

Appendix B

Criteria values for each alternative and current detection limits

Freshwater Human Health Criteria (HHC) alternatives and corresponding methods and levels for analysis.

Chemical Name	Freshwater HHC (Consumption of water & organisms)				Analytical Methods and Quantitation Levels*	
	Alternative 1	Alternative 2	Alternative 3	Alternative 4	EPA or Standard Methods (SM) Method	Quantitation Level
1,1,2,2-Tetrachloroethane	0.17	1.4	0.17	0.12	624	2
1,1,2-Trichloroethane	0.60	5.0	0.60	0.44	624	2
1,1-Dichloroethylene	0.057	1,300	0.057	230	624	2
1,2,4,5-Tetrachlorobenzene	NC	NC	NC	0.11	NL	NL
1,2,4-Trichlorobenzene	NC	36	36	6.4	625	0.6
1,2-Dichlorobenzene	2,700	614	614	110	624	7.6
1,2-Dichloroethane	0.38	4.0	0.38	0.35	624	2
1,2-Dichloropropane	NC	4.4	4.4	0.38	624	2
1,2-Diphenylhydrazine	0.040	0.16	0.040	0.014	1625B	20
1,2-Trans-Dichloroethylene	NC	703	703	120	624	2
1,3-Dichlorobenzene	400	91	91	80	624	7.6
1,3-Dichloropropene	10	10	10	0.30	624	2
1,4-Dichlorobenzene	400	91	91	16	624	17.6
2,3,7,8-TCDD (Dioxin)	0.000000013	0.000000064	0.000000013	0.0000000051	1613B	0.000005
2,4,5-TP	NC	NC	NC	10	NL	NL
2,4,5-Trichlorophenol	NC	NC	NC	330	1653	2.5
2,4,6-Trichlorophenol	2.1	2.6	2.1	0.23	625	4

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	Alternative 1	Alternative 2	Alternative 3	Alternative 4	EPA or Standard Methods (SM) Method	Quantitation Level
2,4-D	NC	NC	NC	10	NL	NL
2,4-Dichlorophenol	93	26	26	23	625	1
2,4-Dimethylphenol	NC	87	87	76	625	1
2,4-Dinitrophenol	70	71	70	62	625	2
2,4-Dinitrotoluene	0.11	1.0	0.11	0.084	609/625	0.4
2-Chloronaphthalene	NC	171	171	150	625	0.6
2-Chlorophenol	NC	16	16	14	625	2
2-Methyl-4,6-Dinitrophenol	13.4	11	11	9.2	625/1625B	2
3,3'-Dichlorobenzidine	0.040	0.031	0.031	0.0027	605/625	1
4,4'-DDD	0.00083	0.00036	0.00036	0.000031	608	0.05
4,4'-DDE	0.00059	0.00025	0.00025	0.000022	608	0.05
4,4'-DDT	0.00059	0.00025	0.00025	0.000022	608	0.05
Acenaphthene	NC	108	108	95	625	0.4
Acrolein	320	1.0	1.0	0.88	624	10
Acrylonitrile	0.059	0.20	0.059	0.018	624	2
Aldrin	0.00013	0.000057	0.000057	0.0000050	608	0.05
alpha-BHC	0.0039	0.0051	0.0039	0.00045	608	0.05
alpha-Endosulfan	0.93	9.7	0.93	8.5	608	0.05
Anthracene	9,600	3,310	3,310	2,900	625	0.6
Antimony	14	15	14	5.1	200.8	1
Arsenic	0.018	0.047	10	2.1	200.8	0.5
Asbestos	7,000,000 fbrs/L	7,000,000 fbrs/L	7,000,000 fbrs/L	7,000,000 fbrs/L	NL	NL
Barium	NC	NC	NC	1,000	200.8	2
Benzene	1.2	18	1.2	0.44	624	2

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	Alternative 1	Alternative 2	Alternative 3	Alternative 4	EPA or Standard Methods (SM) Method	Quantitation Level
Benzidine	0.00012	0.00020	0.00012	0.000018	625	24
Benzo(a)Anthracene	0.0028	0.015	0.0028	0.0013	625	0.6
Benzo(a)Pyrene	0.0028	0.015	0.0028	0.0013	610/625	1
Benzo(b)Fluoranthene	0.0028	0.015	0.0028	0.0013	610/625	1.6
Benzo(k)Fluoranthene	0.0028	0.015	0.0028	0.0013	610/625	1.6
beta-BHC	0.014	0.018	0.014	0.0016	608	0.05
beta-Endosulfan	0.93	9.7	0.93	8.5	608	0.05
Bis(2-Chloroethyl)Ether	0.031	0.23	0.031	0.020	611/625	1
Bis(2-Chloroisopropyl) Ether	1,400	1,300	1,300	1,200	625	0.6
Bis(2-Ethylhexyl) Phthalate	1.8	2.3	1.8	0.20	625	0.5
Bromoform	4.3	38	4.3	3.3	624	2
Butylbenzyl Phthalate	NC	215	215	190	625	0.6
Carbon Tetrachloride	0.25	1.2	0.25	0.10	624/601 or SM6230B	2
Chlordane	0.00057	0.00093	0.00057	0.000081	608	0.05
Chlorobenzene	680	421	421	74	624	2
Chlorodibromomethane	0.41	3.6	0.41	0.31	624	2
Chloroform	5.7	301	5.7	260	624 or SM6210B	2
Chloromethyl ether, bis	NC	NC	NC	0.000024	NL	NL
Chrysene	0.0028	0.015	0.0028	0.0013	610/625	0.6
Copper	NC	1,300	1,300	1,300	200.8	2
Cyanide	700	700	700	130	335.4	10
Dibenzo (a,h) Anthracene	0.0028	0.015	0.0028	0.0013	625	1.6
Dichlorobromomethane	0.27	4.9	0.27	0.42	624	2
Dieldrin	0.00014	0.000061	0.000061	0.0000053	608	0.05

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	Alternative 1	Alternative 2	Alternative 3	Alternative 4	EPA or Standard Methods (SM) Method	Quantitation Level
Diethyl Phthalate	23,000	4,300	4,300	3,800	625	7.6
Dimethyl Phthalate	313,000	96,000	96,000	84,000	625	6.4
Di-n-Butyl Phthalate	2,700	455	455	400	625	1
Dinitrophenols	NC	NC	NC	62	NL	NL
Endosulfan Sulfate	0.93	9.7	0.93	8.5	608	0.05
Endrin	0.76	0.034	0.034	0.024	608	0.05
Endrin Aldehyde	0.76	0.034	0.034	0.030	608	0.05
Ethylbenzene	3,100	934	934	160	624	2
Fluoranthene	300	16	16	14	625	0.6
Fluorene	1,300	441	441	390	625	0.6
gamma-BHC (Lindane)	0.019	1.0	0.019	0.17	608	0.05
Heptachlor	0.00021	0.000091	0.000091	0.0000079	608	0.05
Heptachlor Epoxide	0.00010	0.000045	0.000045	0.0000039	608	0.05
Hexachlorobenzene	0.00075	0.00033	0.00033	0.000029	612/625	0.6
Hexachlorobutadiene	0.44	4.1	0.44	0.36	625	1
Hexachlorocyclo-hexane, technical	NC	NC	NC	0.0014	NL	NL
Hexachloro-cyclopentadiene	240	174	174	30	1625B/625	1
Hexachloroethane	1.9	3.3	1.9	0.29	625	1
Indeno (1,2,3-cd) Pyrene	0.0028	0.015	0.0028	0.0013	610/625	1
Isophorone	8.4	304	8.4	27	625	1
Manganese	NC	NC	NC	NC	200.8	0.5
Methoxychlor	NC	NC	NC	100	NL	NL
Methyl Bromide	48	42	42	37	624/601	10
Methylene Chloride	4.7	49	4.7	4.3	624	10

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	Alternative 1	Alternative 2	Alternative 3	Alternative 4	EPA or Standard Methods (SM) Method	Quantitation Level
Methylmercury	NC	NC	NC	NC	NL	NL
Nickel	610	156	156	140	200.8	0.5
Nitrates	NC	NC	NC	10,000	NL	NL
Nitrobenzene	17	16	16	14	625	1
Nitrosamines	NC	NC	NC	0.00079	NL	NL
N-Nitrosodibutylamine	NC	NC	NC	0.0050	NL	NL
N-Nitrosodiethylamine	NC	NC	NC	0.00079	NL	NL
N-Nitrosodimethylamine	0.00069	0.0078	0.00069	0.00068	607/625	4
N-Nitrosodi-n-Propylamine	NC	0.052	0.052	0.0046	607/625	1
N-Nitrosodiphenylamine	5.0	6.3	5.0	0.55	625	1
N-Nitrosopyrrolidine	NC	NC	NC	0.016	NL	NL
Pentachlorobenzene	NC	NC	NC	0.15	NL	NL
Pentachlorophenol	0.28	1.7	0.28	0.15	625	1
Phenol	21,000	10,700	10,700	9,400	625	4
Polychlorinated Biphenyls (PCBs)	0.00017	0.000073	0.00017	0.000064	608	0.5
Pyrene	960	331	331	290	625	0.6
Selenium	NC	141	141	120	200.8	1
Tetrachloroethylene	0.80	2.7	0.80	0.24	624	2
Thallium	1.7	0.24	0.24	0.043	200.8	0.36
Toluene	6,800	4,100	4,100	720	624	2
Toxaphene	0.00073	0.00032	0.00032	0.000028	608	0.5
Trichloroethylene	2.7	16	2.7	1.4	624	2
Vinyl Chloride	2.0	0.26	0.26	0.023	624/SM6200B	2
Zinc	NC	2,300	2,300	2,100	200.8	2.5

***From Attachment A – Effluent characterization for permit application.**

(Available online at: <http://www.ecy.wa.gov/programs/wq/permits/forms.html>.)

HHC Alternative 1	Not proceed with any rule revisions and remain under the National Toxics Rule for human health criteria. This uses a fish consumption rate of 6.5 grams/day and a risk level of one in a million for the carcinogenic chemicals.
HHC Alternative 2	This uses a fish consumption rate of 175 grams/day and a risk level of one in 100,000 for the carcinogenic chemicals.
HHC Alternative 3	This is the preferred alternative and the alternative presented in the September 30, 2014 preliminary draft rule. This uses a fish consumption rate of 175 grams/day, a policy overlay that no calculated criteria will be less protective than the existing NTR and a decision to use a risk level of one in 100,000 for the carcinogenic chemicals.
HHC Alternative 4	Adopt criteria identical to the criteria adopted in Oregon State.

General Notes:

All criteria and analytical level values are expressed as µg/L unless noted otherwise

Red Font indicates Carcinogen

NC = No Criterion

NL = Not Listed

HHC Alternative 1 (NTR) calculated using a Body Weight (BW) of 70 kg; HHC Alternatives 2 & 3 use a BW of 80 kg.

HHC Alternatives 1, 2, & 3 calculated using a Drinking Water Intake (DI) of 2 L/day.

HHC Alternative 4 (Oregon Criteria) generally calculated using a FCR = 175 g/day, BW = 70kg, DI = 2 L/day, and Risk = 10⁻⁶. See Oregon Criteria (online at <http://www.deq.state.or.us/wq/standards/toxics.htm>) for additional details