Proposed Revisions to Policy 1-11: TECs and DWECs for assessment of tissue and water data for human health-February 2018

In the public review document for proposed changes to Water Quality Policy 1-11, Ecology is proposing to use tissue Exposure Concentrations (TECs) and Drinking Water Exposure Concentrations (DWECs) to assess waters for uses associated with toxics criteria for human health.

The following spreadsheet shows human health criteria, Tissue Exposure Concentrations (TECs) and Drinking Water Exposure Concentrations (DWECs) expressed in parts per million (mg/L for water, mg/kg for tissue). Note: The methylmercury criterion is a tissue residue concentration expressed in mg/kg and the asbestos criterion is expressed in fibers/L.

Chemical Name	CAS # - 1	Water Criterion - Water & Organism consumption (freshwater) (ppm) (mg/L)	Water Criterion - Organisms Only consumption (marine) (ppm) (mg/L)	TEC- tissue (Cancer) (ppm) (mg/kg)	TEC- tissue (Non-cancer) (ppm) (mg/kg))	DWEC- water (Cancer) (ppm) (mg/L)	DWEC- water (Non-cancer) (ppm) (mg/L)
1,1,1-Trichloroethane	71556	20.000	50.000	-	910	-	67.000
1,1,2,2-Tetrachloroethane	79345	0.0001	0.0003	0.0023	9.1	0.00017	0.670
1,1,2-Trichloroethane	79005	0.00035	0.0009	0.0080	1.8	0.00058	0.130
1,1-Dichloroethylene	75354	0.700	4.000	-	23	-	1.700
1,2,4-Trichlorobenzene	120821	0.000036	0.000037	0.016	4.6	0.0011	0.330
1,2-Dichlorobenzene	95501	0.700	0.800	-	140	-	10.000
1,2-Dichloroethane	107062	0.0089	0.073	0.14	36	0.010	2.600
1,2-Dichloropropane	78875	0.00071	0.031	0.013	41	0.00093	3.000
1,2-Diphenylhydrazine	122667	0.00001	0.00002	0.00057	-	0.000042	-
1,2-Trans-Dichloroethylene	156605	0.200	1.000	-	9.1	-	0.670
1,3-Dichlorobenzene	541731	0.002	0.002	-	0.91	-	0.067

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1,3-Dichloropropene	542756	0.00022	0.0012	0.0037	11	0.00027	0.830
1,4-Dichlorobenzene	106467	0.200	0.200	-	32	-	2.300
2,3,7,8-TCDD (Dioxin)	1746016	0.000000000013	0.000000000014	(1)	0.00000032	(1)	0.000000023
2,4,6-Trichlorophenol	88062	0.00025	0.00028	0.042	0.46	0.00303	0.033
2,4-Dichlorophenol	120832	0.010	0.010	-	1.4	-	0.100
2,4-Dimethylphenol	105679	0.085	0.097	-	9.1	-	0.670
2,4-Dinitrophenol	51285	0.030	0.100	-	0.91	-	0.067
2,4-Dinitrotoluene	121142	0.000039	0.00018	0.00069	0.91	0.000050	0.067
2-Chloronaphthalene	91587	0.100	0.100	-	37	-	2.700
2-Chlorophenol	95578	0.015	0.017	-	2.3	-	0.170
2-Methyl-4,6-Dinitrophenol	534521	0.003	0.007	-	0.14	-	0.010
3,3'-Dichlorobenzidine	91941	0.0000031	0.0000033	0.0010	-	0.000074	-
3-Methyl-4-Chlorophenol	59507	0.036	0.036	-	46	-	3.300
4,4'-DDD	72548	0.000.0000079	0.0000000079	0.0019	0.23	0.00014	0.017
4,4'-DDE	72559	0.00000000088	0.00000000088	0.0027	0.23	0.00020	0.017

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4,4'-DDT	50293	0.0000000012	0.0000000012	0.0013	0.23	0.000098	0.017
Acenaphthene	83329	0.030	0.030	-	27	-	2.000
Acrolein	107028	0.001	0.0011	-	0.23	-	0.017
Acrylonitrile	107131	0.000019	0.000028	0.00085	-	0.000062	-
Aldrin	309002	0.000000000041	0.000000000041	0.000027	0.014	0.0000020	0.0010
alpha-BHC	319846	0.000000048	0.000000048	0.000073	3.7	0.0000053	0.270
alpha-Endosulfan	959988	0.006	0.007	-	2.7	-	0.200
Anthracene	120127	0.100	0.100	-	140	-	10.000
Antimony	7440360	0.006	0.090	-	0.18	-	0.013
Arsenic, Inorganic	7440382	0.000018	0.00014	(2)	0.14	(2)	0.010
Asbestos	1332214	7,000,000 (fibers/L)	-	-	-	-	-
Benzene	71432	0.00044	0.0016	0.0083	0.23	0.00061	0.017
Benzidine	92875	0.00000002	0.000000023	0.0000020	1.4	0.00000014	0.100
Benzo(a)Anthracene	56553	0.00000016	0.00000016	0.00063	-	0.000046	-
Benzo(a)Pyrene	50328	0.000000016	0.000000016	0.000063	-	0.0000046	-

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Benzo(b)Fluoranthene	205992	0.00000016	0.00000016	0.00063	-	0.000046	-
Benzo(k)Fluoranthene	207089	0.0000016	0.0000016	0.0063	-	0.00046	-
beta-BHC	319857	0.0000013	0.0000014	0.00025	-	0.000019	-
beta-Endosulfan	33213659	0.0097	0.010	-	2.7	-	0.200
Bis(2-Chloroethyl)Ether	111444	0.00002	0.00006	0.00042	-	0.000030	-
Bis(2-Chloroisopropyl) Ether	108601	0.400	0.900	-	18	-	1.300
Bis(2-Ethylhexyl) Phthalate	117817	0.000045	0.000046	0.033	27	0.0024	2.000
Bromoform	75252	0.0046	0.012	0.10	14	0.0074	1.000
Butylbenzyl Phthalate	85687	0.000013	0.000013	0.24	590	0.018	43.000
Carbon Tetrachloride	56235	0.0002	0.00035	0.0065	1.8	0.00048	0.130
Chlordane	57749	0.000000022	0.000000022	0.0013	0.23	0.000095	0.017
Chlorobenzene	108907	0.100	0.200	-	9.1	-	0.670
Chlorodibromomethane	124481	0.0006	0.0022	0.011	9.1	0.00083	0.670
Chloroform	67663	0.100	0.600	-	4.6	-	0.330
Chrysene	218019	0.000016	0.000016	0.063	-	0.0046	-

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Copper	7440508	1.300	-	-	-	-	-
Cyanide	57125	0.009	0.100	-	0.27		0.020
Dibenzo (a,h) Anthracene	53703	0.000000016	0.000000016	0.000063	-	0.0000046	-
Dichlorobromomethane	75274	0.00073	0.0028	0.013	1.4	0.00098	0.100
Dieldrin	60571	0.00000000007	0.00000000007	0.000029	0.023	0.0000021	0.0017
Diethyl Phthalate	84662	0.200	0.200	-	360	-	27.000
Dimethyl Phthalate	131113	0.600	0.600	-	4600	-	330.000
Di-n-Butyl Phthalate	84742	0.008	0.008	-	46	-	3.300
Endosulfan Sulfate	1031078	0.009	0.010	-	2.7	-	0.200
Endrin	72208	0.000002	0.000002	-	0.14	-	0.010
Endrin Aldehyde	7421934	0.000034	0.000035	-	0.14	-	0.010
Ethylbenzene	100414	0.029	0.031	-	10	-	0.730
Fluoranthene	206440	0.006	0.006	-	18	-	1.300
Fluorene	86737	0.010	0.010	-	18	-	1.300
gamma-BHC (Lindane)	58899	0.00043	0.00043	-	2.1	-	0.160

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Heptachlor	76448	0.00000000034	0.00000000034	0.00011	0.046	0.0000081	0.0033
Heptachlor Epoxide	1024573	0.0000000024	0.0000000024	0.000083	0.0059	0.0000061	0.00043
Hexachlorobenzene	118741	0.000000005	0.000000005	0.00045	0.37	0.000033	0.027
Hexachlorobutadiene	87683	0.00001	0.000.01	0.011	0.14	0.00083	0.010
Hexachloro-cyclopentadiene	77474	0.001	0.001	-	2.7	-	0.200
Hexachloroethane	67721	0.00002	0.00002	0.011	0.32	0.00083	0.023
Indeno (1,2,3-cd) Pyrene	193395	0.00000016	0.00000016	0.00063	-	0.000046	-
Isophorone	78591	0.027	0.110	0.48	91	0.035	6.700
Methyl Bromide	74839	0.300	2.400	-	9.1	-	0.670
Methylene Chloride	75092	0.010	0.100	0.23	2.7	0.017	0.200
Methylmercury	22967926	-	0.03 mg/kg (tissue number)	-	-	-	-
Nickel	7440020	0.080	0.100	-	9.1	-	0.670
Nitrobenzene	98953	0.030	0.100	-	0.91	-	0.067
N-Nitrosodimethylamine	62759	0.00000065	0.00034	0.0000090	-	0.00000065	-
N-Nitrosodi-n-Propylamine	621647	0.0000044	0.000058	0.000065	-	0.0000048	-

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N-Nitrosodiphenylamine	86306	0.00062	0.00069	0.093	-	0.0068	-
Pentachlorophenol	87865	0.000002	0.000002	0.0011	2.3	0.000083	0.170
Phenol	108952	9.000	70.000	-	270	-	20.000
Polychlorinated Biphenyls (PCBs)	n	0.000000007	0.000000007	0.00023	0.0091	0.000017	0.00067
Pyrene	129000	0.008	0.008	-	14		1.000
Selenium	7782492	0.060	0.200	-	2.3	-	0.170
Tetrachloroethylene	127184	0.0024	0.0029	0.22	2.7	0.016	0.200
Thallium	7440280	0.0017	0.0063	-	0.031	-	0.0023
Toluene	108883	0.072	0.130	-	4.4	-	0.320
Toxaphene	8001352	0.000000032	0.000000032	0.00042	0.16	0.000030	0.012
Trichloroethylene	79016	0.0003	0.0007	0.0091	2.3	0.00067	0.170
Vinyl Chloride	75014	0.00002	0.00018	0.00030	1.4	0.000022	0.100
Zinc	7440666	1.000	1.000	-	140	-	10.000

Footnotes:

(1) There is not a TEC_C nor a $DWEC_C$ threshold for 2,3,7,8-TCDD because the validity of the existing cancer slope factor developed by EPA is uncertain and currently under review. In the final rule at 40CFR131.45 EPA notes that for 2,3,7,8-TCDD, IRIS does not currently contain a measure of dioxin's cancer-causing ability (*i.e.,* a CSF). Without such values, EPA concluded that further analysis is necessary in order to promulgate scientifically sound revised criteria for 2,3,7,8-TCDD. In the Technical Support Document issued in November 2016 as part of EPA's partial approval/disapproval of Washington's human health criteria, EPA noted its intent to reevaluate the existing federal 2,3,7,8-TCDD human health criteria in IRIS by 2018.

(2) There is no TEC_C or $DWEC_C$ for arsenic because the validity of the existing cancer slope factor developed by EPA is uncertain and currently under review. In a Technical Support Document issued in November 2016 as part of EPA's partial approval/disapproval of Washington's human health criteria, EPA noted its intent to reevaluate the existing federal arsenic human health criteria through the Integrated Risk Information System (IRIS) Toxicological Review of inorganic arsenic (total dissolved) by 2018.