Table 2. Toxicity associated with mercury in tissues (µg/g) wet weight.

Fish Species (freshwater)	Life Stage	Hg Form	Exposure	Effects end points	Tissue Type	No effect (µg/g, ww)	Effect (µg/g, ww)	Effects descriptions	Reference
Rainbow trout *(Oncorhynchus mykis)*	adult through spawning	mercuric chloride (0.24µg/l in flow-through water)	400-528 days	mortality teratogenic	egg gonad	0.04 0.09	0.26 0.49	significant reduction in alevin survival (4-day post hatch); significant increase in teratogenic effects	Birge et al. 1979
	eyed eggs-larvae	mercuric chloride (0.18 -107µg/g in sediment and 0.25-6.4 µg/l in overlying water)	20 days (10 pre-hatching)	mortality	whole body	0.02	0.04 0.3 0.9	55% mortality at 10 days 77% mortality at 10 days 100% mortality at 10 days	Birge et al. 1979
	embryo-larvae	mercuric chloride (0.1-0.14 in flow-through water)	8 days	mortality	eggs	0.02-0.07	0.07 0.1	17-21% mortality at 4 days 100% mortality at 8 days	Birge et al. 1979
	fingerlings	methylmercuric chloride in food	84 days	growth, behavior, physiology	whole body		10-30 30-35	decreased growth and appetite darkened skin and lethargy	Rodgers and Beamish 1982
	fry-juvenile	total mercury in food (about 50µg/g)	270 days	growth behavior	brain liver muscle whole body	 0.2	16-30 26-68 20-28 19	darkened skin; loss in appetite, visual acuity, and growth; loss of equilibrium	Matida et al. 1971
	fingerlings	methylmercuric chloride (4-24 ppm in food)	105 days	histology biochemistry growth	muscle	<0.2 12	12-24 19-24	hyperplasia of gill epithelium blood PCV, growth	Wobeser 1975
	subadult	methylmercuric chloride (4 µg/l in flow-through water)	30-98 days	mortality behavior	brain liver muscle		7-32 32-114 9-52	decreased appetite and activity	Niimi and Kissoon 1994
	subadult	methylmercuric chloride (9 µg/l in flow through water)	12-33 days	mortality behavior	whole body		4-27	decreased appetite and activity	Niimi and Kissoon 1994
Fathead minnow *(Pimephales promelas)*	larvae-adult and F1 larvae fed Artemia	mercuric chloride (0.26-3.7µg/l in flow-through water)	60 days 30days 41 weeks	growth reproduction	F0 whole body	0.62 0.32 0.32	1.2 1.4 1.4	retarded F0 larval growth (only at 30 days) retarded F1 larval growth F0 reproductive inhibition and retarded growth	Snarski and Olson 1982
	larvae fed dry food	mercuric chloride (0.31-4.51 in flow-through water)	60 days	growth physiology mortality	whole body	0.8	1.3 4.2	retarded larval growth 50% mortality, spinal curvature, retarded larval growth	Snarski and Olson 1982
Brook trout *(Salvelinus fontinalis)*	3 generations continuously exposed	methylmercuric chloride (0.29 µg/l in water column)	273 days	mortality growth reproduction	brain liver gonad whole body	5 8 3 3		no apparent effects	McKim et al. 1976
	3 generations continuously exposed	methylmercuric chloride (0.93 µg/l in water column)	273 days	mortality growth behavior	brain liver gonad whole body		17 24 12 5-7	increased mortality, decreased growth, lethargy, and deformities in F1, no spawning	McKim et al. 1976
	3 generations continuously exposed	methylmercuric chloride (0.93 µg/l in water column)	273 days	mortality	embryo (F2)		2.2	deformed embryos; mortality at 3 weeks post hatching	McKim et al. 1976
	3 generations continuously exposed	methylmercuric chloride (2.9 µg/l in water column)	273 days	mortality	embryo (F1)		12.5	deformed embryos; no hatching	McKim et al. 1976
Channel catfish *(Ictalurus punctatus)*	embryo-larvae	mercuric chloride (0.3µg/L in flow-through water)	10 days	mortality	eggs		0.06*	median lethal concentration at 4 days post-hatching	Birge et al. 1979
Walleye *(Stizostedion vitreum vitreum)*	1 year old	methylmercury (5-13 ppm in food)	42-63 days	mortality behavior physiology	brain liver muscle	 <1	3-6 6-14 5-8	emaciation; loss of locomotion, coordination and appetite.	Scherer et al. 1975
	1 year old	methylmercury (5-13 ppm in food)	240-314 days	mortality behavior physiology	brain liver muscle	 <2.5	15-40 18-50 15-45	88% mortality; emaciation; poor locomotion, coordination and appetite.	Scherer et al. 1975
	juveniles	methylmercury (0.14 & 1 ppm in food)	180 days	development physiology	whole body (minus viscera)	0.06	0.25 2.37	impaired immune function, testicular atrophy, impaired testicular development impaired growth in males, testicular atrophy, impaired testicular development	Friedmann et al. 1996

*no control value, but dose-dependent response

Fish Species (saltwater)	Life Stage	Hg Form	Exposure	Effects end points	Tissue Type	No Effect (µg/g, ww)	Effect (µg/g, ww)	Effects descriptions	Reference
Striped mullet *(Mugil cephalus)*	juvenile	methylmercuric chloride (0.001 mg/l in water column) methylmercuric chloride (0.01 mg/l in water column)	10,13 days 7,10, 13 days	physiology	whole body	<0.1	0.3 5.0	inhibition of regeneration of amputated caudal fin	Weis and Weis 1978
Grayling *(Thymallus thymallus)*	embryos exposed, tested 3 years later	methylmercuric chloride (0.16, 0.8,4.0, 20 µg/l in water)	13 days (until hatching)	behavior, reproduction physiology	whole body (fry)	0.09	0.27 0.63 3.8	reduced foraging efficiency and prey capture reduced foraging efficiency and prey capture reduced hatching, foraging efficiency and prey capture, and scoliosis, jaw deformities	Fjeld et al. 1998
Killifish *(Fundulus heteroclitus)*	adults exposed, 2 generations followed	methylmercury (0.5, 1.9,5.6, 54ppm in food of F0 generation)	42 days (F0 only)	mortality reproduction sex ratios	whole body (F0) eggs (F1)	0.2 (F0) BDL*	0.47 (F0) 1.0-1.1 (F0) 11-12 (F0) 0.01 0.63	reduced survival in F0 males reduced survival in F0 males, altered sex ratio in F1 reduced survival in F0 males, altered sex ratio in F1, reduced fertilization success in F1 altered sex ratio in F1 altered sex ratio in F1, reduced fertilization success in F1	Matta et al. 2001

*Below detection limit of 0.02

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