

Revisions to Proposed Rule adopted by the Board on May 26, 2022 (Pending Rule),  
Docket No. 58-0102-2201

Revisions are in Subsection 210.01.b., Footnote k (p. 12), and Subsection 210.03.e. (pp. 16 - 17) and are highlighted in yellow. Revision made by the Board upon adoption are highlighted in gray (p. 16).

**210. NUMERIC CRITERIA FOR TOXIC SUBSTANCES FOR WATERS DESIGNATED FOR AQUATIC LIFE, RECREATION, OR DOMESTIC WATER SUPPLY USE.**

**01. Criteria for Toxic Substances.** The criteria of Section 210 apply to surface waters of the state as provided in Tables 1 and 2. (SineDie22)

**a.** Table 1 contains criteria set for protection of aquatic life. Criteria for metals (arsenic through zinc) are expressed as dissolved fraction unless otherwise noted. For purposes of these criteria, dissolved fraction means that which passes through a forty-five hundredths (0.45) micron filter. (SineDie22)

Subsections 210.01 and 210.01.a. are effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-2201 have been approved.

**01. Criteria for Toxic Substances.** The criteria of Section 210 apply to surface waters of the state as provided in Tables 1 and 2 Criteria for metals (arsenic through zinc) listed in Tables 1 and 2 are expressed as a dissolved fraction (i.e., passes through a forty-five hundredths (0.45) micron filter) unless otherwise noted. (SineDie22)( )

**a.** Table 1 contains criteria ~~set for to~~ protection of aquatic life. ~~Criteria for metals (arsenic through zinc) are expressed as dissolved fraction unless otherwise noted. For purposes of these criteria, dissolved fraction means that which passes through a forty five hundredths (0.45) micron filter.~~ (SineDie22)( )

Subsections 210.01 and 210.01.a. are not effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-2201 have been approved.

Table 1. Criteria for Protection of Aquatic Life					
Compound	a	b		b	
	CAS Number	CMC (µg/L)			CCC (µg/L)
<b>Inorganic Compounds/Metals</b>					
Arsenic	7440382	340	c	150	c
Cadmium	7440439	1.3	f	0.6	f

Chromium III	16065831	570	f	74	f
Chromium VI	18540299	16	c	11	c
Copper	7440508	12.3	k	7.6	k
Lead	7439921	65	f	2.5	f
Mercury	7439976		e		e

**Note:** In 2005, Idaho adopted EPA's recommended methylmercury fish tissue criterion for protection of human health (docket 58-0102-0302). The decision was made to remove the old tissue-based aquatic life criteria and rely on the fish tissue criterion to provide protection for aquatic life as well as human health. Thus, current Idaho water quality standards do not have mercury water column criteria for the protection of aquatic life. While EPA approved Idaho's adoption of the fish tissue criterion in September 2005, it had withheld judgment on Idaho's removal of aquatic life criteria. On December 12, 2008, EPA disapproved Idaho's removal of the old aquatic life criteria. The water column criteria for total recoverable mercury published in [2004 Idaho Administrative Code](#) continue to apply and are effective for CWA purposes. For more information go to <http://www.deq.idaho.gov/epa-actions-on-proposed-standards>.

Nickel	7440020	470	f	52	f
Selenium	7782492	m		l	
Silver	7440224	3.4	f		
Zinc	7440666	120	f	120	f

**Inorganic Compounds/Non-Metals**

Chlorine		19	h	11	h
Cyanide	57125	22	g	5.2	g

**Organic Compounds**

Acrolein	107028	$\frac{--^1}{3^2}$		$\frac{--^1}{3^2}$	
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<sup>1</sup>Effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-1802 have been approved.

<sup>2</sup>Not effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-1802 have been approved.

Aldrin	39002	3			
gamma-BHC (Lindane)	58899	2		0.08	
Carbaryl	63252	$\frac{--^1}{2.1^2}$		$\frac{--^1}{2.1^2}$	

<sup>1</sup>Effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-1802 have been approved.

<sup>2</sup>Not effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-1802 have been approved.

Chlordane	57749	2.4		0.0043	
4,4'-DDT	50293	1.1		0.001	
Diazinon	333415	$\frac{--^1}{0.17^2}$		$\frac{--^1}{0.17^2}$	

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<sup>2</sup>Not effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-1802 have been approved.

Dieldrin	60571	2.5		0.0019	
alpha-Endosulfan	959988	0.22		0.056	
beta-Endosulfan	33213659	0.22		0.056	
Endrin	72208	0.18		0.0023	
Heptachlor	76448	0.52		0.0038	
Heptachlor Epoxide	1024573	0.52		0.0038	
Pentachlorophenol	87865	20	i	13	i
Polychlorinated Biphenyls PCBs	j			0.014	j
Toxaphene	8001352	0.73		0.0002	

**Footnotes for Table 1. Criteria for Protection of Aquatic Life**

**a.** Chemical Abstracts Service (CAS) registry numbers which provide a unique identification for each chemical.

**b.** See definitions of Acute Criteria (CMC) and Chronic Criteria (CCC), Section 010 of these rules.

**c.** Criteria for these metals are expressed as a function of the water effect ratio, WER, as defined in Subsection 210.03.c.iii. CMC = CMC column value X WER. CCC = CCC column value X WER.

**d.** Criterion expressed as total recoverable (unfiltered) concentrations.

**e.** No aquatic life criterion is adopted for inorganic mercury. However, the narrative criteria for toxics in Section 200 of these rules applies. The Department believes application of the human health criterion for methylmercury will be protective of aquatic life in most situations.

f. Aquatic life criteria for these metals are a function of total hardness (mg/L as calcium carbonate), the pollutant's water effect ratio (WER) as defined in Subsection 210.03.c.iii. and multiplied by an appropriate dissolved conversion factor as defined in Subsection 210.02. For comparative purposes only, the example values displayed in this table are shown as dissolved metal and correspond to a total hardness of one hundred (100) mg/L and a water effect ratio of one (1.0).

g. Criteria are expressed as weak acid dissociable (WAD) cyanide.

h. Total chlorine residual concentrations.

i. Aquatic life criteria for pentachlorophenol are expressed as a function of pH, and are calculated as follows. Values displayed above in the table correspond to a pH of seven and eight tenths (7.8).  
 $CMC = \exp(1.005(pH)-4.830)$   
 $CCC = \exp(1.005(pH)-5.290)$

j. PCBs are a class of chemicals which include Aroclors, 1242, 1254, 1221, 1232, 1248, 1260, and 1016, CAS numbers 53469219, 11097691, 11104282, 11141165, 12672296, 11096825 and 12674112 respectively. The aquatic life criteria apply to this set of PCBs.

k. Aquatic life criteria for copper shall be derived in accordance with Subsection 210.03.c.v. For comparative purposes only, the example values displayed in this table correspond to the Biotic Ligand Model output based on the following inputs: temperature = 14.9°C, pH = 8.16, dissolved organic carbon = 1.4 mg/L, humic acid fraction = 10%, calcium = 44.6 mg/L, magnesium = 11.0 mg/L, sodium = 11.7 mg/L, potassium = 2.12 mg/L, sulfate = 46.2 mg/L, chloride = 12.7 mg/L, alkalinity = 123 mg/L CaCO<sub>3</sub>, and sulfide =  $1.00 \times 10^{-8}$  mg/L.

I. Chronic				Short-term	
Egg-Ovary (mg/kg dw)	Fish Tissue (mg/kg dw)		Water Column (µg/L)		Water Column (µg/L)
Egg-Ovary	Whole-Body	Muscle	Water Lentic	Water Lotic	Water
15.1 <sup>1</sup>	8.5 <sup>2</sup>	11.3 <sup>2</sup>	1.5 (30 day average) <sup>3</sup>	3.1 (30 day average) <sup>3</sup>	Intermittent Exposure Equation <sup>3,4</sup>
mg/kg dw – milligrams per kilogram dry weight, µg/L – micrograms per liter					

1. Egg-ovary supersedes any whole-body, muscle, or water column element when fish egg-ovary concentrations are measured. Single measurement of an average or composite sample of at least five (5) individuals of the same species. Not to be exceeded; DEQ will evaluate all representative egg-ovary data to determine compliance with this criterion element.

2. Fish whole-body or muscle tissue supersedes water column element when both fish tissue and water concentrations are measured. Single measurement of an average or composite sample of at least five (5) individuals of the same species where the smallest individual is no less than seventy-five percent (75%) of the total length (size) of the largest individual. Not to be exceeded; DEQ will evaluate all representative whole body or muscle data to determine compliance with this criterion element.

3. Water column values are based on dissolved total selenium in water and are derived from fish tissue values via bioaccumulation modeling. Water column values are the applicable criterion element in the absence of steady-state condition fish tissue data. In fishless waters, selenium concentrations in fish from the nearest downstream waters may be used to assess compliance using methods provided in [Aquatic Life Ambient Water Quality Criterion for Selenium – Freshwater, EPA-822-R-16-006, Appendix K: Translation of a Selenium Fish Tissue Criterion Element to a Site-Specific Water Column Value \(June 2016\)](#).

$$\frac{WQC - C_{bkgnd}(1 - f_{int})}{f_{int}}$$

4. Intermittent Exposure Equation=

where WQC is the applicable water column element, for either lentic or lotic waters; C<sub>bkgnd</sub> is the average background selenium concentration, and f<sub>int</sub> is the fraction of any 30-day period during which elevated selenium concentrations occur, with f<sub>int</sub> assigned a value ≥ 0.033 (corresponding to one day).

m. There is no specific acute criterion for aquatic life; however, the aquatic life criterion is based on chronic effects of the selenium on aquatic life and is expected to adequately protect against acute effects.

(SineDie22)

b. Table 2 contains criteria ~~set for~~ to protection ~~of~~ human health. The Water & Fish criteria apply to waters designated for domestic water supply use. The Fish Only criteria apply to waters designated for primary or secondary contact recreation use. ~~(SineDie22)~~ (\_\_\_\_\_)

Table 2. Criteria for Protection of Human Health (based on consumption of:)						
Compound	a	Carcinogen?	Water & Fish (µg/L <u>unless otherwise specified</u> )		Fish Only (µg/L <u>unless otherwise specified</u> )	
	CAS Number					
<b>Inorganic Compounds/Metals</b>						
Antimony	7440360		5.2	b	190	b
Arsenic <sup>1</sup>	7440382	Y	10	cdj	10	cdj
<p><b>Note:</b> In 2008, Idaho adopted 10 µg/L as its CWA arsenic criterion for both exposure through fish consumption only and exposure through drinking water+fish consumption, choosing the SDWA MCL due to concerns about background levels that exceed EPA's 304(a) criteria (docket 58-0102-0801). EPA approved this action in 2010. In June 2015, Northwest Environmental Advocates challenged EPA's 2010 approval. Court remanded action back to EPA. On September 15, 2016, EPA disapproved Idaho's adoption of 10 µg/L. Neither EPA nor the state of Idaho has promulgated replacement criteria. For more information, go to <a href="http://www.deq.idaho.gov/epa-actions-on-proposed-standards">http://www.deq.idaho.gov/epa-actions-on-proposed-standards</a>.</p>						
<p><u>Effective for CWA purposes. Water &amp; Fish value, Fish Only value, and footnotes continue to be effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-2201 have been approved. See Arsenic<sup>2</sup> immediately below.</u></p>						
Arsenic <sup>2</sup>	7440382	Y	10	cdj	<del>40 4.3:</del> <u>8.0 µg/kg</u> <u>fish tissue</u>	<del>cdj</del>

*Note: In 2008, Idaho adopted 10 µg/L as its CWA arsenic criterion for both exposure through fish consumption only and exposure through drinking water + fish consumption, choosing the SDWA MCL due to concerns about background levels that exceed EPA's 304(a) criteria (docket 58-0102-0801). EPA approved this action in 2010. In June 2015, Northwest Environmental Advocates challenged EPA's 2010 approval. Court remanded action back to EPA. On September 15, 2016, EPA disapproved Idaho's adoption of 10 µg/L. Neither EPA nor the state of Idaho has promulgated replacement criteria. For more information, go to <http://www.deq.idaho.gov/epa-actions-on-proposed-standards>.*

<sup>2</sup>Not yet effective for CWA purposes. Fish Only value and footnote k are not effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-2201 have been approved.

Beryllium	7440417			e		e
Cadmium	7440439			e		e
Chromium III	16065831			e		e
Chromium VI	18540299			e		e
Copper	7440508		1300	j		
Lead	7439921			e		e
Methylmercury	22967926				0.3mg/kg	i
Nickel	7440020		58	b	100	b
Selenium	7782492		29	b	250	b
Thallium	7440280		0.017	b	0.023	b
Zinc	7440666		870	b	1,500	b
<b>Inorganic Compounds/Non-Metals</b>						
Cyanide	57125		3.9	b	140	b
Asbestos	1332214		7,000,000 Fibers/L	j		
<b>Organic Compounds</b>						
Acenaphthene	83329		26	b	28	b
Acenaphthylene	208968			e		e
Acrolein	107028		3.2	b	120	b
Acrylonitrile	107131	Y	0.60	bf	22	bf
Aldrin	309002	Y	2.5E-06	bf	2.5E-06	bf
Anthracene	120127		110	b	120	b

alpha-BHC	319846	Y	0.0012	bf	0.0013	bf
beta-BHC	319857	Y	0.036	bf	0.045	bf
gamma-BHC (Lindane)	58899		1.4	b	1.4	b
delta-BHC	319868			e		e
Benzene	71432		3.0	bf	28	b
Benzidine	92875	Y	0.0014	bf	0.033	bf
Benzo(a)Anthracene	56553	Y	0.0042	bf	0.0042	bf
Benzo(b)Fluoranthene	205992	Y	0.0042	bf	0.0042	bf
Benzo(k)Fluoranthene	207089	Y	0.042	bf	0.042	bf
Benzo(ghi)Perylene	191242			e		e
Benzo(a)Pyrene	50328	Y	0.00042	bf	0.00042	bf
Bis(2-Chloroethoxy) Methane	111911			e		e
Bis(2-Chloroethyl) Ether	111444	Y	0.29	bf	6.8	bf
Bis(2-Chloroisopropyl) Ether	108601		220	b	1,200	b
Bis(Chloromethyl) Ether	542881	Y	0.0015	bf	0.055	bf
Bis(2-Ethylhexyl) Phthalate	117817	Y	1.2	bf	1.2	bf
Bromoform	75252	Y	62	bf	380	bf
4-Bromophenyl Phenyl Ether	101553			e		e
Butylbenzyl Phthalate	85687		0.33	b	0.33	b
Carbon Tetrachloride	56235	Y	3.6	bf	15	bf
Chlorobenzene	108907		89	b	270	b
Chlordane	57749	Y	0.0010	bf	0.0010	bf
Chlorodibromomethane	124481	Y	7.4	bf	67	bf
Chloroethane	75003			e		e
2-Chloroethylvinyl Ether	110758			e		e
Chloroform	67663		61	b	730	b

2-Chloronaphthalene	91587		330	b	380	b
2-Chlorophenol	95578		30	b	260	b
Chlorophenoxy Herbicide (2,4-D)	94757		1,000	b	3,900	b
Chlorophenoxy Herbicide (2,4,5-TP) [Silvex]	93721		82	b	130	b
4-Chlorophenyl Phenyl Ether	7005723			e		e
Chrysene	218019	Y	0.42	bf	0.42	bf
4,4'-DDD	72548	Y	0.00042	bf	0.00042	bf
4,4'-DDE	72559	Y	5.5E-05	bf	5.5E-05	bf
4,4'-DDT	50293	Y	9.8E-05	bf	9.8E-05	bf
Di-n-Butyl Phthalate	84742		8.2	b	8.3	b
Di-n-Octyl Phthalate	117840			e		e
Dibenzo (a,h) Anthracene	53703	Y	0.00042	bf	0.00042	bf
1,2-Dichlorobenzene	95501		700	b	1,100	b
1,3-Dichlorobenzene	541731		3.5	b	4.8	b
1,4-Dichlorobenzene	106467		180	b	300	b
3,3'-Dichlorobenzidine	91941	Y	0.29	bf	0.48	bf
Dichlorobromomethane	75274	Y	8.8	bf	86	bf
1,1-Dichloroethane	75343			e		e
1,2-Dichloroethane	107062	Y	96	bf	2,000	bf
1,1-Dichloroethylene	75354		310	b	5,200	b
2,4-Dichlorophenol	120832		9.6	b	19	b
1,2-Dichloropropane	78875	Y	8.5	bf	98	bf
1,3-Dichloropropene	542756	Y	2.5	bf	38	bf
Dieldrin	60571	Y	4.2E-06	bf	4.2E-06	bf
Diethyl Phthalate	84662		200	b	210	b
2,4-Dimethylphenol	105679		110	b	820	b



Dimethyl Phthalate	131113		600	b	600	b
Dinitrophenols	25550587		13	b	320	b
2,4-Dinitrophenol	51285		12	b	110	b
2,4-Dinitrotoluene	121142	Y	0.46	bf	5.5	bf
2,6-Dinitrotoluene	606202			e		e
1,2-Diphenylhydrazine	122667	Y	0.25	bf	0.65	bf
2, 3, 7, 8-TCDD Dioxin	1746016	Y	1.8E-08	bf	1.9E-08	bf
alpha-Endosulfan	959988		7.0	b	8.5	b
beta-Endosulfan	33213659		11	b	14	b
Endosulfan Sulfate	1031078		9.9	b	13	b
Endrin	72208		0.011	b	0.011	b
Endrin Aldehyde	7421934		0.38	b	0.40	b
Ethylbenzene	100414		32	b	41	b
Fluoranthene	206440		6.3	b	6.4	b
Fluorene	86737		21	b	22	b
Heptachlor	76448	Y	2.0E-05	bf	2.0E-05	bf
Heptachlor Epoxide	1024573	Y	0.00010	bf	0.00010	bf
Hexachlorobenzene	118741	Y	0.00026	bf	0.00026	bf
Hexachlorobutadiene	87683	Y	0.031	bf	0.031	bf
Hexachlorocyclohexane (HCH)-Technical	608731	Y	0.027	bf	0.032	bf
Hexachloro-cyclopentadiene	77474		1.3	b	1.3	b
Hexachloroethane	67721		0.23	b	0.24	b
Ideno (1,2,3-cd) Pyrene	193395	Y	0.0042	bf	0.0042	bf
Isophorone	78591	Y	330	bf	6,000	bf
Methoxychlor	72435		0.0054	b	0.0055	b
Methyl Bromide	74839		130	b	3,700	b
Methyl Chloride	74873			e		e

3-Methyl-4-Chlorophenol	59507		350	b	750	b
2-Methyl-4,6-Dinitrophenol	534521		1.6	b	8.6	b
Methylene Chloride	75092		38	b	960	b
Naphthalene	91203			e		e
Nitrobenzene	98953		12	b	180	b
2-Nitrophenol	88755			e		e
4-Nitrophenol	100027			e		e
N-Nitrosodimethylamine	62759	Y	0.0065	bf	9.1	bf
N-Nitrosodi-n-Propylamine	621647	Y	0.046	bf	1.5	bf
N-Nitrosodiphenylamine	86306	Y	3.14	bf	18	bf
Pentachlorobenzene	608935		0.035	b	0.036	b
Pentachlorophenol	87865	Y	0.11	bf	0.12	bf
Phenanthrene	85018			e		e
Phenol	108952		3,800	b	85,000	b
Polychlorinated Biphenyls PCBs	g	Y	0.00019	bfh	0.00019	bfh
Pyrene	129000		8.1	b	8.4	b
1,2,4,5-Tetrachlorobenzene	95943		0.0093	b	0.0094	b
1,1,2,2-Tetrachloroethane	79345	Y	1.4	bf	8.6	bf
Tetrachloroethylene	127184		15	b	23	b
Toluene	108883		47	b	170	b
Toxaphene	8001352	Y	0.0023	bf	0.0023	bf
1,2-Trans-Dichloroethylene	156605		120	b	1,200	b
1,2,4-Trichlorobenzene	120821		0.24	b	0.24	b
1,1,1-Trichloroethane	71556		11,000	b	56,000	b
1,1,2-Trichloroethane	79005	Y	4.9	bf	29	bf
Trichloroethylene	79016		2.6	b	11	b

2,4,5-Trichlorophenol	95954		140	b	190	b
2,4,6-Trichlorophenol	88062		1.5	b	2.0	b
Vinyl Chloride	75014	Y	0.21	bf	5.0	bf

**Footnotes for Table 2. Criteria for Protection of Human Health**

a. Chemical Abstracts Service (CAS) registry numbers which provide a unique identification for each chemical.

b. This criterion is based on input values to human health criteria calculation specified in [Idaho's Technical Support Document \(TSD\) for Human Health Criteria Calculations - 2015](#). Criteria for non-carcinogens are calculated using the formula:

$$AWQC = RfD * RSC * \left( \frac{BW}{DI + (FI * BAF)} \right)$$

and criteria for carcinogens are calculated using the formula:

$$AWQC = RSD * \left( \frac{BW}{DI + (FI * BAF)} \right)$$

Where:

AWQC = Ambient water quality criterion (mg/L)

BW = Human Body Weight (kg), 80 is used in these criteria

DI = Drinking Water Intake, (L/day), 2.4 is used in these criteria

FI = Fish Intake, (kg/day), 0.0665 is used in these criteria

BAF = Bioaccumulation Factor, L/kg, chemical specific value, see TSD

RfD = Reference dose (mg/kg-day), chemical specific value, see TSD

RSD =  $\frac{\text{Target Incremental Cancer Risk}}{\text{Cancer Potency Factor}}$  (mg/kg-day), chemical specific value, see TSD

RSC = Relative Source Contribution, chemical specific value, see TSD

c. Inorganic forms only.

d. Criterion expressed as total recoverable (unfiltered) concentrations.

e. No numeric human health criteria has been established for this contaminant. However, permit authorities should address this contaminant in NPDES permit actions using the narrative criteria for toxics from Section 200 of these rules.

f. EPA guidance allows states to choose from a range of 10<sup>-4</sup> to 10<sup>-6</sup> for the incremental increase in cancer risk used in human health criteria calculation. Idaho has chosen to base this criterion on carcinogenicity of 10<sup>-5</sup> risk.

<p>g. PCBs are a class of chemicals which include Aroclors, 1242, 1254, 1221, 1232, 1248, 1260, and 1016, CAS numbers 53469219, 11097691, 11104282, 11141165, 12672296, 11096825 and 12674112 respectively. The aquatic life criteria apply to this set of PCBs.</p>	
<p>h. This criterion applies to total PCBs, (e.g. the sum of all congener, isomer, or Aroclor analyses).</p>	
<p>i. This fish tissue residue criterion (TRC) for methylmercury is based on a human health reference dose (RfD) of 0.0001 mg/kg body weight-day; a relative source contribution (RSC) estimated to be 27% of the RfD; a human body weight (BW) of 70 kg (for adults); and a total fish consumption rate of 0.0175 kg/day for the general population, summed from trophic level (TL) breakdown of TL2 = 0.0038 kg fish/day + TL3 = 0.0080 kg fish/day + TL4 = 0.0057 kg fish/day. This is a criterion that is protective of the general population. A site-specific criterion or a criterion for a particular subpopulation may be calculated by using local or regional data, rather than the above default values, in the formula: <math>TRC = [BW \times \{RfD - (RSC \times RfD)\}] / TL</math>. In waters inhabited by species listed as threatened or endangered under the Endangered Species Act or designated as their critical habitat, the Department will apply the human health fish tissue residue criterion for methylmercury to the highest trophic level available for sampling and analysis.</p>	
<p>j. This criterion is based on the drinking water Maximum <u>Containment Contaminant</u> Level (MCL).</p>	
<p><u>k. For Fish Only exposure to inorganic arsenic, the human health criterion is:</u></p>	
<u>Fish Tissue (ug/kg wet-weight)</u>	<u>Water Column (ug/L)</u>
<u>8.0<sup>1</sup></u>	<u>4.3<sup>2</sup></u>
<p><sup>1</sup>Fish tissue element is based on total recoverable inorganic arsenic in muscle or fillet. <u>When sufficient fish tissue data are available and there are no new or increasing point source discharges of arsenic, the fish tissue element supersedes the water column element provided at least ninety (90) days have passed since any new activity or discharge has occurred within the water body. Fish tissue element will be applied in accordance with Subsection 210.03.e.</u></p>	
<p><sup>2</sup>Water column element is based on dissolved inorganic arsenic in water.</p>	
<p><u>Footnote k is not effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-2201 have been approved.</u></p>	

~~(SineDie22)~~( )

**02. Factors for Calculating Hardness Dependent Metals Criteria.** Hardness dependent metals criteria are calculated using values from the following table in the equations: (SineDie22)

a.  $CMC = WER \exp\{mA[\ln(\text{hardness})] + bA\}$  X Acute Conversion Factor. (SineDie22)

b.  $CCC = WER \exp\{mc[\ln(\text{hardness})] + bc\}$  X Chronic Conversion Factor.

Metal	mA	bA	mc	bc	aAcute Conversion Factor	aChronic Conversion Factor
Arsenic	b	b	b	b	1.0	1.0
Cadmium	0.8367	-3.560	0.6247	-3.344	0.944 see footnote a	0.909

Chromium (III)	0.819	3.7256	0.8190	0.6848	0.316	0.860
Chromium (VI)	b	b	b	b	0.982	0.962
Lead	1.273	-1.460	1.273	-4.705	0.791	0.791
Mercury	b	b	b	b	0.85	0.85
Nickel	0.846	2.255	0.8460	0.0584	0.998	0.997
Silver	1.72	-6.52	c	c	0.85	c
Zinc	0.8473	0.884	0.8473	0.884	0.978	0.986

Note to table: The term “exp” represents the base e exponential function.

Footnotes to table:

**a.** Conversion factors (CF) are from “Stephan, C. E. 1995. Derivation of conversion factors for the calculation of dissolved freshwater aquatic life criteria for metals. U.S. Environmental Protection Agency, Environmental Research Laboratory – Duluth.” The conversion factors for cadmium and lead are hardness-dependent and can be calculated for any hardness (see limitations in Subsection 210.03.b.i.) using the following equations. For comparative purposes, the conversion factors for a total hardness of one hundred (100) mg/L are shown in the table. The conversion factor shall not exceed one (1).

Cadmium

Acute:  $CF=1.136672-[(\ln \text{hardness})(0.041838)]$  NOTE: The cadmium acute criterion equation was derived from dissolved metals toxicity data and thus requires no conversion; this conversion factor may be used to back calculate an equivalent total recoverable concentration.

Chronic:  $CF=1.101672-[(\ln \text{hardness})(0.041838)]$

Lead (Acute and Chronic):  $CF=1.46203-[(\ln \text{hardness})(0.145712)]$

**b.** Not applicable

**c.** No chronic criteria are available for silver.

(SineDie22)

**03. Applicability.** The criteria established in Section 210 are subject to the general rules of applicability in the same way and to the same extent as are the other numeric chemical criteria when applied to the same use classifications. Mixing zones may be applied to toxic substance criteria subject to the limitations set forth in Section 060 and set out below. (SineDie22)

**a.** For all waters for which the Department has determined mixing zones to be applicable, the toxic substance criteria apply at the boundary of the mixing zone(s) and beyond. Absent an authorized mixing zone, the toxic substance criteria apply throughout the waterbody including at the end of any discharge pipe, canal or other discharge point. (SineDie22)

**b.** Low flow design conditions. Water quality-based effluent limits and mixing zones for toxic substances shall be based on the following low flows in perennial receiving streams. Numeric chemical criteria may be exceeded in perennial streams outside any applicable mixing zone only when flows are less than these values:

Aquatic Life		Human Health	
CMC (“acute” criteria)	1Q10 or 1B3	Non-carcinogens	Harmonic mean flow
CCC (“chronic” criteria)	7Q10 or 4B3	Carcinogens	Harmonic mean flow

(SineDie22)

- i. Where “1Q10” is the lowest one-day flow with an average recurrence frequency of once in ten (10) years determined hydrologically; (SineDie22)
  - ii. Where “1B3” is biologically based and indicates an allowable exceedance of once every three (3) years. It may be determined by EPA’s computerized method (DFLOW model); (SineDie22)
  - iii. Where “7Q10” is the lowest average seven (7) consecutive day low flow with an average recurrence frequency of once in ten (10) years determined hydrologically; (SineDie22)
  - iv. Where “4B3” is biologically based and indicates an allowable exceedance for four (4) consecutive days once every three (3) years. It may be determined by EPA’s computerized method (DFLOW model);(SineDie22)
  - v. Where the harmonic mean flow is a long term mean flow value calculated by dividing the number of daily flows analyzed by the sum of the reciprocals of those daily flows. (SineDie22)
- c. Application of aquatic life metals criteria. (SineDie22)

i. For metals other than cadmium, for purposes of calculating hardness dependent aquatic life criteria from the equations in Subsection 210.02, the minimum hardness allowed for use in those equations shall not be less than twenty-five (25) mg/l, as calcium carbonate, even if the actual ambient hardness is less than twenty-five (25) mg/l as calcium carbonate. For cadmium, the minimum hardness for use in those equations shall not be less than ten (10) mg/l, as calcium carbonate. The maximum hardness allowed for use in those equations shall not be greater than four hundred (400) mg/l, as calcium carbonate, except as specified in Subsections 210.03.c.ii. and 210.03.c.iii., even if the actual ambient hardness is greater than four hundred (400) mg/l as calcium carbonate. (SineDie22)

ii. The hardness values used for calculating aquatic life criteria for metals at design discharge conditions shall be representative of the ambient hardnesses for a receiving water that occur at the design discharge conditions given in Subsection 210.03.b. (SineDie22)

iii. Except as otherwise noted, the aquatic life criteria for metals (arsenic through zinc in Table 1 in Subsection 210.01) are expressed as dissolved metal concentrations. Unless otherwise specified by the Department, dissolved concentrations are considered to be concentrations recovered from a sample which has passed through a forty-five hundredths (0.45) micron filter. For the purposes of calculating aquatic life criteria for metals from the equations in footnotes c. and f. in Table 1 in Subsection 210.01, the water effect ratio is computed as a specific pollutant’s acute or chronic toxicity values measured in water from the site covered by the standard, divided by the respective acute or chronic toxicity value in laboratory dilution water. The water-effect ratio shall be assigned a value of one (1.0), except where the Department assigns a different value that protects the designated uses of the water body from the toxic effects of the pollutant, and is derived from suitable tests on sampled water representative of conditions in the affected water body, consistent with the design discharge conditions established in Subsection 210.03.b. For purposes of calculating water effects ratios, the term acute toxicity value is the toxicity test results, such as the concentration lethal one-half (1/2) of the test organisms (i.e., LC50) after ninety-six (96) hours of exposure (e.g., fish toxicity tests) or the effect concentration to one-half of the test organisms, (i.e., EC50) after forty-eight (48) hours of exposure (e.g., daphnia toxicity tests). For purposes of calculating water effects ratios, the term chronic value is the result from appropriate hypothesis testing or regression analysis of measurements of growth, reproduction, or survival from life cycle, partial life cycle, or early life stage tests. The determination of acute and chronic values shall be according to current standard protocols (e.g., those published by the American Society for Testing and Materials (ASTM)) or other comparable methods. For calculation of criteria using site-specific values for both the hardness and the water effect ratio, the hardness used in the equations in Subsection 210.02 shall be as required in Subsection 210.03.c.ii. Water hardness shall be calculated from the measured calcium and magnesium ions present, and the ratio of calcium to magnesium shall be approximately the same in laboratory toxicity testing water as in the site water, or be similar to average ratios of laboratory waters used to derive the criteria. (SineDie22)

iv. Implementation Guidance for the Idaho Mercury Water Quality Criteria. (SineDie22)

(1) The “Implementation Guidance for the Idaho Mercury Water Quality Criteria” describes in detail suggested methods for discharge related monitoring requirements, calculation of reasonable potential to exceed (RPTE) water quality criteria in determining need for mercury effluent limits, and use of fish tissue mercury data in calculating mercury load reductions. This guidance, or its updates, will provide assistance to the Department and the public when implementing the methylmercury criterion. The “Implementation Guidance for the Idaho Mercury Water Quality Criteria” also provides basic background information on mercury in the environment, the novelty of a fish tissue criterion for water quality, the connection between human health and aquatic life protection, and the relation of environmental programs outside of Clean Water Act programs to reducing mercury contamination of the environment. The “[Implementation Guidance for the Idaho Mercury Water Quality Criteria](#)” is available at the Department of Environmental Quality, 1410 N. Hilton, Boise, Idaho 83706, and on the DEQ website at <https://www.deq.idaho.gov>. (SineDie22)

(2) The implementation of a fish tissue criterion in NPDES permits and TMDLs requires a non-traditional approach, as the basic criterion is not a concentration in water. In applying the methylmercury fish tissue criterion in the context of NPDES effluent limits and TMDL load reductions, the Department will assume change in fish tissue concentrations of methylmercury are proportional to change in water body loading of total mercury. Reasonable potential to exceed (RPTE) the fish tissue criterion for existing NPDES sources will be based on measured fish tissue concentrations potentially affected by the discharge exceeding a specified threshold value, based on uncertainty due to measurement variability. This threshold value is also used for TMDL decisions. Because measured fish tissue concentrations do not reflect the effect of proposed new or increased discharge of mercury, RPTE in these cases will be based upon an estimated fish tissue methylmercury concentration, using projected changes in waterbody loading of total mercury and a proportional response in fish tissue mercury. For the above purposes, mercury will be measured in the skinless filets of sport fish using techniques capable of detecting tissue concentrations down to point zero five (0.05) mg/kg. Total mercury analysis may be used, but will be assumed to be all methylmercury for purposes of implementing the criterion. (SineDie22)

v. Copper Criteria for Aquatic Life. (SineDie22)

(1) Aquatic life criteria for copper shall be derived using: (SineDie22)

(a) Biotic Ligand Model (BLM) software that calculates criteria consistent with the “[Aquatic Life Ambient Freshwater Quality Criteria – Copper](#)”: EPA-822-R-07-001 (February 2007); or (SineDie22)

(b) An estimate derived from BLM outputs that is based on a scientifically sound method and protective of the designated aquatic life use. (SineDie22)

(2) To calculate copper criteria using the BLM, the following parameters from each site shall be used: temperature, pH, dissolved organic carbon (DOC), calcium, magnesium, sodium, potassium, sulfate, chloride, and alkalinity. The BLM inputs for humic acid (HA) as a proportion of DOC and sulfide shall be based on either measured values or the following default values: 10% HA as a proportion of DOC,  $1.00 \times 10^{-8}$  mg/L sulfide. Measured values shall supersede any estimate or default input. (SineDie22)

(3) BLM input measurements shall be planned to capture the most bioavailable conditions for copper. (SineDie22)

(4) A criterion derived under Subsection 210.03.c.v.(1)(a) shall supersede any criterion derived under Subsection 210.03.c.v.(1)(b). Acceptable BLM software includes the “[US EPA WQC Calculation](#)” for copper in BLM Version 3.1.2.37 (October 2015). (SineDie22)

(5) Implementation Guidance for the Idaho Copper Criteria for Aquatic Life. The “Implementation Guidance for the Idaho Copper Criteria for Aquatic Life: Using the Biotic Ligand Model” describes in detail methods for implementing the aquatic life criteria for copper using the BLM. This guidance, or its updates, will provide assistance to the Department and the public for determining minimum data requirements for BLM inputs and how to estimate criteria when data are incomplete or unavailable. The “[Implementation Guidance for the Idaho](#)

Copper Criteria for Aquatic Life: Using the Biotic Ligand Model” is available at the Department of Environmental Quality, 1410 N. Hilton, Boise, Idaho 83706, and on the DEQ website at <https://www.deq.idaho.gov>. (SineDie22)

d. Application of toxics criteria. (SineDie22)

i. Frequency and duration for aquatic life toxics criteria. CMC column criteria in Table 1 in Subsection 210.01 are concentrations not to be exceeded for a one-hour average more than once in three (3) years unless otherwise specified. CCC column criteria in Table 1 in Subsection 210.01 are concentrations not to be exceeded for a four-day average more than once in three (3) years unless otherwise specified. (SineDie22)

ii. Frequency and duration for human health toxics criteria. Criteria in Table 2 in Subsection 210.01 are not to be exceeded based on an annual harmonic mean. (SineDie22)

Effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-2201 have been approved.

ii. Frequency and duration for human health toxics criteria. Criteria in Table 2-~~in~~, Subsection 210.01, are not to be exceeded based on an annual harmonic arithmetic mean concentration. (SineDie22)( )

Not effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-2201 have been approved.

~~e. Application of the fish tissue element of the arsenic criterion for human health. ( )~~

~~i. The fish tissue element for total recoverable inorganic arsenic is based on a single measurement using sufficiently sensitive methods. ( )~~

~~ii. The single measurement must be made on a sample that is an average or composite of a minimum of five (5) individual fish of the same species, game fish when present, collected from the same water body within the same calendar year. When available, game fish species representative of the size and species that may be legally harvested within the waterbody are preferred. Results from multiple sample events may be averaged or composited provided they represent the same species collected from the same water body within the same calendar year. ( )~~

~~iii. Not to be exceeded; the Department will evaluate all representative fish tissue data to determine compliance with this criterion element. ( )~~

~~iv. For purposes of determining water column targets for the development of effluent limits, TMDL targets, or water column targets for fishless waters. The fish tissue element may be translated to a water column value using a site-specific bioaccumulation factor (BAF) based on the ratio of total recoverable inorganic arsenic in fish muscle or fillet tissue to dissolved inorganic arsenic in the water column using the following equation:~~

$$WC_T (\mu g/L) = \frac{8.00 \mu g/kg}{BAF_{SS} L/kg}$$

Where:

$WC_T (\mu g/L)$  is the translated water column value; and

$BAF_{SS} L/kg$  is the site specific BAF calculated consistent with 210.03.e.v.

In fishless waters, surface water ~~from the fishless waters~~ and fish tissue from the immediate downstream waters may be used for bioaccumulation modeling. In the absence of sufficient fish tissue data, the water column element is the applicable criterion element in fishless waters. ( )



v. When translating the fish tissue element to a water column value, the following procedures will be followed. ( )

(1) Data used to translate the fish tissue element must be based on current conditions and consistent with Subsections 210.03.e.i. and ii. ( )

(2) Whenever practical, fish tissue samples must be representative of the game fish species present within the waterbody and include game fish species whenever practical of legally harvestable size. In the absence of suitable game fish species, other resident fish species may be used. ( )

(3) Water column samples must be representative of the annual average concentration of dissolved inorganic arsenic at the site. ( )

(4) BAFs are calculated as a trophic-level weighted BAF or other scientifically defensible method for deriving protective BAF. ( )

Subsection 210.03.e. is not effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-2201 have been approved.

**04. National Pollutant Discharge Elimination System Permitting.** For the purposes of NPDES permitting, interpretation and implementation of metals criteria listed in Subsection 210.02 should be governed by the following standards, that are hereby incorporated by reference, in addition to other scientifically defensible methods deemed appropriate by the Department; provided, however, any identified conversion factors within these documents are not incorporated by reference. Metals criteria conversion factors are identified in Subsection 210.02 of this rule. (SineDie22)

a. "Guidance Document on Dissolved Criteria -- Expression of Aquatic Life Criteria," EPA, October 1993. (SineDie22)

b. "Guidance Document on Dynamic Modeling and Translators," EPA, August 1993. (SineDie22)

c. "Guidance Document on Clean Analytical Techniques and Monitoring," EPA, October 1993. (SineDie22)

d. "Interim Guidance on Determination and Use of Water-Effect Ratios for Metals," EPA, February 1994. (SineDie22)

e. "Technical Support Document for Water Quality-Based Toxics Control." EPA, March 1991. (SineDie22)

**05. Development of Toxic Substance Criteria.** (SineDie22)

a. Aquatic Life Communities Criteria. Numeric criteria for the protection of aquatic life uses not identified in these rules for toxic substances, may be derived by the Department from the following information: (SineDie22)

i. Site-specific criteria developed pursuant to Section 275; (SineDie22)

ii. Effluent biomonitoring, toxicity testing and whole-effluent toxicity determinations; (SineDie22)

iii. The most recent recommended criteria defined in EPA's ECOTOX database. When using EPA recommended criteria to derive water quality criteria to protect aquatic life uses, the lowest observed effect concentrations (LOECs) shall be considered; or (SineDie22)

iv. Scientific studies including, but not limited to, instream benthic assessment or rapid bioassessment. (SineDie22)

b. Human Health Criteria. (SineDie22)

i. When numeric criteria for the protection of human health are not identified in these rules for toxic substances, quantifiable criteria may be derived by the Department using best available science on toxicity thresholds (i.e. reference dose or cancer slope factor), such as defined in EPA's Integrated Risk Information System (IRIS) or other peer-reviewed source acceptable to the Department. (SineDie22)

ii. When using toxicity thresholds to derive water quality criteria to protect human health, a fish consumption rate representative of the population to be protected, a mean adult body weight, an adult 90th percentile water ingestion rate, a trophic level weighted BAF or BCF, and a hazard quotient of one (1) for non-carcinogens or a cancer risk level of  $10^{-5}$  for carcinogens shall be utilized. (SineDie22)

Effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-2201 have been approved.

ii. When using toxicity thresholds to derive water quality criteria to protect human health, a fish consumption rate representative of the population to be protected, a mean adult body weight, an adult 90th percentile water ingestion rate, a trophic level weighted BAF or BCF, and a hazard quotient of one (1) for non-carcinogens or a cancer risk level of  $10^{-5}$  for carcinogens ~~shall~~ will be utilized for any compound not listed in Subsection 210.05.b.iii. (SineDie22)( )

Not effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-2201 have been approved.

iii. Subsection 210.05.b.ii. does not apply to the fish tissue element for inorganic arsenic. ( )

Not effective for CWA purposes until the date EPA issues written notification that the revisions in Docket No. 58-0102-2201 have been approved.