Perciformes	<i>Channa punctata</i>	Snake-Head Catfish	894	TGAI	E14673
Siluriformes	<i>Otocinclus affinis</i>	Dwarf Sucking Catfish	1067	Formulation	E162408
Cypriniformes	<i>Cirrhinus mrigala</i>	Carp, Hawk Fish	1125	Formulation	E9277
Anura	<i>Hoplobatrachus tigerinus</i>	Indian Bullfrog	1410	Unknown	E61878
Perciformes	<i>Colisa fasciata</i>	Giant Gourami	1480	TGAI	E74220
Perciformes	<i>Oreochromis niloticus</i>	Nile Tilapia	1500	TGAI	E162438
Anura	<i>NR Anura</i>	Frog And Toad Order	1500	Formulation	E20421
Beloniformes	<i>Oryzias latipes</i>	Japanese Medaka	1500*	TGAI	MRID 49364102
Characiformes	<i>Colossoma macropomum</i>	Blackfin Pacu	1507	Formulation	E162408
Cypriniformes	<i>Cyprinus carpio</i>	Common Carp	1575	Formulation	E9277

Order	Species Name	Common Name	LC ₅₀ Value (µg/L)	Test Material	Reference No.
Cypriniformes	<i>Puntius sophore</i>	Pool Barb	1600	Formulation	E9276
Anura	<i>Euphlyctis cyanophlyctis</i>	Indian Skittering Frog	1762	Formulation	E158906
Anura	<i>Euphlyctis cyanophlyctis</i>	Indian Skittering Frog	1794	Formulation	E158906
Perciformes	<i>Oreochromis niloticus</i>	Nile Tilapia	1980	Formulation	E89874
Perciformes	<i>Oreochromis mossambicus</i>	Mozambique Tilapia	2000	TGAI	MRID 40089001; E6797
Atheriniformes	<i>Melanotaenia fluviatilis</i>	Crimson-Spotted Rainbowfish	2090	Formulation	E15030
Cypriniformes	<i>Cyprinus carpio</i>	Common Carp	2100	Formulation	E6999
Perciformes	<i>Colisa fasciata</i>	Giant Gourami	2120	TGAI	E74220
Anura	<i>Rana boylii</i>	Foothill Yellow-Legged Frog	2137	TGAI	E92498
Perciformes	<i>Oreochromis niloticus</i>	Nile Tilapia	2200	TGAI	E20087
Perciformes	<i>Oreochromis mossambicus</i>	Mozambique Tilapia	2400	TGAI	MRID 40089001; E6797
Cypriniformes	<i>Labeo rohita</i>	Rohu	2490	Formulation	E9277

Order	Species Name	Common Name	LC ₅₀ Value (µg/L)	Test Material	Reference No.
Perciformes	<i>Channa punctata</i>	Snake-Head Catfish	2500	Unknown	E89754
Cypriniformes	<i>Carassius auratus</i>	Goldfish	2610	Unknown	E563
Cyprinodontiformes	<i>Gambusia affinis</i>	Western Mosquitofish	2900*	TGAI	MRID 49422801
Cypriniformes	<i>Nemacheilus angorae</i>	River Loach	3024	Unknown	E106641
Cyprinodontiformes	<i>Poecilia reticulata</i>	Guppy	3069	TGAI	E5370
Cypriniformes	<i>Carassius auratus</i>	Goldfish	3150	Unknown	E563
Tetraodontiformes	<i>Sphoeroides maculatus</i>	Northern Puffer	3250	Unknown	E628
Cypriniformes	<i>Alburnus alburnus</i>	Bleak	3591	TGAI	E14861
Cypriniformes	<i>Barbus dorsalis</i>	Two Spot African Barb	3700	Formulation	E6722
Perciformes	<i>Channa punctata</i>	Snake-Head Catfish	3890	Formulation	E11888
Cypriniformes	<i>Barbus ticto</i>	Two-Spot Or Tic Tac Toe Barb	4000	TGAI	E10763
Cypriniformes	<i>Rasbora daniconius</i>	Slender Rasbora	4000	TGAI	E10763
Cypriniformes	<i>Barbus ticto</i>	Two-Spot Or Tic Tac Toe Barb	4000	TGAI	E10764
Cypriniformes	<i>Labeo rohita</i>	Rohu	4500	Formulation	E158903

Order	Species Name	Common Name	LC ₅₀ Value (µg/L)	Test Material	Reference No.
Cypriniformes	<i>Labeo rohita</i>	Rohu	4500	Formulation	E118200
Cypriniformes	<i>Labeo rohita</i>	Rohu	4500	Formulation	E118295
Perciformes	<i>Channa punctata</i>	Snake-Head Catfish	4510	TGAI	E11888
Anura	<i>Xenopus laevis</i>	African Clawed Frog	4710*	TGAI	MRID 48409302
Cypriniformes	<i>Rhodeus sericeus ssp. amarus</i>	Bitterling	4807	TGAI	E14861
Perciformes	<i>Oreochromis mossambicus X niloticus</i>	Hybrid Tilapia	4939	Technical (84%)	E166
Cypriniformes	<i>Rasbora daniconius</i>	Slender Rasbora	6000	TGAI	E10764
Anura	<i>Lithobates clamitans</i>	Green Frog	6470	Formulation	E161203
Cypriniformes	<i>Cyprinus carpio</i>	Common Carp	6590	TGAI	MRID 40089001; E6797
Perciformes	<i>Channa punctata</i>	Snake-Head Catfish	6610	Formulation	E81095
Perciformes	<i>Channa punctata</i>	Snake-Head Catfish	6650	Formulation	E81095
Perciformes	<i>Channa orientalis</i>	Smooth-Breasted Snakefish	6950	Formulation	E5736
Perciformes	<i>Channa orientalis</i>	Smooth-Breasted Snakefish	7050	Formulation	E5736

Order	Species Name	Common Name	LC ₅₀ Value (µg/L)	Test Material	Reference No.
Cypriniformes	<i>Pimephales promelas</i>	Fathead Minnow	7125	Formulation	E2155
Cypriniformes	<i>Pimephales promelas</i>	Fathead Minnow	7125	Formulation	E2155
Perciformes	<i>Channa orientalis</i>	Smooth-Breasted Snakefish	7350	Formulation	E5736
Cypriniformes	<i>Cirrhinus mrigala</i>	Carp, Hawk Fish	7500	Formulation	E118383
Siluriformes	<i>Mystus tengara</i>	Catfish	7600	TGAI	E94525
Perciformes	<i>Channa orientalis</i>	Smooth-Breasted Snakefish	7600	Formulation	E5736
Siluriformes	<i>Ictalurus punctatus</i>	Channel Catfish	7620	TGAI	MRID 40089001; E6797
Cypriniformes	<i>Pimephales promelas</i>	Fathead Minnow	>7980	TGAI	MRID 48998004
Cypriniformes	<i>Carassius auratus</i>	Goldfish	8066	TGAI	E13456
Siluriformes	<i>Heteropneustes fossilis</i>	Indian Catfish	8500	Unknown	E17539
Cypriniformes	<i>Pimephales promelas</i>	Fathead Minnow	8650	TGAI	MRID 40089001; E6797
Siluriformes	<i>Ictalurus punctatus</i>	Channel Catfish	8970	TGAI	MRID 40089001; E6797
Cypriniformes	<i>Ptychocheilus lucius</i>	Colorado Squawfish	9140	TGAI	E13270

Order	Species Name	Common Name	LC ₅₀ Value (µg/L)	Test Material	Reference No.
Siluriformes	<i>Ictalurus punctatus</i>	Channel Catfish	9650	Formulation	E822
Beloniformes	<i>Oryzias latipes</i>	Japanese Medaka	9700	TGAI	E89099
Anura	<i>Xenopus laevis</i>	African Clawed Frog	9810	TGAI	E66506
Cypriniformes	<i>Cyprinus carpio</i>	Common Carp	>10000	TGAI	MRID 48998005
Cypriniformes	<i>Carassius auratus</i>	Goldfish	10700	TGAI	MRID 40089001; E6797
Cypriniformes	<i>Pimephales promelas</i>	Fathead Minnow	11000	TGAI	MRID 40089001; E6797
Perciformes	<i>Anabas testudineus</i>	Climbing Perch	11210	TGAI	E94525
Siluriformes	<i>Ameiurus melas</i>	Black Bullhead	11700	TGAI	MRID 40089001; E6797
Siluriformes	<i>Ameiurus melas</i>	Black Bullhead	12900	TGAI	MRID 40089001; E6797
Cypriniformes	<i>Cyprinus carpio</i>	Common Carp	12930	Formulation	E6999
Cypriniformes	<i>Lepidocephalichthys thermalis</i>	Common Spiny Loach	13790	Unknown	E17207
Cypriniformes	<i>Pimephales promelas</i>	Fathead Minnow	14100	TGAI	E12859
Siluriformes	<i>Heteropneustes fossilis</i>	Indian Catfish	15000	Formulation	E15179

Order	Species Name	Common Name	LC ₅₀ Value (µg/L)	Test Material	Reference No.
Cypriniformes	<i>Gila elegans</i>	Bonytail	15300	TGAI	E13270
Perciformes	<i>Anabas testudineus</i>	Climbing Perch	16000	Unknown	E88437
Cypriniformes	<i>Cyprinus carpio</i>	Common Carp	16600	Formulation	E89874
Siluriformes	<i>Ictalurus furcatus</i>	Blue Catfish	17000	TGAI	E112921
Cypriniformes	<i>Cyprinus carpio</i>	Common Carp	23180	TGAI	E14861
Cypriniformes	<i>Pimephales promelas</i>	Fathead Minnow	28300*	TGAI	MRID 49252802
Siluriformes	<i>Heteropneustes fossilis</i>	Indian Catfish	28500	TGAI	E94525
Anura	<i>Pelophylax ridibundus</i>	Lowland Frog	29000	Formulation	E104561
Anura	<i>Pelophylax ridibundus</i>	Lowland Frog	38000	TGAI	E104561
Siluriformes	<i>Heteropneustes fossilis</i>	Indian Catfish	38000	Formulation	E470
Siluriformes	<i>Heteropneustes fossilis</i>	Indian Catfish	42000	Formulation	E470
Siluriformes	<i>Heteropneustes fossilis</i>	Indian Catfish	45000	Formulation	E5064
Siluriformes	<i>Heteropneustes fossilis</i>	Indian Catfish	45000	Formulation	E470
Siluriformes	<i>Clarias batrachus</i>	Walking Catfish	448000	TGAI	E89006

*=Included in SSD given known information regarding test material source.

*Aquatic Invertebrates***Table 3-3 from the BE. 48 and 96 hr EC/LC₅₀ Toxicity Values for Arthropods and Mollusks.**

Order	Species name	Common Name	EC/LC ₅₀ Value (µg/L)	% Purity	Reference No.
Amphipoda	<i>Hyalella sp.</i>	Scud	0.06	99.1	120900
Amphipoda	<i>Hyalella sp.</i>	Scud	0.08	99.1	120900
Amphipoda	<i>Hyalella sp.</i>	Scud	0.19	99.1	120900
Amphipoda	<i>Gammarus pulex</i>	Scud	0.33	100	153561
Decapoda	Cancer	Dungeness Or Edible Crab	0.4	95	6793
Amphipoda	<i>Gammarus fasciatus</i>	Scud	0.5	100	887
Amphipoda	<i>Gammarus fasciatus</i>	Scud	0.5	95	MRID 40089001; 6797
Diplostraca	Ceriodaphnia	Water Flea	0.5	100	67777
Diplostraca	<i>Ceriodaphnia dubia</i>	Water Flea	0.58	98	121216
Diplostraca	Simocephalus	Water Flea	0.59	95	MRID 40089001; E6797
Cladocera	Simocephalus	Water Flea	0.59	TGAI	MRID40098001
Amphipoda	<i>Gammarus pulex</i>	Scud	0.68	97.78	153560
Plecoptera	<i>Isoperla sp.</i>	Stonefly	0.69	95	MRID 40089001; E6797

Order	Species name	Common Name	EC/LC ₅₀ Value (µg/L)	% Purity	Reference No.
Amphipoda	<i>Gammarus fasciatus</i>	Scud	0.76	95	MRID 40089001; E6797
Diplostraca	<i>Daphnia magna</i>	Water Flea	0.9	100	104559
Amphipoda	<i>Gammarus fasciatus</i>	Scud	0.9	95	MRID 40089001; E6797
Diptera	<i>Anopheles quadrimaculatus</i>	Common Malaria Mosquito	1	100	56989
Diplostraca	Daphnia	Water Flea	1	95	MRID 40089001; E6797
Diplostraca	<i>Ceriodaphnia dubia</i>	Water Flea	1.02	98	121216
Plecoptera	<i>Pteronarcella badia</i>	Stonefly	1.1	95	MRID 40089001; E6797
Amphipoda	<i>Gammarus pulex</i>	Scud	1.1385	100	153561
Decapoda	<i>Cancer magister</i>	Dungeness Or Edible Crab	1.2	95	6793
Trichoptera	<i>Limnephilus sp.</i>	Caddisfly	1.3	95	MRID 40089001; E6797
Diplostraca	Ceriodaphnia	Water Flea	1.4	100	67777
Diplostraca	<i>Ceriodaphnia dubia</i>	Water Flea	1.5484	98	121216
Diplostraca	<i>Daphnia magna</i>	Water Flea	1.584	99	5370

Order	Species name	Common Name	EC/LC ₅₀ Value (µg/L)	% Purity	Reference No.
Diplostraca	Daphnia	Water Flea	1.6	99	6449
Amphipoda	<i>Gammarus lacustris</i>	Scud	1.62	100	528
Diplostraca	Daphnia	Water Flea	1.7	99	6449
Diplostraca	<i>Ceriodaphnia dubia</i>	Water Flea	1.799	99.4	158065
Diplostraca	Daphnia	Water Flea	1.8	100	96171
Diplostraca	Daphnia	Water Flea	1.8	95	MRID 40089001; E6797
Trichoptera	Cheumatopsyche	Caddisfly	1.81	100	152279
Diplostraca	<i>Ceriodaphnia dubia</i>	Water Flea	1.9979	99.4	158065
Cyclopoida	<i>Eucyclops sp.</i>	Cyclopoid Copepod	0.561	56.1	786
Podocopida	<i>Cypria sp.</i>	Ostracod	1.122	56.1	786
Diplostraca	<i>Alonella sp.</i>	Water Flea	1.122	56.1	786
Calanoida	<i>Diaptomus sp.</i>	Calanoid Copepod	1.122	56.1	786
Diptera	<i>Culex pipiens</i>	Northern House Mosquito	15.2	95	160217
Amphipoda	<i>Gammarus fasciatus</i>	Scud	2	100	887
Diplostraca	<i>Ceriodaphnia dubia</i>	Water Flea	2.03	98	121216

Order	Species name	Common Name	EC/LC ₅₀ Value (µg/L)	% Purity	Reference No.
Diplostraca	<i>Ceriodaphnia dubia</i>	Water Flea	2.0776	98	121216
Amphipoda	<i>Gammarus pseudolimnaeus</i>	scud	2.1*	96.8	MRID 49389402
Diplostraca	Daphnia	Water Flea	2.1	99	6449
Diplostraca	<i>Ceriodaphnia dubia</i>	Water Flea	2.19	98	121216
Mysida	<i>Americamysis bahia</i>	mysid shrimp	2.2		MRID41474501
Diplostraca	Daphnia	Water Flea	2.2	99	6449
Cladocera	Daphnia	water flea	2.2	form	MRID41029701
Amphipoda	<i>Gammarus palustris</i>	Gammarid Amphipod	2.29	100	51439
Mysida	<i>Americamysis bahia</i>	Opossum Shrimp	2.6	71.5	968
Diplostraca	<i>Daphnia magna</i>	Water Flea	2.8	99.1	162471
Plecoptera	<i>Claassenia sabulosa</i>	Stonefly	2.8	95	MRID 40089001; E6797
Diplostraca	<i>Simocephalus vetulus</i>	Water Flea	2.9	100	104624
Mysida	<i>Americamysis bahia</i>	Opossum Shrimp	2.944	92	2280
Mysida	<i>Americamysis bahia</i>	Opossum Shrimp	3	71.5	968
Mysida	<i>Americamysis bahia</i>	Opossum Shrimp	3.1	71.5	968

Order	Species name	Common Name	EC/LC ₅₀ Value (µg/L)	% Purity	Reference No.
Diplostraca	<i>Ceriodaphnia dubia</i>	Water Flea	3.3232	99.2	95923
Diptera	<i>Chironomus tentans</i>	Midge	3.5*	96.8	MRID 49479002
Diplostraca	<i>Simocephalus</i>	Water Flea	3.5	95	MRID 40089001; E6797
Diplostraca	<i>Daphnia</i>	Water Flea	3.53	100	80724
Decapoda	<i>Paratya compressa</i> ssp. <i>improvisa</i>	Freshwater Shrimp	3.62	100	18945
Decapoda	<i>Homarus americanus</i>	American Lobster	3.626	98	104603
Mysida	<i>Americamysis bahia</i>	Opossum Shrimp	3.68	92	2280
Mysida	<i>Americamysis bahia</i>	Opossum Shrimp	4.6	92	2280
Amphipoda	<i>Gammarus palustris</i>	Gammarid Amphipod	4.65	100	51439
Mysida	<i>Americamysis bahia</i>	Opossum Shrimp	4.784	92	2280
Mysida	<i>Americamysis bahia</i>	Opossum shrimp	4.8*	96.8	MRID 49389401
Mysida	<i>Americamysis bahia</i>	Opossum Shrimp	4.968	92	2280
Trichoptera	<i>Hydropsyche sp.</i>	Caddisfly	5	95	MRID 40089001; E6797
Veneroida	<i>Katelysia opima</i>	Marine Bivalve	6	50	14269

Order	Species name	Common Name	EC/LC ₅₀ Value (µg/L)	% Purity	Reference No.
Plecoptera	<i>Pteronarcella badia</i>	Stonefly	6.2	95	MRID 40089001; E6797
Diplostraca	<i>Simocephalus</i>	Water Flea	6.2	95	MRID 40089001; E6797
Plecoptera	<i>Hesperoperla pacifica</i>	Golden Stonefly, Willow Fly	6.65	95	2667
Podocopida	<i>Cypris</i>	Ostracod	6.8	100	151495
Plecoptera	<i>Hesperoperla pacifica</i>	Golden Stonefly, Willow Fly	7	100	528
Harpacticoida	<i>Tigriopus brevicornis</i>	Harpacticoid Copepod	7.2	100	19281
Diptera	<i>Chironomus plumosus</i>	Midge	8.4	100	118362
Plecoptera	<i>Pteronarcella badia</i>	Stonefly	8.8	95	MRID 40089001; E6797
Decapoda	<i>Palaemonetes pugio</i>	Daggerblade Grass Shrimp	8.94	100	92616
Decapoda	<i>Palaemonetes pugio</i>	Daggerblade Grass Shrimp	9.06	100	14346
Zygoptera	<i>Lestes congener</i>	Damselfly	10	95	MRID 40089001; E6797
Plecoptera	<i>Pteronarcys californica</i>	Stonefly	10	95	MRID 40089001; E6797
Diplostraca	<i>Daphnia magna</i>	Water Flea	10.754	>95.0	156795

Order	Species name	Common Name	EC/LC ₅₀ Value (µg/L)	% Purity	Reference No.
Mysida	<i>Americamysis bahia</i>	Opossum Shrimp	11	100	13513
Plecoptera	<i>Hesperoperla pacifica</i>	Golden Stonefly, Willow Fly	11.4	95	2667
Decapoda	<i>Penaeus duorarum</i>	Northern Pink Shrimp	12	100	13513
Decapoda	<i>Palaemonetes kadiakensis</i>	Grass Shrimp, Freshwater Prawn	12	95	MRID 40089001; E6797
Diptera	<i>Chironomus plumosus</i>	Midge	12.25	100	118362
Decapoda	<i>Palaemonetes pugio</i>	Daggerblade Grass Shrimp	13.24	100	14346
Diptera	<i>Chironomus plumosus</i>	Midge	16.1	100	118362
Harpacticoida	<i>Tigriopus brevicornis</i>	Harpacticoid Copepod	20.5	100	19281
Decapoda	<i>Litopenaeus vannamei</i>	White Shrimp	21.46	100	16752
Trichoptera	<i>Hydropsyche californica</i>	Caddisfly	22.5	100	528
Ephemeroptera	<i>Centroptilum triangulifer</i>	mayfly	23*	96.8	MRID 49479001
Diptera	<i>Culex pipiens ssp. molestus</i>	Mosquito	24	30	5162
Harpacticoida	<i>Tigriopus brevicornis</i>	Harpacticoid Copepod	24.3	100	19281

Order	Species name	Common Name	EC/LC ₅₀ Value (µg/L)	% Purity	Reference No.
Decapoda	<i>Palaemonetes kadiakensis</i>	Grass Shrimp, Fresh water Prawn	25	100	887
Diptera	<i>Chironomus plumosus</i>	Midge	28.18	100	118362
Trichoptera	<i>Arctopsyche grandis</i>	Caddisfly	32	100	528
Decapoda	<i>Palaemonetes kadiakensis</i>	Grass Shrimp, Fresh water Prawn	32	95	MRID 40089001; E6797
Diptera	<i>Culex quinquefasciatus</i>	Southern House Mosquito	32.2	100	101101
Coleoptera	<i>Hydrophilus sp.</i>	Black Beetle	34.5	100	162408
Decapoda	<i>Homarus americanus</i>	American Lobster	38	100	73331
Decapoda	<i>Palaemonetes pugio</i>	Daggerblade Grass Shrimp	38.19	100	14346
Decapoda	<i>Palaemonetes pugio</i>	Daggerblade Grass Shrimp	39.92	100	92616
Diptera	<i>Chironomus plumosus</i>	Midge	40.55	100	118362
Heteroptera	<i>Anisops sardeus</i>	Backswimmer	42.2	100	59962
Podocopa	<i>Cypridopsis vidua</i>	Ostracod, Seed Shrimp	47	95	MRID 40089001; E6797
Plecoptera	<i>Pteronarcys californica</i>	Stonefly	47.5	95	2667

Order	Species name	Common Name	EC/LC ₅₀ Value (µg/L)	% Purity	Reference No.
Diptera	<i>Toxorhynchites splendens</i>	Mosquito	49.8	100	4139
Plecoptera	<i>Pteronarcys californica</i>	Stonefly	50	100	528
Isopoda	<i>Alitropus typus</i>	Sowbug	52.5	100	89498
Diptera	<i>Chironomus plumosus</i>	Midge	52.92	100	118362
Diptera	<i>Simulium vittatum</i>	Blackfly	54.2	>=98	71060
Unionoida	<i>Lamellidens marginalis</i>	Mussel	55.63	50	12537
Decapoda	<i>Macrobrachium lamarrei</i>	Prawn	65	50	71773
Diptera	<i>Chironomus plumosus</i>	Midge	65.29	100	118362
Decapoda	<i>Palaemonetes pugio</i>	Daggerblade Grass Shrimp	67*	96.8	MRID 49534902
Heteroptera	<i>Notonecta undulata</i>	Backswimmer	75.2	94	7775
Unionoida	<i>Anodonta anatina</i>	Fresh-Water Mussel	76	95	6665
Diptera	<i>Chironomus plumosus</i>	Midge	77.66	100	118362
Diplostraca	<i>Daphnia magna</i>	Water Flea	80	100	94536
Decapoda	<i>Palaemonetes kadiakensis</i>	Grass Shrimp, Fresh water Prawn	90	95	MRID 40089001; E6797
Diptera	<i>Chironomus plumosus</i>	Midge	90.03	100	118362

Order	Species name	Common Name	EC/LC ₅₀ Value (µg/L)	% Purity	Reference No.
Decapoda	<i>Palaemonetes kadiakensis</i>	Grass Shrimp, Fresh water Prawn	100	100	887
Ephemeroptera	<i>Drunella grandis</i>	Mayfly	100	100	528
Diplostraca	Daphnia	Water Flea	100	100	5194
Diptera	<i>Chironomus plumosus</i>	Midge	102.4	100	118362
Heteroptera	<i>Notonecta undulata</i>	Backswimmer	103.4	94	7775
Diptera	<i>Chironomus plumosus</i>	Midge	114.77	100	118362
Unionoida	<i>Lamellidens corrianus</i>	Mussel	118.55	50	12537
Diptera	<i>Chironomus plumosus</i>	Midge	146.75	100	118362
Unionoida	<i>Lamellidens marginalis</i>	Mussel	168.36	50	12537
Plecoptera	<i>Pteronarcys californica</i>	Stonefly	171	95	2667
Diptera	<i>Chironomus plumosus</i>	Midge	178.73	100	118362
Decapoda	<i>Orconectes nais</i>	Crayfish	180	95	MRID 40089001; E6797
Diptera	<i>Chironomus plumosus</i>	Midge	244.98	100	118362
Unionoida	<i>Lamellidens corrianus</i>	Mussel	248.97	50	12537

Order	Species name	Common Name	EC/LC ₅₀ Value (µg/L)	% Purity	Reference No.
Diptera	<i>Chironomus plumosus</i>	Midge	261.99	100	118362
Unionoida	<i>Lamellidens corrianus</i>	Mussel	284.11	50	12537
Unionoida	<i>Anodonta cygnea</i>	Swan Mussel	294.5	95	6665
Diptera	<i>Atherix variegata</i>	Snipefly	385	95	MRID 40089001; E6797
Decapoda	<i>Macrobrachium ferreirai</i>	Freshwater Shrimp	398	100	162408
Lepidoptera	<i>Palustra laboulbeni</i>	Moth	426	100	162408
Coleoptera	<i>Eretes sticticus</i>	Beetle	430	100	5182
Decapoda	<i>Macrobrachium lamarrei</i>	Prawn	630.5	50	11557
Odonata	<i>Orthetrum albistylum</i> ssp. <i>speciosum</i>	Dragonfly	730	100	7119
Unionoida	<i>Lamellidens marginalis</i>	Mussel	797.78	50	12537
Decapoda	<i>Macrobrachium lamarrei</i>	Prawn	843.5	50	11557
Decapoda	<i>Macrobrachium lar</i>	Monkey River Prawn	851	form	157374
Decapoda	<i>Procambarus clarkii</i>	Red Swamp Crayfish	875	50	71856
Coleoptera	<i>Peltodytes</i> sp.	Beetle	940	94	7775

Order	Species name	Common Name	EC/LC ₅₀ Value (µg/L)	% Purity	Reference No.
Decapoda	<i>Cancer magister</i>	Dungeness Or Edible Crab	1330	95	6793
Decapoda	<i>Procambarus clarkii</i>	Red Swamp Crayfish	1340	100	20475
Decapoda	<i>Metapenaeus monoceros</i>	Sand Shrimp	1406	95	89575
Coleoptera	<i>Peltodytes sp.</i>	Beetle	1410	94	7775
Unionoida	<i>Anodonta anatina</i>	Fresh-Water Mussel	1928.5	95	6665
Basommatophora	<i>Lymnaea stagnalis</i>	Great Pond Snail	2960	40	77206
Decapoda	<i>Paratelphusa hydrodromus</i>	Crab	3000	50	13437
Isopoda	<i>Caecidotea brevicauda</i>	Aquatic Sowbug	3000	95	MRID 40089001; E6797
Basommatophora	<i>Lymnaea stagnalis</i>	Great Pond Snail	4960	40	77206
Diptera	<i>Chironomus riparius</i>	Midge	5280	40	77206
Basommatophora	<i>Lymnaea stagnalis</i>	Great Pond Snail	5320	40	77206
Basommatophora	<i>Lymnaea stagnalis</i>	Great Pond Snail	5840	40	77206
Architaenioglossa	<i>Viviparus bengalensis</i>	Snail	6136	100 (form)	14311
Unionoida	<i>Lampsilis siliquoidea</i>	Lamp-Mussel	6720	96	17860

Order	Species name	Common Name	EC/LC ₅₀ Value (µg/L)	% Purity	Reference No.
Basommatophora	<i>Lymnaea stagnalis</i>	Great Pond Snail	6720	40	77206
Diptera	<i>Chironomus riparius</i>	Midge	8400	40	77206
Unionoida	<i>Anodonta cygnea</i>	Swan Mussel	9699.5	95	6665
Decapoda	<i>Orconectes nais</i>	Crayfish	10000	95	MRID 40089001; E6797
Diptera	<i>Chironomus riparius</i>	Midge	10760	40	77206
Architaenioglossa	<i>Viviparus bengalensis</i>	Snail	10970	100 (form)	14311
Isopoda	<i>Asellus aquaticus</i>	Aquatic Sowbug	12840	40	77206
Diptera	<i>Chironomus riparius</i>	Midge	14880	40	77206
Architaenioglossa	<i>Pomacea canaliculata</i>	Snail	18680	100	20421
Isopoda	<i>Asellus aquaticus</i>	Aquatic Sowbug	20000	40	77206
Diptera	<i>Chironomus riparius</i>	Midge	20240	40	77206
Decapoda	<i>Procambarus clarkii</i>	Red Swamp Crayfish	21000*	96.8	MRID 49534901
Architaenioglossa	<i>Pomacea dolioides</i>	Golden Apple Snail	22075	100	162408
Unionoida	<i>Lampsilis straminea ssp. claibornensis</i>	Southern Fatmucket	23040	96	17860

Order	Species name	Common Name	EC/LC ₅₀ Value (µg/L)	% Purity	Reference No.
Isopoda	<i>Asellus aquaticus</i>	Aquatic Sowbug	24000	40	77206
Basommatophora	<i>Planorbis corneus</i>	Great Ramshorn Snail	24800	40	77206
Unionoida	<i>Lampsilis subangulata</i>	Shiny-Rayed Pocketbook	26880	96	17860
Isopoda	<i>Asellus aquaticus</i>	Aquatic Sowbug	28680	40	77206
Unionoida	<i>Elliptio icterina</i>	Variable Spike	30720	96	17860
Basommatophora	<i>Planorbis corneus</i>	Great Ramshorn Snail	32520	40	77206
Basommatophora	<i>Planorbis corneus</i>	Great Ramshorn Snail	32840	40	77206
Decapoda	<i>Litopenaeus stylirostris</i>	Blue Shrimp	34197	100	73317
Isopoda	<i>Asellus aquaticus</i>	Aquatic Sowbug	35720	40	77206
Unionoida	<i>Utterbackia imbecillis</i>	Paper Pondshell	38400	96	17860
Basommatophora	<i>Planorbis corneus</i>	Great Ramshorn Snail	41880	40	77206
Basommatophora	<i>Planorbis corneus</i>	Great Ramshorn Snail	44440	40	77206
Unionoida	<i>Lampsilis siliquioidea</i>	Lamp-Mussel	56640	96	17860

Order	Species name	Common Name	EC/LC ₅₀ Value (µg/L)	% Purity	Reference No.
Anostraca	<i>Streptocephalus sudanicus</i>	Fairy Shrimp	67750	100	59962
Unionoida	<i>Villosa lienosa</i>	Little Spectacle Case	71040	96	17860
Unionoida	<i>Utterbackia imbecillis</i>	Paper Pondshell	71040	96	17860
Archaeopulmonata	<i>Melampus bidentatus</i>	Salt Marsh Snail	100000	100	7917
Unionoida	<i>Lamellidens marginalis</i>	Mussel	100980	100	126
Unionoida	<i>Villosa lienosa</i>	Little Spectacle Case	104640	96	17860
Unionoida	<i>Villosa lienosa</i>	Little Spectacle Case	106560	96	17860
Unionoida	<i>Villosa villosa</i>	Downy Rainbow Mussel	114240	96	17860
Unionoida	<i>Villosa villosa</i>	Downy Rainbow Mussel	136320	96	17860
Unionoida	<i>Villosa villosa</i>	Downy Rainbow Mussel	172800	96	17860
Unionoida	<i>Utterbackia imbecillis</i>	Paper Pondshell	206400	96	17860
Unionoida	<i>Utterbackia imbecillis</i>	Paper Pondshell	210240	96	17860
Unionoida	<i>Utterbackia imbecillis</i>	Paper Pondshell	311040	96	17860

Order	Species name	Common Name	EC/LC ₅₀ Value (µg/L)	% Purity	Reference No.
Tricladida	<i>Dugesia tigrina</i>	Flatworm	4400	54.4	13793
Haplotaxida	<i>Tubificida sp.</i>	Tubificid worm	9790-19240	40	77206
Lumbriculida	<i>Lumbriculus variegatus</i>	Oligochaete worm	20500	100 (reagent)	6502

*= used in SSD (test material source/impurity profile known).

Plants*Terrestrial Plants***Table 11-1 from the BE. Toxicity Values for Malathion and Terrestrial Plant Species**

TAXON	THRESHOLD	EXPOSURE	ENDPOINT (lb a.i./acre)	EFFECT(S)	SPECIES	STUDY ID	COMMENTS
All Terrestrial Plants¹	NOAEC/ LOAEC	Pre-emergence	4.64 / >4.64	N/A	N/A	MRID 49076001	For all species tested, no endpoints were significantly inhibited compared to the control
		Post-emergence	NOAEC/LOAEC: 1.17 / 2.39; IC25: >4.86	Reduced weight	Cabbage (<i>Brassica oleracea</i>)	MRID 49076002	The LOAEC is 2.39 lb a.i./acre (12% inhibition in dry weight at this treatment concentration)
Dicots	NOAEC/ LOAEC; IC₂₅	Pre-emergence	NOAEC/LOAEC: 4.64 / >4.64; IC25: >4.64	N/A	N/A	MRID 49076001	For all species tested, no endpoints were significantly inhibited compared to the control
		Post-emergence	NOAEC/LOAEC: 1.17 / 2.39; IC25: >4.86	Reduced weight	Cabbage (<i>Brassica oleracea</i>)	MRID 49076002	The LOAEC is 2.39 lb a.i./acre (12% inhibition in dry weight at this treatment concentration)
Monocots	NOAEC/ LOAEC; IC₂₅	Pre-emergence	NOAEC/LOAEC: 4.64 / >4.64; IC25: >4.64	N/A	N/A	MRID 49076001	For all monocot species tested, no endpoints were significantly inhibited compared to the control

TAXON	THRESHOLD	EXPOSURE	ENDPOINT (lb a.i./acre)	EFFECT(S)	SPECIES	STUDY ID	COMMENTS
		Post-emergence	NOAEC/LOAEC: 4.7 / >4.7; IC25: >4.7	N/A	N/A	MRID 49076002	For all monocot species tested, no endpoints were significantly inhibited compared to the control

Table 11-2 from the BE. Effects of Malathion on Pink Sundew and Venus Flytrap Survival

Experiment	Test Species	Test Material	Lab or Field	NOAEC	LOAEC
I	Pink Sundew	Formulated product	Lab	--	4.63 lb a.i./A
II	Pink Sundew	TGAI	Lab	46.3 lb a.i./A	>46.3 lb a.i./A
III	Pink Sundew	Formulated product	Field	--	2.94 lb a.i./A
		TGAI	Field	2.94 lb a.i./A	> 2.94 lb a.i./A
IV	Venus Flytrap	Formulated product	Field	4.63 lb a.i./A	> 4.63 lb a.i./A
		TGAI	Lab	4.63 lb a.i./A	> 4.63 lb a.i./A