UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
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Seattle, WA 98101-3140

OFFICE OF
WATER AND
WATERSHEDS

NOV 15 2016

Ms. Maia Bellon, Director
Department of Ecology
Post Office Box 47600
Olympia, Washington 98504-7600

Re: EPA's Partial Approval/Partial Disapproval of Washington's Human Health Water Quality Criteria and Implementation Tools

Dear Ms. Bellon:

The Environmental Protection Agency has completed its Clean Water Act review of the new and revised water quality standards (WQS) that the Department of Ecology (Ecology) submitted to the EPA on August 1, 2016. The EPA values the leadership that Washington has shown in completing its development and adoption of human health criteria for toxics. The EPA recognizes that Ecology developed this rule after engaging in an extensive public process spanning several years, and worked collaboratively with EPA, tribes, and key stakeholders throughout the process. The EPA also acknowledges the importance of strategies for reasonably implementing these water quality criteria in Clean Water Act programs and is committed to continue working with Ecology and others on implementation over the long-term.

Under CWA section 303(c), 33 U.S.C. 1313(c), and the EPA's implementing regulations at 40 CFR 131.4, states have the primary responsibility for reviewing, establishing, and revising WQS, which include the designated uses of a waterbody or waterbody segment and the water quality criteria necessary to protect those designated uses. CWA section 303(c) also requires states to submit new or revised WQS to EPA for review, as the EPA must ensure that those WQS are consistent with the CWA and EPA's implementing regulations.

The new and revised WQS are located in the Water Quality Standards for Surface Waters of the State of Washington (Chapter 173-201A WAC):

- Human Health Criteria and Other Narrative Revisions (WAC 173-201A-240)
- Variances (WAC 173-201A-420)
- Intake Credits (WAC 173-201A-460)
- Compliance Schedules (WAC 173-201A-510(4))
- Implementation Clarification for Combined Sewer Overflows (CSO) Treatment Plants (WAC 173-201A-510(6))

A summary of EPA's actions is provided below and further described in the enclosed *Technical Support Document for EPA's Partial Approval/Partial Disapproval of Washington's Human Health Water Quality Criteria and Implementation Tools* (hereafter referred to as the TSD).

Summary of the EPA's Actions

The EPA initially established Washington's human health water quality criteria for toxic pollutants in the 1992 National Toxics Rule (NTR).[1] Ecology's August 1, 2016 submittal contains 192 new human health criteria for 97 priority pollutants that are applicable to all surface waters of the state. The EPA is taking action under CWA section 303(c) to approve in part, and disapprove in part, the human health criteria submitted by Washington. Specifically:

I. Pursuant to the EPA's authority under CWA section 303(c) and implementing regulations at 40 CFR Part 131, the EPA is approving the following:

- 45 human health criteria contained in Table 240
- Narrative revisions at WAC 173-201A-240, in part
- Revisions to the variance provision at WAC 173-201A-420, in part
- Revisions to the compliance schedule provision at WAC 173-201A-510(4), in part

II. Pursuant to the EPA's authority under CWA section 303(c) and implementing regulations at 40 CFR Part 131, the EPA is disapproving the following:

- 143 human health criteria contained in Table 240 and associated footnotes
- Narrative language at WAC 173-201A-240(3)
- Part of the variance provision at WAC 173-201A-420(5)(a)

The EPA is not taking action on the following because they are not WQS reviewable under CWA section 303(c):

- Certain footnotes to Table 240
- Narrative language at WAC 173-201A-240(4)
- New intake credit rule at WAC 173-201A-460
- New provision regarding implementation for CSO Treatment Plants at WAC 173-201A-510(6)

In addition, the EPA is taking no action under CWA section 303(c) at this time on four new human health criteria submitted by Ecology for two pollutants (thallium and 2,3,7,8-TCDD (dioxin)) and part of the compliance schedule provision at WAC 173-201A-510(4)(a)(i). Additional information and a detailed discussion of the rationale supporting all of the EPA's decisions is included in the enclosed TSD.

The EPA's Evaluation of Washington's New Human Health Criteria

In reviewing Washington's submittal, the EPA began by evaluating whether Washington's human health criteria are protective of Washington's applicable designated uses and based on sound scientific rationale, consistent with 40 CFR 131.11. It is important to note that while the EPA carefully considers

[1] The EPA. 1992. *Toxics Criteria for Those States Not Complying with Clean Water Act*, section 303(c)(2)(B). 40 CFR Part 131.36. http://water.epa.gov/lawsregs/rulesregs/ntr/. Amended in 1999 for PCBs. http://water.epa.gov/lawsregs/rulesregs/ntrfact.cfm.

the scientific defensibility and protectiveness of both the inputs used to derive criteria and the resulting criteria values, it is ultimately on the criteria values that EPA takes approval or disapproval action under CWA section 303(c). EPA evaluated Washington's criteria values against criteria that the EPA determined would be protective of the state's designated uses and scientifically defensible (e.g., based on appropriate bioaccumulation factors (BAFs) and protective relative source contribution (RSC) values of less than 1). In so doing, the EPA determined that there are instances where Washington's criteria are as stringent as or more stringent than criteria the EPA determined would be protective of the state's designated uses and scientifically defensible, using appropriate inputs. CWA section 510, 33 U.S.C. § 1370, preserves the authority of states to adopt more stringent standards than otherwise required by the CWA. Therefore, the EPA is approving Washington's criteria where they are as stringent as or more stringent than scientifically defensible criteria that the EPA determined would be protective of Washington's designated uses, consistent with CWA requirements and the EPA's implementing regulations, specifically 40 CFR 131.11.

Additionally, the EPA is approving most revisions to the narrative language at WAC 173-201A-240 (such as the new downstream waters provision), but is taking no action on one provision and disapproving one provision, which is further described in the enclosed TSD.

Under CWA section 303(c)(3) and the EPA's regulations at 40 CFR 131.21 and 131.22, if EPA disapproves a state or tribe's new or revised water quality standards, it must "specify the changes" necessary to meet the applicable requirements of the CWA and the EPA's regulations. A comprehensive summary of the EPA's actions and the specific changes necessary to address each disapproval are included in the TSD.

For the criteria that the EPA disapproved, concurrent with this action on Washington's submittal, the EPA is finalizing a federal rule for Washington containing 144 human health criteria in accordance with CWA section 303(c)(3) and (c)(4) requirements.[2] After the effective date of the final rule, those federal criteria will be in effect for CWA purposes along with the human health criteria that Washington adopted and the EPA is approving in this action. For reference, the EPA is also enclosing a table of the CWA-effective human health criteria applicable to Washington, which shows the Ecology criteria approved by the EPA and the EPA federally promulgated criteria. Washington continues to have the option to adopt and submit to the EPA human health criteria for the pollutants in the EPA's final federal rule, consistent with CWA section 303(c) and the EPA's implementing regulations at 40 CFR part 131.

The EPA's Evaluation of Washington's New and Revised Implementation Tools

Regarding the state's implementation tools, the EPA is approving Ecology's revisions to its variance provision and compliance schedule provision, in part. The EPA is disapproving WAC 173-201A-420(5)(a) of the variance provision since it conflicts with 40 CFR 131.14. EPA is not acting on WAC 173-201A-510(4)(a)(i) of the compliance schedule provision pertaining to aquatic life criteria at this time, since the EPA has yet to complete Endangered Species Act (ESA) consultation. The EPA is taking

[2] The EPA is promulgating a different number of human health criteria (144) than it is disapproving (143) in Ecology's 2016 submittal. Ecology did not adopt org only criteria for methylmercury or water + org and org only criteria for bis(2-chloro-1-methylethyl) ether. These are priority pollutants for which the EPA has 304(a) recommended criteria, and CWA section 303(c)(2)(B) requires that states adopt numeric criteria for these pollutants, as necessary to support the states' designated uses. Therefore, the EPA is including these three criteria in its final federal rule for Washington. The EPA's final federal rule, however, does not include revised water + org and org only criteria for arsenic, even though the EPA is disapproving the arsenic criteria in Ecology's submittal. Therefore, the existing water + org and org only arsenic criteria from the NTR (0.018 µg/L and 0.14 µg/L) will remain in effect.

no action on the remaining implementation tools (intake credit rule and CSO implementation clarification) since these provisions pertain to National Pollutant Discharge Elimination System (NPDES) implementation and are not new or revised WQS reviewable under CWA section 303(c). The state may use its approved implementation tools in concert with the approved new state criteria as well as the federal human health criteria applicable to Washington. The EPA recognizes the importance of implementation tools in making progress toward improved water quality while allowing a reasonable time for industry to comply with more stringent requirements, and remains committed to providing assistance to Ecology during implementation of the criteria.

Conclusion

As noted above, the EPA appreciates Ecology's significant efforts to update human health criteria for Washington waters over the last several years. The EPA's actions support key advances Ecology made to update the criteria based on regional and local data, such as the use of available tribal fish consumption surveys. At the same time, the EPA felt it was necessary to also adopt criteria based on the latest national criteria recommendations in the absence of a sufficient rationale for departing from those recommendations. The combination of the EPA-approved criteria from the state's rule and the criteria in the EPA's final federal rule set an appropriate level of protection for all Washington citizens, including tribal members with treaty-protected fishing rights. As stated previously, the EPA remains available to work closely with Ecology and others during implementation of the criteria.

We look forward to continuing our work together to protect Washington's water quality. If you have any questions or comments, please contact me at (206) 553-1855 or you may contact Angela Chung, the Water Quality Standards Unit Manager, at (206) 553-6511.

Sincerely,

Daniel D. Opalski, Director
Office of Water and Watersheds

Enclosures

cc: Mr. Kelly Susewind, Ecology
Ms. Heather Bartlett, Ecology
Ms. Melissa Gildersleeve, Ecology
Ms. Cheryl Niemi, Ecology

CWA-Effective Human Health Criteria Applicable to Washington

Ecology criteria approved by EPA
EPA federally promulgated criteria

			CWA-Effective Criteria	
	Chemical	CAS Number	Water & Organisms (µg/L)	Organisms Only (µg/L)
1	1,1,1-Trichloroethane	71556	20000	50000
2	1,1,2,2-Tetrachloroethane	79345	0.1	0.3
3	1,1,2-Trichloroethane	79005	0.35	0.90
4	1,1-Dichloroethylene	75354	700	4000
5	1,2,4-Trichlorobenzene	120821	0.036	0.037
6	1,2-Dichlorobenzene	95501	700	800
7	1,2-Dichloroethane	107062	8.9	73
8	1,2-Dichloropropane	78875	0.71	3.1
9	1,2-Diphenylhydrazine	122667	0.01	0.02
10	1,2-Trans-Dichloroethylene	156605	200	1000
11	1,3-Dichlorobenzene	541731	2	2
12	1,3-Dichloropropene	542756	0.22	1.2
13	1,4-Dichlorobenzene	106467	200	200
14	2,3,7,8-TCDD (Dioxin)**	1746016	0.000000013	0.000000014
15	2,4,6-Trichlorophenol	88062	0.25	0.28
16	2,4-Dichlorophenol	120832	10	10
17	2,4-Dimethylphenol	105679	85	97
18	2,4-Dinitrophenol	51285	30	100
19	2,4-Dinitrotoluene	121142	0.039	0.18
20	2-Chloronaphthalene	91587	100	100
21	2-Chlorophenol	95578	15	17
22	2-Methyl-4,6-Dinitrophenol	534521	3	7
23	3,3'-Dichlorobenzidine	91941	0.0031	0.0033
24	3-Methyl-4-Chlorophenol	59507	36	36
25	4,4'-DDD	72548	0.0000079	0.0000079
26	4,4'-DDE	72559	0.00000088	0.00000088
27	4,4'-DDT	50293	0.0000012	0.0000012
28	Acenaphthene	83329	30	30
29	Acrolein	107028	1.0	1.1
30	Acrylonitrile	107131	0.019	0.028
31	Aldrin	309002	0.000000041	0.000000041
32	alpha-BHC	319846	0.000048	0.000048
33	alpha-Endosulfan	959988	6	7
34	Anthracene	120127	100	100
35	Antimony	7440360	6	90
36	Arsenic**	7440382	0.018	0.14
37	Asbestos[a]	1332214	7,000,000 (fibers/L)	

CWA-Effective Human Health Criteria Applicable to Washington

Ecology criteria approved by EPA
EPA federally promulgated criteria

			CWA-Effective Criteria	
	Chemical	CAS Number	Water & Organisms (µg/L)	Organisms Only (µg/L)
38	Benzene- Upper CSF	71432	0.44	1.6
39	Benzidine	92875	0.00002	0.000023
40	Benzo(a) Anthracene	56553	0.00016	0.00016
41	Benzo(a) Pyrene	50328	0.000016	0.000016
42	Benzo(b) Fluoranthene	205992	0.00016	0.00016
43	Benzo(k) Fluoranthene	207089	0.0016	0.0016
44	beta-BHC	319857	0.0013	0.0014
45	beta-Endosulfan	33213659	9.7	10
46	Bis(2-Chloroethyl) Ether	111444	0.02	0.06
47	Bis(2-Chloro-1-Methylethyl) Ether*	108601	400	900
48	Bis(2-Ethylhexyl) Phthalate	117817	0.045	0.046
49	Bromoform	75252	4.6	12
50	Butylbenzyl Phthalate	85687	0.013	0.013
51	Carbon Tetrachloride	56235	0.2	0.35
52	Chlordane	57749	0.000022	0.000022
53	Chlorobenzene	108907	100	200
54	Chlorodibromomethane	124481	0.60	2.2
55	Chloroform	67663	100	600
56	Chrysene	218019	0.016	0.016
57	Copper[a]	7440508	1300	
58	Cyanide	57125	9	100
59	Dibenzo(a,h) Anthracene	53703	0.000016	0.000016
60	Dichlorobromomethane	75274	0.73	2.8
61	Dieldrin	60571	0.000000070	0.000000070
62	Diethyl Phthalate	84662	200	200
63	Dimethyl Phthalate	131113	600	600
64	Di-n-Butyl Phthalate	84742	8	8
65	Endosulfan Sulfate	1031078	9	10
66	Endrin	72208	0.002	0.002
67	Endrin Aldehyde	7421934	0.034	0.035
68	Ethylbenzene	100414	29	31
69	Fluoranthene	206440	6	6
70	Fluorene	86737	10	10
71	gamma-BHC; Lindane	58899	0.43	0.43
72	Heptachlor	76448	0.00000034	0.00000034
73	Heptachlor Epoxide	1024573	0.0000024	0.0000024
74	Hexachlorobenzene	118741	0.0000050	0.0000050

CWA-Effective Human Health Criteria Applicable to Washington

Ecology criteria approved by EPA
EPA federally promulgated criteria

			CWA-Effective Criteria	
	Chemical	CAS Number	Water & Organisms (µg/L)	Organisms Only (µg/L)
75	Hexachlorobutadiene	87683	0.01	0.01
76	Hexachlorocyclopentadiene	77474	1	1
77	Hexachloroethane	67721	0.02	0.02
78	Indeno(1,2,3-cd) Pyrene	193395	0.00016	0.00016
79	Isophorone	78591	27	110
80	Methyl Bromide	74839	300	2400
81	Methylene Chloride	75092	10	100
82	Methylmercury[b]	22967926		0.03
83	Nickel	7440020	80	100
84	Nitrobenzene	98953	30	100
85	N-Nitrosodimethylamine	62759	0.00065	0.34
86	N-Nitrosodi-n-Propylamine	621647	0.0044	0.058
87	N-Nitrosodiphenylamine	86306	0.62	0.69
88	Pentachlorophenol (PCP)	87865	0.002	0.002
89	Phenol	108952	9000	70000
90	Polychlorinated Biphenyls (PCBs)[c]		0.000007	0.000007
91	Pyrene	129000	8	8
92	Selenium	7782492	60	200
93	Tetrachloroethylene	127184	2.4	2.9
94	Thallium**	7440280	1.7	6.3
95	Toluene	108883	72	130
96	Toxaphene	8001352	0.000032	0.000032
97	Trichloroethylene	79016	0.3	0.7
98	Vinyl Chloride	75014	0.02	0.18
99	Zinc	7440666	1000	1000

[a] This criterion is based on a regulatory level developed under the Safe Drinking Water Act.

[b] This criterion is expressed as the fish tissue concentration of methylmercury (mg methylmercury/kg fish). See *Water Quality Criterion for the Protection of Human Health: Methylmercury* (EPA-823-R-01-001, January 3, 2001) for how this value is calculated using the criterion equation in EPA's 2000 Human Health Methodology rearranged to solve for a protective concentration in fish tissue rather than in water.

[c] This criterion applies to total PCBs (e.g., the sum of all congener or isomer or homolog or Aroclor analyses).

* Bis(2-Chloro-1-Methylethyl) Ether was previously listed as Bis(2-Chloroisopropyl) Ether.

** EPA withdrew its proposal for these criteria, so the CWA-effective criteria are those that EPA originally promulgated for Washington in the National Toxics Rule.

Technical Support Document

The EPA's Partial Approval/Partial Disapproval of Washington's Human Health Water Quality Criteria and Implementation Tools Submitted on August 1, 2016

November 15, 2016

Technical Support Document

The EPA's Partial Approval/Partial Disapproval of Washington's Human Health Water Quality Criteria and Implementation Tools Submitted on August 1, 2016

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Technical Support Document
The EPA's Partial Approval/Partial Disapproval of Washington's Human Health Water Quality Criteria and Implementation Tools Submitted on August 1, 2016

I. INTRODUCTION

On August 1, 2016, the Washington Department of Ecology (Ecology) submitted new and revised water quality standards (WQS)[1] to the U.S. Environmental Protection Agency (EPA or the "Agency") for review and approval. The new and revised WQS were adopted by Ecology on August 1, 2016, and included the first-time adoption of human health criteria into Washington's WQS. Ecology's submittal also included new and revised language on implementation tools: variances, compliance schedules, intake credits, and combined sewer overflow (CSO) treatment plants. These new and revised criteria and provisions are located in the Water Quality Standards for Surface Waters of the State of Washington (Chapter 173-201A WAC):

- Human Health Criteria and Other Narrative Revisions (WAC 173-201A-240)
- Variances (WAC 173-201A-420)
- Intake Credits (WAC 173-201A-460)
- Compliance Schedules (WAC 173-201A-510(4))
- Implementation Clarification for Combined Sewer Overflows (CSO) Treatment Plants (WAC 173-201A-510(6))

The EPA initially established Washington's human health criteria for toxic pollutants in the 1992 National Toxics Rule (NTR).[2] Ecology's August 1, 2016 submittal contains 192 new human health criteria for 97 priority pollutants that are applicable to all surface waters of the state. The EPA is taking action under CWA section 303(c), 33 U.S.C. § 1313(c), to approve in part, and disapprove in part, the human health criteria submitted by Washington. The EPA is also taking no action on four new human health criteria submitted by Ecology for two pollutants (thallium and 2,3,7,8-TCDD (dioxin)).

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[1] Ecology. 2016. Letter dated August 1, 2016, from Maia Bellon, Director, Washington Department of Ecology, to Dennis McLerran, Regional Administrator, Region 10, U.S. Environmental Protection Agency, RE: Submittal of Water Quality Standards for Clean Water Act.

[2] EPA. 1992. *Toxics Criteria for Those States Not Complying with Clean Water Act*, section 303(c)(2)(B). 40 CFR Part 131.36. http://water.epa.gov/lawsregs/rulesregs/ntr/. Amended in 1999 for PCBs. https://www.epa.gov/wqs-tech/human-health-water-quality-criteria-polychlorinated-biphenyls-pcbs-national-toxics-rule-ntr.

The EPA is approving 45 and disapproving 143 of Washington's human health criteria under CWA section 303(c). The EPA is disapproving these human health criteria for surface waters of the State of Washington based on an evaluation of whether the human health criteria are based on sound scientific rationale and protective of applicable designated uses in Washington. Concurrent with this action, the EPA is finalizing a federal rule for Washington containing 144 human health criteria in accordance with CWA section 303(c)(3) and (c)(4) requirements.[3] After the effective date of the final rule, those federal criteria will be in effect for CWA purposes along with the human health criteria that Washington adopted and the EPA is approving in this action. Washington continues to have the option to adopt and submit to the EPA human health criteria for the pollutants in the EPA's final federal rule, consistent with CWA section 303(c) and the EPA's implementing regulations at 40 CFR part 131.

Additionally, the EPA is approving most revisions to the narrative language at WAC 173-201A-240 (such as the new downstream waters provision), but is taking no action on one provision and disapproving one provision.

Regarding the state's implementation tools, the EPA is approving Ecology's revisions to the variance provision and compliance schedule provision, in part. The EPA is disapproving WAC 173-201A-420(5)(a) of the variance provision because it conflicts with 40 CFR 131.14. The EPA is not acting on WAC 173-201A-510(4)(a)(i) of the compliance schedule provision pertaining to aquatic life criteria at this time, because the Agency has yet to complete Endangered Species Act (ESA) consultation. The EPA is taking no action on the remaining implementation tools (intake credit rule and CSO implementation clarification) because these provisions are not WQS reviewable under CWA section 303(c).

Part II of this document provides additional background information about Washington's August 1, 2016 WQS submittal. Parts III, IV, V, and VI of this document provide the basis for this action under CWA section 303(c) and the EPA's implementing regulations at 40 CFR 131.

II. BACKGROUND

A. *Clean Water Act Requirements for Water Quality Standards*

Under CWA section 303(c) and the EPA's implementing regulations at 40 CFR part 131, states have the primary responsibility for reviewing, establishing, and revising WQS, which include the designated uses of a waterbody or waterbody segment and the water quality criteria necessary to protect those designated uses. The EPA's regulations at 40 CFR 131.11(a)(1) provide that

[3] The EPA is promulgating a different number of human health criteria (144) than it is disapproving (143) in Ecology's 2016 submittal. Ecology did not adopt org only criteria for methylmercury or water + org and org only criteria for bis(2-chloro-1-methylethyl) ether. These are priority pollutants for which the EPA has 304(a) recommended criteria, and, as such, CWA section 303(c)(2)(B) requires that states adopt numeric criteria for these pollutants, as necessary to support the states' designated uses. Therefore, the EPA is including these three criteria in its final federal rule for Washington. The EPA's final federal rule, however, does not include revised water + org and org only criteria for arsenic, as explained below, even though the EPA is disapproving the arsenic criteria in Ecology's submittal. Therefore, the existing water + org and org only arsenic criteria from the NTR (0.018 µg/L and 0.14 µg/L) will remain in effect.

"[s]uch criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. For waters with multiple use designations, the criteria shall support the most sensitive use." In addition, 40 CFR 131.10(b) provides that "[i]n designating uses of a water body and the appropriate criteria for those uses, the state shall take into consideration the water quality standards of downstream waters and ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters."

CWA section 303(c)(2)(B) requires states to adopt numeric water quality criteria for toxic pollutants listed pursuant to section 307(a)(1), 33 U.S.C. 1317(a)(1), for which the EPA has published criteria under section 304(a), 33 U.S.C. 1314(a), where the discharge or presence of these toxics could reasonably be expected to interfere with the designated uses adopted by the state. In adopting such criteria, states should establish numeric values based on one of the following: (1) section 304(a) criteria; (2) section 304(a) criteria modified to reflect site-specific conditions; or, (3) other scientifically defensible methods. 40 CFR 131.11(b). Above and beyond these requirements, states can establish narrative criteria where numeric criteria cannot be established, or to supplement numeric criteria.

At least once every three years, states are required to review their applicable WQS, and as appropriate, modify these standards and/or adopt new standards. 40 CFR 131.20. CWA section 303(c) also requires states to submit new or revised WQS to the EPA for review, as the EPA must ensure that any revisions to surface WQS are consistent with the CWA and the EPA's implementing regulations. In addition, the state must follow its own legal procedures for adopting such standards, 40 CFR 131.5, and submit certification by the state's attorney general, or other appropriate legal authority within the state, that the WQS were duly adopted pursuant to state law, 40 CFR 131.6(e).

B. *Overview of Washington's August 1, 2016 WQS Submission*

The State of Washington proposed human health criteria and revisions to certain implementation tools (e.g., variances and compliance schedules) in January 2015. This proposal came after significant public outreach and numerous meetings starting in 2011. However, in July 2015, Governor Inslee directed Ecology to reconsider its proposed human health criteria and implementation tool revisions given that the 2015 Legislature did not pass proposed legislation and funding for stronger controls on toxics.

In June 2015, the EPA finalized updates to the Agency's national 304(a) recommendations for the protection of human health for 94 chemical pollutants.[4] These updated recommendations reflect the latest scientific information and the EPA policies, including updated body weight, drinking water consumption rate, fish consumption rate (FCR), bioaccumulation factors (BAFs), toxicity values, and relative source contribution (RSC) values. The EPA accepted written scientific views from the public from May to August 2014 on the draft updated 304(a) human

[4] Federal Register. Vol. 80, No. 124. June 29, 2015. *Final Updated Ambient Water Quality Criteria for the Protection of Human Health.* https://www.gpo.gov/fdsys/pkg/FR-2015-06-29/html/2015-15912.htm.

health criteria recommendations and published responses to those comments. The EPA water quality criteria serve as recommendations to states and tribes authorized to establish WQS under the CWA.

In September 2015, the EPA published a proposed rule to revise the current federal CWA human health water quality criteria applicable to Washington waters to ensure that the criteria are set at levels that protect fish consumers in Washington, including tribes with treaty-protected rights, from exposure to toxic pollutants. The rule proposed to update the human health criteria initially established for Washington in the 1992 National Toxics Rule (NTR).[5] The EPA's proposed rule updated the FCR based on more recent regional and local fish consumption data, and updated the toxicity and exposure information, consistent with the EPA's 2015 304(a) recommended human health criteria. The EPA held two virtual public hearings on the proposed rule on December 15 and 16, 2015. The public comment period on the EPA's proposed rule ended on December 28, 2015.

In October 2015, Governor Inslee directed Ecology to revise the state's 2015 proposal. On February 1, 2016, Ecology proposed a new rule to adopt human health criteria and revise or establish new implementation tools. Ecology held four public hearings on the rule proposal, one in Western Washington, one in Eastern Washington, and two webinars on April 5-7, 2016. Ecology received comments from 77 entities on the 2016 proposed rule, including the EPA on April 22, 2016. Ecology's 2016 proposal incorporated new science and included several risk management decisions that affect the final criteria values. In particular, Ecology's 2016 proposed rule used the current cancer risk level in Washington's WQS: one-in-one-million (10^{-6}) for most chemical pollutants and a FCR of 175 g/day. As previously noted, Ecology adopted final human health criteria and revised implementation tools on August 1, 2016.

Ecology's August 1, 2016 submittal includes human health criteria for 97 different toxic pollutants, which represent all CWA section 307(a) priority toxic pollutants, except for methylmercury and bis(2-chloro-1-methylethyl) ether, for which the EPA has developed 304(a) recommendations for the protection of human health. Ecology added the new criteria values to Table 240 in the state's WQS, which also contains aquatic life criteria. Ecology's submittal also included new and revised language on implementation tools: variances, compliance schedules, intake credits, and combined sewer overflow (CSO) treatment plants.

Ecology's August 1, 2016 submittal package included the following enclosures:

A. Submittal Crosswalk.
B. A memorandum from the Attorney General's office certifying the standards were duly adopted pursuant to state law dated July 28, 2016.
C. *Water Quality Standards for Surface Waters of the State of Washington, Chapter 173-201A WAC*, as revised on August 1, 2016.

[5] USEPA. 1992. *Toxics Criteria for Those States Not Complying with Clean Water Act*, section 303(c)(2)(B). 40 CFR Part 131.36. http://water.epa.gov/lawsregs/rulesregs/ntr/. Amended in 1999 for PCBs. https://www.epa.gov/wqs-tech/human-health-water-quality-criteria-polychlorinated-biphenyls-pcbs-national-toxics-rule-ntr.

D. *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment.* August 2016. Ecology Publication no. 16-10-025.
E. *Concise Explanatory Statement. Chapter 173-201 WAC Water Quality Standards for Surface Waters of the State of Washington. Summary of Rulemaking and response to comments.* August 2016. Ecology Publication no. 16-10-026.
F. *Rule Implementation Plan. Water Quality Standards for Surface Waters of the State of Washington. Amendments to Chapter 173-201A WAC.* August 2016. Ecology Publication no. 16-10-022.
G. *Final Cost-Benefit and Least-Burdensome Alternative Analyses. Chapter 173-201A WAC. Water Quality Standards for Surface Waters of the State of Washington.* August 2016. Ecology Publication no. 16-10-019.
H. *Final Environmental Impact Statement. Washington State's Changes to Water Quality Standards for Surface Waters of the State of Washington – WAC 173-201A.* July 2016. Ecology Publication no. 16-10-023.
I. *E-mails providing information on the priority pollutant bis(2-chloroisopropyl) ether.*
J. *EPA's Motion for Summary Judgement, US District Court, Western District, Case No. 2:16-cv-00293-JLR,* June 3, 2016.

Ecology's final rule adoption took effect under state law on September 1, 2016, but requires the EPA approval under CWA section 303(c) before the WQS are effective for CWA purposes.

In most cases, Ecology calculated human health criteria for each pollutant using the equations in the EPA's 2000 Human Health Methodology[6] for deriving human health criteria for carcinogens and non-carcinogens, with state-selected inputs. However, in the case of human health criteria for arsenic, copper, and asbestos, Ecology derived those values differently using Safe Drinking Water Act Maximum Contaminant Levels and Maximum Contaminant Level Goals. In addition, Ecology's 2016 submittal included new and revised implementation tools in the state's WQS.

Washington adopted human health criteria to protect human health from chronic (lifetime) exposure to toxic substances through drinking water and eating fish[7] obtained from surface waters. The calculations that Washington used to derive the human health criteria for non-carcinogens and carcinogens differed depending upon the primary exposure pathway for which the criteria were derived. Washington adopted "water + organism" criteria to protect human health from exposure through both drinking water and eating fish (in combination). Washington adopted "organism only" criteria to protect human health from exposure through eating fish alone (not in combination with drinking water). These two sets of criteria (i.e., "water + organism" and "organism only") are reflected in the column headings of Table 240 (Toxics Substances Criteria) in Washington's WQS.

In reviewing Washington's submittal, the EPA began by evaluating whether Washington's human health criteria are protective of Washington's applicable designated uses and based on

[6] USEPA. 2000. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health.* U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA-822-B-00-004. Available at: https://www.epa.gov/wqc/human-health-water-quality-criteria.
[7] As used throughout this technical support document, the term "fish" refers to finfish as well as shellfish.

sound scientific rationale, consistent with 40 CFR 131.11. It is important to note that while the EPA carefully considers the scientific defensibility and protectiveness of both the inputs used to derive criteria and the resulting criteria values, it is ultimately on the criteria values that the EPA takes approval or disapproval action under CWA section 303(c). The EPA evaluated Washington's criteria values against criteria that the EPA determined would be protective of the state's designated uses and scientifically defensible (e.g., based on appropriate bioaccumulation factors (BAFs) and protective relative source contribution (RSC) values of less than 1). In so doing, the EPA determined that there are instances where Washington's criteria are as stringent or more stringent than criteria the EPA determined would be protective of the state's designated uses and scientifically defensible, using appropriate inputs. CWA section 510, 33. U.S.C. § 1370, preserves the authority of states to adopt more stringent standards than otherwise required by the CWA. Therefore, the EPA is approving Washington's criteria where they are as stringent or more stringent than scientifically defensible criteria that the EPA determined would be protective of Washington's designated uses, consistent with CWA requirements and the EPA's implementing regulations at 40 CFR 131.11.

III. WASHINGTON'S HUMAN HEALTH WATER QUALITY CRITERIA

A. *Human Health Criteria and Application to Washington's Designated Uses*

Washington's designated uses for surface waters are found in WAC 173-201A-600 through 612. WAC 173-201A-600(1) states "All surface waters of the state not named in Table 602 are to be protected for the designated uses of: Salmonid spawning, rearing and migration; primary contact recreation; domestic, industrial, and agricultural water supply; stock watering; harvesting; commerce and navigation; boating; and aesthetic values." Human health criteria address the designated use of "harvest" and the uses listed below the description of the "harvest" use. Apart from the general designated use of "harvest," the specifically named designated uses in WAC 173-201A to which the human health criteria apply to are: Fresh waters – Harvesting (fish harvesting), Domestic Water (domestic water supply), and Recreational Uses; Marine waters – Shellfish Harvesting (shellfish—clam, oyster, and mussel—harvesting), Harvesting (salmonid and other fish harvesting, and crustacean and other shellfish—crabs, shrimp, scallops, etc.—harvesting), and Recreational Uses (see WAC 173-201A-600 and WAC 173-201A-610).

Washington's "water + organism" criteria apply where Washington has designated domestic water supply as a use. The "organism only" criteria apply where Washington has designated one of the uses listed above, but not the domestic water supply use.

B. *Criteria Methodology and Input Variables Used by Washington*

The human health criteria are based on two types of biological endpoints: (1) carcinogenicity and (2) systemic toxicity (i.e., all adverse effects other than cancer). Human health criteria for

carcinogenic effects are calculated using the following input parameters: cancer slope factor (CSF), cancer risk level, body weight, drinking water intake rate, fish consumption rate (FCR), and a bioaccumulation factor(s) (BAFs). Human health criteria for non-carcinogenic and nonlinear carcinogenic effects are calculated using a reference dose (RfD) in place of a CSF and cancer risk level, and a relative source contribution (RSC) factor, which is intended to ensure that an individual's total exposure to a given pollutant from all sources does not exceed the RfD. Each of these inputs is discussed in more detail below and in the EPA's 2000 Human Health Methodology. While the 2000 Human Health Methodology provides national default values, it also recommends that states use the guidance to derive criteria that appropriately reflect local conditions and that priority be given to identifying and protecting the most highly exposed population.[8]

a. Cancer Risk Level

The EPA's 304(a) national recommended human health criteria are typically based on the assumption that carcinogenicity is a "non-threshold phenomenon," which means that there are no "no-effect" levels, because even extremely small doses are assumed to cause a finite increase in the incidence of cancer. Therefore, the EPA calculates 304(a) human health criteria for carcinogenic effects as pollutant concentrations corresponding to lifetime increases in the risk of developing cancer. The EPA calculates its 304(a) human health criteria values at a 10^{-6} (one in one million) cancer risk level and recommends lifetime excess cancer risk levels of 10^{-6} or 10^{-5} (one in one hundred thousand) for the general population.[9] The EPA notes that states and authorized tribes can also choose a more stringent risk level, such as 10^{-7} (one in ten million), when deriving human health criteria.

If the pollutant is not considered to have the potential for causing cancer in humans (i.e., systemic toxicants), the EPA assumes that the pollutant has a threshold (the reference dose or RfD) below which a physiological mechanism exists to avoid or overcome the adverse effects of the pollutant.

The EPA takes an integrated approach and considers both cancer and non-cancer effects when deriving human health criteria. Where sufficient data are available, the EPA derives criteria using both carcinogenic and non-carcinogenic toxicity endpoints and recommends the lower value.

b. Cancer Slope Factor and Reference Dose

A dose-response assessment is required to understand the quantitative relationships between the exposure to a pollutant and the onset of human health effects. The EPA evaluates dose-response relationships derived from animal toxicity and human epidemiological studies to derive dose-response metrics. For carcinogenic toxicological effects, the EPA uses an oral cancer slope factor

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[8] USEPA. 2000. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health.* U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA 822-B-00-004. Pages iii, 1-11, 2-2.

[9] The EPA's 2000 methodology also states:
"Criteria based on a 10^{-5} risk level are acceptable for the general population as long as states and authorized tribes ensure that the risk to more highly exposed subgroups (sport fishers or subsistence fishers) does not exceed the 10^{-4} level."

(CSF) to derive human health criteria. The oral CSF is an upper bound, approximating a 95 percent confidence limit, on the increased cancer risk from a lifetime oral exposure to a stressor. For non-carcinogenic effects, the EPA uses the RfD to calculate human health criteria. A RfD is an estimate of a daily oral exposure of an individual to a substance that is likely to be without an appreciable risk of deleterious effects during a lifetime. An RfD is typically derived from a laboratory animal dosing study in which a no-observed-adverse-effect level (NOAEL), lowest-observed-adverse-effect level (LOAEL), or benchmark dose can be obtained. Uncertainty factors are applied to reflect the limitations of the data. The EPA's Integrated Risk Information System (IRIS)[10] was the primary source of toxicity values (i.e., RfD and CSF) for the EPA's 2015 updated 304(a) human health criteria.[11] For some pollutants, however, more recent peer-reviewed and publicly available toxicological data were available from other EPA program offices (e.g., Office of Pesticide Programs, Office of Water, Office of Land and Emergency Management), other national and international programs, and state programs.

c. Exposure Assumptions

The EPA's 2015 updated 304(a) national human health criteria use a default drinking water intake rate of 2.4 liters per day (L/day) and default FCR of 22 g/day for consumption of fish and shellfish from inland and nearshore waters, multiplied by pollutant-specific bioaccumulation factors (BAFs) to account for the amount of the pollutant in the edible portions of the ingested species. The EPA's 2000 Methodology for deriving human health criteria emphasizes using, when possible, measured or estimated BAFs, which account for chemical accumulation in aquatic organisms from all potential exposure routes.[12] In the 2015 national 304(a) human health criteria update the EPA primarily used field-measured BAFs, and laboratory-measured bioconcentration factors (BCFs) with applicable food chain multipliers available from peer-reviewed, publicly available databases, to develop national BAFs for three trophic levels of fish. If this information was not available, the EPA selected octanol-water partition coefficients (K_{ow} values) from peer-reviewed sources for use in calculating national BAFs.[13]

The EPA's national default drinking water intake rate of 2.4 L/day represents the per capita estimate of combined direct and indirect community water ingestion at the 90th percentile for adults ages 21 and older.[14] The EPA's national default FCR of 22 g/day represents the 90th percentile consumption rate of fish and shellfish from inland and nearshore waters for the U.S.

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[10] USEPA. Integrated Risk Information System (IRIS). U.S. Environmental Protection Agency, Office of Research and Development, Washington, D.C. www.epa.gov/iris.

[11] Final Updated Ambient Water Quality Criteria for the Protection of Human Health, (80 FR 36986, June 29, 2015). See also: USEPA. 2015. Final 2015 Updated National Recommended Human Health Criteria. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. https://www.epa.gov/wqc/human-health-water-quality-criteria.

[12] USEPA. 2000. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA-822-B-00-004. https://www.epa.gov/wqc/human-health-water-quality-criteria.

[13] Final Updated Ambient Water Quality Criteria for the Protection of Human Health, (80 FR 36986, June 29, 2015). See also: USEPA. 2015. Final 2015 Updated National Recommended Human Health Criteria. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. https://www.epa.gov/wqc/human-health-water-quality-criteria.

[14] USEPA. 2011. EPA Exposure Factors Handbook. 2011 edition (EPA 600/R-090/052F). http://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236252.

adult population 21 years of age and older, based on National Health and Nutrition Examination Survey (NHANES) data from 2003 to 2010.[15,16] The EPA calculates human health criteria using a default body weight of 80 kilograms (kg), the average weight of a U.S. adult age 21 and older, based on NHANES data from 1999 to 2006.

Although the EPA uses these default values to calculate national 304(a) recommended human health criteria, the EPA's 2000 Methodology notes a preference for the use of local data to calculate human health criteria (e.g., locally derived FCRs, drinking water intake rates and body weights, and waterbody-specific bioaccumulation rates) over national default values, where data are sufficient to do so, to better represent local conditions.[17] It is also important, where sufficient data are available, to select a FCR that reflects consumption that is not suppressed by concerns about the safety of available fish.[18] In addition to suppression effects as a result of the safety of available fish, suppression effects can also occur as a result of depleted fisheries, which may also be relevant for criteria setting purposes.[19] Deriving human health criteria using an unsuppressed FCR furthers the restoration goals of the CWA and ensures protection of human health-related designated uses (as pollutant levels decrease, fish habitats are restored, and fish availability increases over time). See the EPA's final federal rule for additional discussion regarding use of an unsuppressed FCR to protect a subsistence or sustenance fishing use, especially where the subsistence or sustenance use is based in whole or in part on tribal treaty or other reserved subsistence or sustenance fishing rights.

d. Relative Source Contribution

When deriving human health criteria for non-carcinogens and nonlinear carcinogens, the EPA recommends including a RSC value to account for sources of exposure other than drinking water and fish and shellfish from inland and nearshore waters, so that the pollutant effect threshold (i.e., RfD) is not apportioned to drinking water and fish consumption alone. The rationale for this approach is that for pollutants exhibiting threshold effects, the objective of the human health criteria is to ensure that an individual's total exposure from all sources does not exceed that threshold level. These other exposures include exposure to a particular pollutant from ocean fish and shellfish consumption (which is not included in the EPA's default national FCR), non-fish

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[15] USEPA. 2014. Estimated Fish Consumption Rates for the U.S. Population and Selected Subpopulations (NHANES 2003-2010). United States Environmental Protection Agency, Washington, DC, USA. EPA 820-R-14-002.

[16] The EPA's national FCR is based on the total rate of consumption of fish and shellfish from inland and nearshore waters (including fish and shellfish from local, commercial, aquaculture, interstate, and international sources). This is consistent with a principle that each state does its share to protect people who consume fish and shellfish that originate from multiple jurisdictions. USEPA. January 2013. *Human Health Ambient Water Quality Criteria and Fish Consumption Rates: Frequently Asked Questions.* https://www.epa.gov/wqc/human-health-ambient-water-quality-criteria-and-fish-consumption-rates-frequently-asked.

[17] USEPA. 2000. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA-822-B-00-004. https://www.epa.gov/wqc/human-health-water-quality-criteria.

[18] USEPA. January 2013. *Human Health Ambient Water Quality Criteria and Fish Consumption Rates: Frequently Asked Questions.* https://www.epa.gov/wqc/human-health-ambient-water-quality-criteria-and-fish-consumption-rates-frequently-asked.

[19] For a more thorough discussion of suppression effects and their implications, see National Environmental Justice Advisory Council, *Fish Consumption and Environmental Justice*, p.44 (2002) *available at* https://www.epa.gov/sites/production/files/2015-02/documents/fish-consump-report_1102.pdf.

food consumption (e.g., fruits, vegetables, grains, meats, poultry), dermal exposure, and inhalation exposure. The EPA's guidance includes a procedure for determining an appropriate RSC value ranging from 0.2 to 0.8 for a given pollutant.

Washington used the equations in Figures 1 and 2 to calculate criteria for carcinogens and non-carcinogens, respectively.

Figure 1. Simplified version of the equation used by Washington in deriving the human health criteria for carcinogens.

$$AWQC = \frac{(Risk\ Level \bullet BW)}{[CSF \bullet (DI + (FCR \bullet BAF))]}$$

where:

AWQC	=	Ambient Water Quality Criterion (milligrams per liter)
Risk Level	=	Risk level (unitless)
CSF	=	Cancer slope factor (milligrams per kilogram per day)
BW	=	Human body weight (kilograms)
DI	=	Drinking water intake (liters per day)
FCR	=	Fish consumption rate (kilograms per day)
BAF	=	Bioaccumulation factor (liters per kilogram)

As recommended in the EPA's 2000 Human Health Methodology, Washington derived organism only criteria by removing the drinking water intake (DI) term.

Figure 2. Simplified version of the equation used by Washington in deriving the human health criteria for non-carcinogens.

$$AWQC = RfD \bullet RSC \bullet \frac{(BW)}{[DI + (FCR \bullet BAF)]}$$

where:

AWQC	=	Ambient Water Quality Criterion (milligrams per liter)
RfD	=	Reference dose for noncancer effects (milligrams per kilogram per day)
RSC	=	Relative source contribution factor to account for other sources of exposure (unitless)
BW	=	Human body weight (kilograms)
DI	=	Drinking water intake (liters per day)
FCR	=	Fish consumption rate (kilograms per day)
BAF	=	Bioaccumulation factor (liters per kilogram)

As recommended in the EPA's 2000 Human Health Methodology, Washington derived organism only criteria by removing the drinking water intake (DI) term.

When using the equations in Figures 1 and 2, Washington used the following inputs for the variables to derive human health criteria:

RfD: updated values in EPA IRIS and 2015 EPA 304(a) recommendation documents

RSC: 1

BW: 80 kilograms

DI: 2.4 liters per day

FCR: 175 grams per day

BCF/BAF: values from 1992 NTR and 1999 revision; EPA's 2002 Human Health Calculation Matrix and pre 2015 304(a) recommendations; and EPA 1980.

Cancer risk level: 1×10^{-6} (with the exception of PCBs)

CSF: updated values in EPA IRIS and 2015 EPA 304(a) recommendation documents

In the case of human health criteria for arsenic, copper, and asbestos, Ecology derived those values differently using Safe Drinking Water Act Maximum Contaminant Levels and Maximum Contaminant Level Goals. Other exceptions are described further below (e.g., cancer risk level specific to PCBs).

IV. The EPA's Review

As discussed above, the EPA's 2000 Human Health Methodology provides guidance for deriving human health criteria for toxic pollutants. For each input used in the criteria calculation, the EPA provides a national recommended value and guidance on specific adjustments that may be necessary to reflect local conditions and protect the most highly exposed populations. As part of evaluating whether Washington's criteria protect the applicable designated uses, the EPA reviewed Washington's selected input values by evaluating the scientific rationale for each input and whether there was Washington-specific information relative to each value that should be considered in the review.

A. *Inputs to Washington's Human Health Criteria*

1. *Cancer Risk Level*

Ecology derived human health criteria for carcinogens using the cancer risk level of one-in-one million (10^{-6}) as specified in 173-201A-240 WAC, except for the chemical-specific risk level for PCBs.

The EPA also used a cancer risk level of 10^{-6} to derive Washington's human health criteria for carcinogens in the 1992 NTR and the final federal rule to update the NTR for Washington. In the 1992 NTR, the EPA selected this cancer risk level with input from Washington. Around that

same time, Washington adopted a WQS provision that states: "*Risk-based criteria for carcinogenic substances shall be selected such that the upper-bound excess cancer risk is less than or equal to one in a million*" (WAC 173-201A-240(6)), and the EPA approved that provision in 1993. In Ecology's final rule, the risk level is identified in the newly formatted toxics criteria table at WAC 173-201A-240.

Ecology's selection of a 10^{-6} cancer risk level is consistent with the EPA's 2000 Human Health Methodology[20] and the EPA's final federal rule.

2. *Cancer Slope Factor and Reference Dose*

With two exceptions, Ecology used the RfDs and CSFs that correspond to the EPA's most recent 304(a) recommended criteria. These values are consistent with the EPA's final federal rule. For arsenic and 2,3,7,8-TCDD (dioxin), however, the state has used alternative approaches (see below).

3. *Exposure Assumptions*

i. *Fish Consumption Rate*

Ecology used a FCR of 175 g/day to derive the human health criteria. Ecology describes this decision as a Washington-specific risk management choice to use a value that: (1) is representative of state-specific information; and (2) was determined through a process that included consideration of the EPA guidance and precedent, and input from multiple groups of stakeholders.[21] Specifically, in selecting a FCR of 175 g/day, Ecology stated: "Since Washington has a strong tradition of fish and shellfish harvest and consumption from local waters, and within-state survey information indicates that different groups of people harvest fish both recreationally and for subsistence (Ecology, 2013), *Ecology has made the risk management decision to base the fish consumption rate used in the HHC equation on "highly exposed populations,"* which include, among other groups, the following: tribes, Asian Pacific Islanders (API), recreational and subsistence fishers, immigrant populations."[22]

The EPA's 2000 Methodology recognizes the variability of FCRs among population groups and by geographic region. In employing the 2000 Methodology to derive criteria, the EPA urges

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[20] USEPA. 2000. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health.* U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA-822-B-00-004. https://www.epa.gov/wqc/human-health-water-quality-criteria.

[21] Department of Ecology. *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment.* August 2016. Ecology Publication no. 16-10-025. Page 27. https://fortress.wa.gov/ecy/publications/documents/1610025.pdf;
Department of Ecology. *Fish Consumption Rates Technical Support Document.* Final issued in January 2013. Draft issued in October 2011. http://www.ecy.wa.gov/programs/tcp/regs/fish/2012/FCR-doc.html.

[22] Department of Ecology. *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment.* August 2016. Ecology Publication no. 16-10-025. Page 28. https://fortress.wa.gov/ecy/publications/documents/1610025.pdf;

states and tribes to use a fish intake level derived from local or regional data instead of the national default recommendation to ensure the fish intake level chosen is protective of highly exposed subpopulations. The 2000 Methodology includes a four-preference hierarchy concerning the use of fish consumption rate data: (1) use of local data; (2) use of data reflecting similar geography/population groups; (3) use of data from national surveys; and (4) use of the EPA's default intake rate. Ecology's use of a FCR of 175 g/day is consistent with the 95th percentile of *A Fish Consumption Survey of the Umatilla, Nez Perce, Yakama, and Warm Springs Tribes of the Columbia River Basin* (Columbia River Inter-Tribal Fish Commission (CRITFC), 1994), and is the same FCR that the EPA used in its final federal rule and that the state of Oregon used to derive its human health criteria, which the EPA approved in 2011.[23]

The EPA agrees with Ecology's decision to protect high fish consumers in Washington by deriving human health criteria using local and regional fish consumption data. The EPA also agrees with Ecology's decision to include anadromous fish in the FCR used to derive the criteria, given the species that reside in Washington's nearshore and coastal waters, especially Puget Sound. Ecology's approach is consistent with the EPA's recommendation to use scientifically sound regional and local fish consumption data. The EPA is also supportive of Ecology's decision to select a FCR that represents the upper percentile consumption rate from local and/or regional consumer-only fish consumption data. As described above in Section III.B.c., consistent with the restoration goals of the CWA and to ensure protection of human health-related designated uses, it is important to select a FCR that reflects consumption that is not suppressed by concerns about safety of available fish. In the absence of data that clearly demonstrate what the current unsuppressed FCR is for a relevant population, the EPA and states should consider, among other things, upper percentile FCRs of local contemporary fish consumption surveys. The EPA notes, however, that the tribes within the state have generally viewed 175 g/day as a compromise minimum value for current criteria-setting purposes, so long as it is coupled with a cancer risk level of 10^{-6}. See the EPA's final federal rule for additional discussion regarding use of an unsuppressed FCR to protect a subsistence or sustenance fishing use, especially where the subsistence or sustenance use is based in whole or in part on tribal treaty or other reserved subsistence or sustenance fishing rights.

Based on the EPA's review of existing data in Washington, in conjunction with consultation with the tribes, the EPA agrees with Washington's decision to derive the human health criteria using a FCR of 175 g/day and a cancer risk level of 10^{-6}. These values also are consistent with the EPA's final federal rule.

ii. *Drinking Water Intake*

Ecology derived human health criteria using a drinking water intake rate of 2.4 L/day. In the absence of reliable local or regional data, the EPA recommends that states refer to the most current available national data on drinking water intake rates. The EPA agrees with Ecology assuming a drinking water intake rate of 2.4 L/day to derive human health criteria, consistent

[23] USEPA. October 2011. *Technical Support Document for Action on the State of Oregon's New and Revised Human Health Water Quality Criteria for Toxics and Associated Implementation Provisions Submitted July 12 and 21, 2011.* http://www.epa.gov/region10/pdf/water/or-tsd-hhwqs-2011.pdf.

with the EPA's 2015 updated 304(a) recommendations. This value is also consistent with the EPA's final federal rule.

iii. *Body Weight*

Ecology derived human health criteria using a body weight assumption of 80 kg based on tribal survey data relevant to Washington and the EPA's 2011 Exposure Factors Handbook.[24] The EPA agrees with Ecology's selection of a body weight of 80 kg to derive human health criteria. This value is also consistent with the EPA's final federal rule.

iv. *Bioconcentration Factors/Bioaccumulation Factors*

In Ecology's rule, the state derived human health criteria using BCFs (including using the EPA's 1980 guidance to calculate BCFs for 1,1,1-Trichloroethane and 3-Methyl-4-chlorophenol). Ecology's stated rationale is that, 1) BCFs are more closely related to water which is regulated under the CWA, 2) BCFs do not include as many inputs and predictions based on national datasets, 3) BCFs have fewer inputs and less uncertainty, and 4) BCFs are acceptable under the CWA for criteria development.[25] Ecology did not demonstrate how its selection of outdated BCFs to derive human health criteria is scientifically defensible and protective of the applicable designated uses.

To account for bioaccumulation, the EPA's 2000 Human Health Methodology recommends use of BAFs that account for uptake of a contaminant from all sources by fish and shellfish, rather than BCFs that only account for uptake from the water column. The EPA's 2015 304(a) recommendations replace BCFs with BAFs, where data are available. The EPA's national recommended BAFs are based on peer-reviewed, publicly available data and were developed consistent with the EPA's 2000 Human Health Methodology and its supporting documents. The EPA published supplemental information on development of the national recommended BAFs in January 2016.[26] The EPA's final federal rule uses trophic level four BAFs where available, based on data and information from the CRITFC survey showing that surveyed tribal members consume primarily trophic level four fish species (see the EPA's final federal rule for more information).

4. *Relative Source Contribution*

[24] USEPA. 2011. EPA Exposure Factors Handbook. 2011 edition (EPA 600/R-090/052F). http://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236252.

[25] Department of Ecology. *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment.* August 2016. Ecology Publication no. 16-10-025. Page 56. https://fortress.wa.gov/ecy/publications/documents/1610025.pdf;

[26] USEPA. January 2016. *Development of National Bioaccumulation Factors: Supplemental Information for EPA's 2015 Human Health Criteria Update.* Office of Water, Washington, D.C. EPA 822-R-16-001. http://www.epa.gov/sites/production/files/2016-01/documents/national-bioaccumulation-factors-supplemental-information.pdf.

Ecology derived human health criteria using a RSC value of 1. Ecology stated that this is an appropriate risk management decision due to the limited ability of the CWA to control exposure to pollutant sources outside of its jurisdiction.

The EPA recommends a RSC ceiling of 0.8 to ensure protection of individuals whose exposure could be greater than indicated by current data and to account for unknown sources of exposure. In the EPA's 2015 updated 304(a) recommendations and final federal rule for Washington, the EPA applied a pollutant-specific RSC value for all non-carcinogens and nonlinear carcinogens.[27]

The EPA agrees with Ecology incorporating anadromous fish, which spend significant portions of their lives in marine waters, in the FCR. This is particularly appropriate because local data show adult salmon in Washington can accumulate a substantial fraction of their contaminant body burden during their residence time in Puget Sound (O'Neill and West, 2009) and near coastal marine waters (O'Neill 2006) that are under the jurisdiction of the CWA.[28, 29] The EPA's human health criteria FAQs clarify that, where a state's FCR includes freshwater, estuarine, and all marine fish consumption, states can adjust the RSC upward to reflect that marine exposures are already accounted for in the FCR.[30] Because the selected FCR includes some but not all marine species, the EPA decided to adjust the RSC values in its final rule. However, the EPA only adjusted RSC values to 0.5 for criteria calculations in the final rule where the EPA had previously used a RSC between 0.2 and 0.5 in its proposed rule. The EPA decided to retain RSC values of 0.5 and above, recognizing the compelling need to account for the other potential exposure sources, including marine fish not accounted for in the FCR of 175 g/day, consistent with the logic and procedures used in establishing the national 304(a) criteria recommendations. For further information on the EPA's adjustment of the RSC for Washington, see the EPA's final rule.

However, even when accounting for anadromous fish in the FCR, Ecology has not adequately justified departing from the EPA guidance (to use a RSC between 0.2 and 0.8) when using a RSC value of 1 to derive human health criteria for all non-carcinogens and nonlinear carcinogens, nor has it adequately explained why it is appropriate to disregard all other routes of exposure, including air, soil, other marine fish and shellfish, non-fish food, etc. Ecology did not demonstrate how its selection of a RSC value of 1 to derive human health criteria is scientifically defensible and protective of the applicable designated uses.

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[27] Final Updated Ambient Water Quality Criteria for the Protection of Human Health, (80 FR 36986, June 29, 2015). See also: USEPA. 2015. Final 2015 Updated National Recommended Human Health Criteria. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. https://www.epa.gov/wqc/human-health-water-quality-criteria.

[28] O'Neill, S.M., and J.E. West. 2009. Marine distribution, life history traits, and the accumulation of polychlorinated biphenyls in Chinook salmon from Puget Sound, Washington. Transactions of the American Fisheries Society 138: 616-632.

[29] O'Neill, S.M., G.M. Ylitalo, J.E. West, J. Bolton, C.A. Sloan, and M.M. Krahn. 2006. Regional patterns of persistent organic pollutants in five Pacific salmon species (*Oncorhynchus spp*) and their contributions to contaminant levels in northern and southern resident killer whales (*Orcinus orca*). 2006 Southern Resident Killer Whale Symposium, NOAA Fisheries Service Northwest Regional Office April 3-5, 2006. Seattle, WA. Extended Abstract. 5pp.

[30] USEPA. January 2013. *Human Health Ambient Water Quality Criteria and Fish Consumption Rates: Frequently Asked Questions.* https://www.epa.gov/wqc/human-health-ambient-water-quality-criteria-and-fish-consumption-rates-frequently-asked.

V. The EPA Partial Approval/Disapproval of Washington's Human Health Criteria

In accordance with 40 CFR 131.11(a), the EPA must ensure that new or revised criteria are based on sound scientific rationale and contain sufficient parameters or constituents to protect designated uses. Additionally, the EPA evaluated Washington's criteria values against criteria that the EPA determined would be protective and scientifically defensible (e.g., based on appropriate BAFs, and protective RSC values of less than 1). The EPA found that Ecology adopted human health criteria protective of designated uses in some, but not all, cases. The EPA is approving Washington's criteria where they are as stringent or more stringent than scientifically defensible criteria that the EPA determined would be protective of Washington's designated uses, consistent with CWA requirements and the EPA's implementing regulations at 40 CFR 131.11. The EPA is disapproving Washington's criteria where they are not sufficiently protective of the applicable designated uses.

Of the 192 new human health criteria for 97 priority pollutants that Ecology submitted on August 1, 2016, the EPA is approving 45 and disapproving 143 of Washington's human health criteria under CWA section 303(c). The EPA is taking no action at this time on four new human health criteria for two pollutants (thallium and 2,3,7,8-TCDD (dioxin)) due to scientific uncertainty.

A. *The EPA Approval of 45 New Human Health Criteria*

The EPA Action

Based upon the above evaluation and in accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR part 131, the EPA approves the 45 "water + organism" and "organism only" human health criteria identified in Table 1. (See Table 2 for criteria not identified in Table 1).

The EPA Rationale

The EPA evaluated Washington's criteria values against criteria that the EPA determined would be protective of the state's designated uses and scientifically defensible in its final rule (e.g., based on appropriate BAFs and protective RSC values between 0.2 and 0.8). In some instances, such as where Ecology used BCFs that are higher than the corresponding BAFs that the EPA used for the same pollutants (based on the EPA's 2015 304(a) updated information), Ecology's criteria are more stringent than the criteria the EPA determined would be protective as noted above. Table 1 identifies Ecology's criteria that are as stringent or more stringent than criteria that the EPA determined would be protective of Washington's designated uses when drafting its final federal rule.

Table 1. Approved Human Health Criteria

			Washington's Criteria	
	Chemical	**CAS Number**	**Water & Organisms (µg/L)**	**Organisms Only (µg/L)**
1	1,1,1-Trichloroethane	71556		
2	1,1,2,2-Tetrachloroethane	79345		
3	1,1,2-Trichloroethane	79005		
4	1,1-Dichloroethylene	75354		
5	1,2,4-Trichlorobenzene	120821		
6	1,2-Dichlorobenzene	95501		
7	1,2-Dichloroethane	107062		
8	1,2-Dichloropropane	78875	0.71	3.1
9	1,2-Diphenylhydrazine	122667		
10	1,2-Trans-Dichloroethylene	156605		
11	1,3-Dichlorobenzene	541731		
12	1,3-Dichloropropene	542756		
13	1,4-Dichlorobenzene	106467		
14	2,3,7,8-TCDD (Dioxin)	1746016		
15	2,4,6-Trichlorophenol	88062	0.25	0.28
16	2,4-Dichlorophenol	120832		
17	2,4-Dimethylphenol	105679	85	97
18	2,4-Dinitrophenol	51285		
19	2,4-Dinitrotoluene	121142	0.039	0.18
20	2-Chloronaphthalene	91587		
21	2-Chlorophenol	95578	15	17
22	2-Methyl-4,6-Dinitrophenol	534521		
23	3,3'-Dichlorobenzidine	91941	0.0031	0.0033
24	3-Methyl-4-Chlorophenol	59507	36	36
25	4,4'-DDD	72548		
26	4,4'-DDE	72559		
27	4,4'-DDT	50293		
28	Acenaphthene	83329		
29	Acrolein	107028	1.0	1.1
30	Acrylonitrile	107131	0.019	0.028
31	Aldrin	309002		
32	alpha-BHC	319846		
33	alpha-Endosulfan	959988		
34	Anthracene	120127		
35	Antimony	7440360		
36	Arsenic	7440382		

			Washington's Criteria	
	Chemical	**CAS Number**	**Water & Organisms (µg/L)**	**Organisms Only (µg/L)**
37	Asbestos	1332214	7,000,000 (fibers/L)	
38	Benzene	71432	0.44	1.6
39	Benzidine	92875	0.00002	0.000023
40	Benzo(a) Anthracene	56553		
41	Benzo(a) Pyrene	50328		
42	Benzo(b) Fluoranthene	205992		
43	Benzo(k) Fluoranthene	207089		
44	beta-BHC	319857		
45	beta-Endosulfan	33213659	9.7	10
46	Bis(2-Chloroethyl) Ether	111444	0.02	0.06
47	*Bis(2-Chloro-1-Methylethyl) Ether	108601	Not submitted	Not submitted
48	Bis(2-Ethylhexyl) Phthalate	117817		
49	Bromoform	75252		
50	Butylbenzyl Phthalate	85687		
51	Carbon Tetrachloride	56235	0.2	0.35
52	Chlordane	57749		
53	Chlorobenzene	108907		
54	Chlorodibromomethane	124481		
55	Chloroform	67663		
56	Chrysene	218019		
57	Copper	7440508	1300	
58	Cyanide	57125		
59	Dibenzo(a,h) Anthracene	53703		
60	Dichlorobromomethane	75274		
61	Dieldrin	60571		
62	Diethyl Phthalate	84662		
63	Dimethyl Phthalate	131113		
64	Di-n-Butyl Phthalate	84742		
65	Endosulfan Sulfate	1031078		10
66	Endrin	72208		
67	Endrin Aldehyde	7421934	0.034	0.035
68	Ethylbenzene	100414		
69	Fluoranthene	206440		
70	Fluorene	86737		

			Washington's Criteria	
	Chemical	**CAS Number**	**Water & Organisms (µg/L)**	**Organisms Only (µg/L)**
71	Gamma-BHC; Lindane	58899		
72	Heptachlor	76448		
73	Heptachlor Epoxide	1024573		
74	Hexachlorobenzene	118741		
75	Hexachlorobutadiene	87683		
76	Hexachlorocyclopentadiene	77474		
77	Hexachloroethane	67721		
78	Indeno(1,2,3-cd) Pyrene	193395		
79	Isophorone	78591	27	110
80	Methyl Bromide	74839		2400
81	Methylene Chloride	75092		
82	Methylmercury	22967926	Not submitted	Not submitted
83	Nickel	7440020		
84	Nitrobenzene	98953		
85	N-Nitrosodimethylamine	62759	0.00065	0.34
86	N-Nitrosodi-n-Propylamine	621647	0.0044	0.058
87	N-Nitrosodiphenylamine	86306	0.62	0.69
88	Pentachlorophenol (PCP)	87865		
89	Phenol	108952		
90	Polychlorinated Biphenyls (PCBs)	PCB		
91	Pyrene	129000		
92	Selenium	7782492		
93	Tetrachloroethylene	127184		
94	Thallium	7440280		
95	Toluene	108883		
96	Toxaphene	8001352	0.000032	0.000032
97	Trichloroethylene	79016		
98	Vinyl Chloride	75014	0.02	
99	Zinc	7440666		

• Bis(2-Chloro-1-Methylethyl) Ether was previously listed as Bis(2-Chloroisopropyl) Ether.

B. *The EPA Disapproval of 143 New Human Health Criteria*

The EPA Action

Based upon the above evaluation and in accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR Part 131, the EPA disapproves the 143 "water + organism" and "organism only" human health criteria identified in Table 2.

The EPA Rationale

The EPA evaluated Washington's criteria values against criteria that the EPA determined would be protective of the state's designated uses and scientifically defensible in its final rule (e.g., based on appropriate BAFs and protective RSC values between 0.2 and 0.8). The EPA has determined that Washington's criteria that are less stringent than the EPA's final federal criteria are not protective of Washington's designated uses and, therefore, do not comply with CWA section 303(c) and 40 CFR 131.11. Therefore, the EPA is disapproving Washington's criteria where they are not sufficiently protective of the applicable designated uses, as identified in Table 2.

Table 2: Disapproved Human Health Criteria

			Washington's Criteria	
	Chemical	**CAS Number**	**Water & Organisms (µg/L)**	**Organisms Only (µg/L)**
1	1,1,1-Trichloroethane	71556	47000	160000
2	1,1,2,2-Tetrachloroethane	79345	0.12	0.46
3	1,1,2-Trichloroethane	79005	0.44	1.8
4	1,1-Dichloroethylene	75354	1200	4100
5	1,2,4-Trichlorobenzene	120821	0.12	0.14
6	1,2-Dichlorobenzene	95501	2000	2500
7	1,2-Dichloroethane	107062	9.3	120
8	1,2-Dichloropropane	78875		
9	1,2-Diphenylhydrazine	122667	0.015	0.023
10	1,2-Trans-Dichloroethylene	156605	600	5800
11	1,3-Dichlorobenzene	541731	13	16
12	1,3-Dichloropropene	542756	0.24	2.0
13	1,4-Dichlorobenzene	106467	460	580
14	2,3,7,8-TCDD (Dioxin)	1746016		
15	2,4,6-Trichlorophenol	88062		
16	2,4-Dichlorophenol	120832	25	34
17	2,4-Dimethylphenol	105679		
18	2,4-Dinitrophenol	51285	60	610
19	2,4-Dinitrotoluene	121142		
20	2-Chloronaphthalene	91587	170	180
21	2-Chlorophenol	95578		
22	2-Methyl-4,6-Dinitrophenol	534521	7.1	25

			Washington's Criteria	
	Chemical	**CAS Number**	**Water & Organisms (µg/L)**	**Organisms Only (µg/L)**
23	3,3'-Dichlorobenzidine	91941		
24	3-Methyl-4-Chlorophenol	59507		
25	4,4'-DDD	72548	0.000036	0.000036
26	4,4'-DDE	72559	0.000051	0.000051
27	4,4'-DDT	50293	0.000025	0.000025
28	Acenaphthene	83329	110	110
29	Acrolein	107028		
30	Acrylonitrile	107131		
31	Aldrin	309002	0.0000057	0.0000058
32	alpha-BHC	319846	0.0005	0.00056
33	alpha-Endosulfan	959988	9.7	10
34	Anthracene	120127	3100	4600
35	Antimony	7440360	12	180
36	Arsenic	7440382	10	10
37	Asbestos	1332214		
38	Benzene	71432		
39	Benzidine	92875		
40	Benzo(a) Anthracene	56553	0.014	0.021
41	Benzo(a) Pyrene	50328	0.0014	0.0021
42	Benzo(b) Fluoranthene	205992	0.014	0.021
43	Benzo(k) Fluoranthene	207089	0.014	0.21
44	beta-BHC	319857	0.0018	0.002
45	beta-Endosulfan	33213659		
46	Bis(2-Chloroethyl) Ether	111444		
47	*Bis(2-Chloro-1-Methylethyl) Ether	108601	Not submitted	Not submitted
48	Bis(2-Ethylhexyl) Phthalate	117817	0.23	0.25
49	Bromoform	75252	5.8	27
50	Butylbenzyl Phthalate	85687	0.56	0.58
51	Carbon Tetrachloride	56235		
52	Chlordane	57749	0.000093	0.000093
53	Chlorobenzene	108907	380	890
54	Chlorodibromomethane	124481	0.65	3
55	Chloroform	67663	260	1200
56	Chrysene	218019	1.4	2.1
57	Copper	7440508		

			Washington's Criteria	
	Chemical	**CAS Number**	**Water & Organisms (µg/L)**	**Organisms Only (µg/L)**
58	Cyanide	57125	19	270
59	Dibenzo(a,h) Anthracene	53703	0.0014	0.0021
60	Dichlorobromomethane	75274	0.77	3.6
61	Dieldrin	60571	0.0000061	0.0000061
62	Diethyl Phthalate	84662	4200	5000
63	Dimethyl Phthalate	131113	92000	130000
64	Di-n-Butyl Phthalate	84742	450	510
65	Endosulfan Sulfate	1031078	9.7	
66	Endrin	72208	0.034	0.035
67	Endrin Aldehyde	7421934		
68	Ethylbenzene	100414	200	270
69	Fluoranthene	206440	16	16
70	Fluorene	86737	420	610
71	Gamma-BHC; Lindane	58899	15	17
72	Heptachlor	76448	0.0000099	0.00001
73	Heptachlor Epoxide	1024573	0.0000074	0.0000074
74	Hexachlorobenzene	118741	0.000051	0.000052
75	Hexachlorobutadiene	87683	0.69	4.1
76	Hexachlorocyclopentadiene	77474	150	630
77	Hexachloroethane	67721	0.11	0.13
78	Indeno(1,2,3-cd) Pyrene	193395	0.014	0.021
79	Isophorone	78591		
80	Methyl Bromide	74839	520	
81	Methylene Chloride	75092	16	250
82	Methylmercury	22967926	Not submitted	Not submitted
83	Nickel	7440020	150	190
84	Nitrobenzene	98953	55	320
85	N-Nitrosodimethylamine	62759		
86	N-Nitrosodi-n-Propylamine	621647		
87	N-Nitrosodiphenylamine	86306		
88	Pentachlorophenol (PCP)	87865	0.046	0.1
89	Phenol	108952	18000	200000
90	Polychlorinated Biphenyls (PCBs)	PCB	0.00017	0.00017
91	Pyrene	129000	310	460
92	Selenium	7782492	120	480

			Washington's Criteria	
	Chemical	**CAS Number**	**Water & Organisms (µg/L)**	**Organisms Only (µg/L)**
93	Tetrachloroethylene	127184	4.9	7.1
94	Thallium	7440280		
95	Toluene	108883	180	410
96	Toxaphene	8001352		
97	Trichloroethylene	79016	0.38	0.86
98	Vinyl Chloride	75014		0.26
99	Zinc	7440666	2300	2900

• Bis(2-Chloro-1-Methylethyl) Ether was previously listed as Bis(2-Chloroisopropyl) Ether.

Remedies to Address the EPA's Disapproval

The federal WQS regulations at 40 CFR 131.21 state, in part, that when the EPA disapproves a state's WQS, the EPA shall specify changes that are needed to assure compliance with the requirements of CWA section 303(c) and federal water quality standards regulations.

To address this disapproval, Ecology must adopt human health criteria that are based on a sound scientific rationale and protect human health uses. There are several means by which Ecology may potentially accomplish this objective. They include:

- Revising the human health criteria by incorporating the BAFs and RSC values recommended in the EPA's 304(a) guidance.
- Revising the human health criteria by incorporating BAFs and RSC values used in the EPA's final federal rule for Washington.
- Revising the human health criteria by incorporating alternative BAFs and RSC values (using state-specific information, for example) based upon a sound scientific rationale.

C. *The EPA Disapproval of New Human Health Criteria for PCBs*

For PCBs, Ecology adopted human health criteria that are the same as those that were in effect under the NTR (as revised in 1999): 0.00017 µg/L for both the criteria for water & organisms and organisms only. Ecology adopted human health criteria for PCBs considering local and regional data when selecting a FCR of 175 g/day and generally selected other inputs consistent with the EPA's 304(a) recommendations. However, rather than using the cancer risk level of 10^{-6} applied to all of Ecology's other human health criteria for carcinogens, Ecology elected to use a cancer risk level of 4×10^{-5} for PCBs, consistent with the level of risk/hazard used by the Washington Department of Health in developing fish advisories. When Ecology used the 4×10^{-5} cancer risk level along with its other inputs to calculate PCB criteria, the resulting criteria of 0.00029 µg/L were less stringent than the 1999 NTR values. Ecology then adjusted the cancer

risk level to 2.3 x 10^{-5} so the criteria adopted by the state would be equivalent to the NTR criteria for PCBs, 0.00017 µg/L.[31]

The EPA Action

Based upon the above evaluation and in accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR Part 131, the EPA disapproves Washington's "water + organism" and "organism only" human health criteria for PCBs of 0.00017 µg/L.

The EPA Rationale

The EPA has determined that Washington's criteria of 0.00017 µg/L for the protection of human health from exposure to PCBs from the consumption of water and organisms and organisms only are not protective of Washington's designated uses and, therefore, do not comply with CWA section 303(c) and 40 CFR 131.11. Ecology did not provide adequate supporting information or analysis to demonstrate that the criteria account for both consumption of water and consumption of organisms as exposure pathways for PCBs and are based on sound science. In addition, Ecology did not provide adequate justification for using the Washington Department of Health cancer risk level for this specific chemical and then adjusting that cancer risk level so that the criteria would be equivalent to the NTR criteria. Finally, Ecology did not demonstrate how the criteria were derived using a cancer risk level that is based on scientifically sound rationale and protective of applicable designated uses, including the tribal subsistence fishing portion of the fish and shellfish harvesting use as informed by treaty-reserved fishing rights. Therefore, the EPA is disapproving Washington's human health criteria for PCBs.

See the EPA's final rule for more information about tribal treaty rights and Washington's designated uses.

Remedies to Address the EPA's Disapproval

The federal water quality standards regulations at 40 CFR 131.21 state in part that when the EPA disapproves a state's water quality standards, the EPA shall specify changes that are needed to assure compliance with the requirements of CWA section 303(c) and federal water quality standards regulations.

To address this disapproval, Ecology must adopt human health criteria that are based on a sound scientific rationale and protect human health uses. For PCBs, Ecology may potentially accomplish this objective by:

- Revising the human health criteria for PCBs, without using a chemical-specific cancer risk level, consistent with the EPA's latest 304(a) guidance and its final rule. For example, Ecology could use a 10^{-6} cancer risk level along with the other inputs recommended in the latest 304(a) guidance to derive criteria that are protective of the designated uses, including the tribal subsistence fishing use as informed by treaty-reserved fishing rights.

[31] Department of Ecology. *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment.* August 2016. Ecology Publication no. 16-10-025. Page 67. https://fortress.wa.gov/ecy/publications/documents/1610025.pdf

D. *The EPA Disapproval of New Human Health Criteria for Arsenic*

Ecology adopted human health criteria of 10 µg/L for arsenic for water & organisms and organisms only along with pollutant minimization efforts in footnote A. These criteria are equivalent to the Safe Drinking Water Act (SDWA) maximum contaminant level (MCL) that applies in Washington for drinking water protection. Ecology states this decision is based on scientific information, regulatory precedent by other states and the EPA, and high concentrations of naturally occurring arsenic in Washington.[32]

The EPA notes that there are significant differences in the allowable considerations for developing SDWA MCLs and water quality criteria to protect designated uses under CWA section 303(c). For example, MCLs do not factor in routes of human exposure other than drinking water, such as the consumption of fish and other aquatic organisms. In addition, MCLs can be partially based on feasibility considerations, including the availability of technology to achieve the regulatory level and the cost of such treatment.[33] In contrast, water quality criteria in CWA water quality standards must be based on a sound scientific rationale and protect the designated use, and not on available treatment technology, costs, or other feasibility considerations.

The EPA's most recent guidance regarding use of MCLs as CWA criteria is found in the Federal Register Notice accompanying the EPA's 2000 Human Health Methodology.[34] In a discussion of the relationship between the EPA's Recommended 304(a) Water Quality Criteria and Drinking Water Standards, the EPA stated:

> *"The EPA no longer recommends that an MCL be used [i.e., adopted as a water quality criterion to protect designated uses that include consumption of aquatic organisms] where consideration of available treatment technology, costs, or availability of analytical methodologies has resulted in an MCL that is less protective than [a Maximum Contaminant Level Goal (MCLG)][35]."*

Furthermore, as stated in the Notice, the EPA recommends that states and authorized tribes use the most recently published recommended 304(a) water quality criteria for "water and organisms" based on the 2000 Human Health Methodology[36] in order to protect CWA section 101(a) fishable uses and waters designated for drinking water.[37] This ensures that the water quality criteria adequately address fish consumption, bioaccumulation, and drinking water uses.

CWA section 303(c)(2)(B) states:

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[32] Department of Ecology. *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment.* August 2016. Ecology Publication no. 16-10-025. Page 70. https://fortress.wa.gov/ecy/publications/documents/1610025.pdf

[33] See National Toxics Rule. 57 *Fed. Reg.* 60885, December 22, 1992.

[34] See 65 *Fed. Reg.* 66444, November 3, 2000.

[35] See 65 *Fed. Reg.* 66444, 66450-51 November 3, 2000. Maximum Contaminant Level Goal (MCLG) for arsenic is zero.

[36] Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000). EPA-822-B-00-004, October 2000.

[37] See 65 *Fed. Reg.* 66444, 66450 November 3, 2000.

> Whenever a State reviews water quality standards...such State shall adopt criteria for all toxic pollutants listed pursuant to section 307(a)(1) of this Act for which criteria have been published under Section 304(a), the discharge or presence of which in the affected water could reasonably be expected to interfere with those designated uses adopted by the State, as necessary to support such designated uses. Such criteria shall be specific numerical criteria for such toxic pollutants.

40 CFR 131.11(a)(2) requires states to review water quality data and information on discharges to identify specific water bodies where toxic pollutants may be adversely affecting water quality or the attainment of the designated use, or where the level of toxic pollutants warrants concern, and to adopt criteria for such toxic pollutants applicable to the water body sufficient to protect the designated use.

The EPA Action

Based upon the above evaluation and in accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR Part 131, the EPA disapproves Washington's "water + organism" and "organism only" human health criteria for arsenic of 10 µg/L.

The EPA Rationale

The EPA has determined that Washington's criteria of 10 µg/L for the protection of human health from exposure to arsenic from the consumption of water and organisms and organisms only are not protective of Washington's designated uses and, therefore, do not comply with CWA section 303(c) and 40 CFR 131.11. Ecology did not provide adequate supporting information or analysis to demonstrate that the 10 µg/L criteria account for both consumption of water and consumption of organisms as exposure pathways for arsenic, nor did Ecology demonstrate how the criteria were derived independent of feasibility considerations. Therefore, the EPA is disapproving Washington's human health criteria for arsenic.

In its December 2015 draft Assessment Development Plan for the Integrated Risk Information System (IRIS) Toxicological Review of Inorganic Arsenic,[38] the EPA discussed its intent to post the results of its toxicological review to the IRIS database in 2017. The results of this review could result in the EPA updating its section 304(a) recommended criteria for arsenic. Given the scientific uncertainty, the EPA is withdrawing its proposal of revised criteria for arsenic in Washington at this time and leaving the existing criteria from the NTR in effect for CWA purposes. The EPA intends to reevaluate the existing federal arsenic human health criteria for Washington by 2018, with particular consideration of any relevant information released by the EPA's IRIS program.

Remedies to Address the EPA's Disapproval

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[38] USEPA. 2015. Assessment Development Plan for the Integrated Risk Information System (IRIS) Toxicological Review of Inorganic Arsenic [CASRN 7440-38-2]. Office of Research and Development. EPA/630/R-14/101. Available at: http://ofmpub.epa.gov/eims/eimscomm.getfile?p_download_id=526109.

The federal water quality standards regulations at 40 CFR 131.21 state in part that when the EPA disapproves a state's water quality standards, the EPA shall specify changes that are needed to assure compliance with the requirements of CWA section 303(c) and federal water quality standards regulations.

To address this disapproval, Ecology must adopt human health criteria that are based on a sound scientific rationale and protect human health uses. For arsenic, there are several means by which Ecology may potentially accomplish this objective. They include:

- Adopting arsenic criteria that protect designated uses, including designated uses informed by tribal reserved fishing rights, by accounting for both consumption of water and consumption of organisms as exposure pathways (without feasibility considerations) and considering local and regional tribal fish consumption data.
- Reviewing the EPA's final IRIS Toxicological Review of Inorganic Arsenic (anticipated in 2017) and adopting arsenic criteria that protect designated uses (as described above) taking into consideration the updated scientific information.

E. *The EPA No Action on New Human Health Criteria for Thallium and 2,3,7,8-TCDD (Dioxin)*

Ecology adopted human health criteria for thallium and dioxin considering local and regional data when selecting a FCR. However, Ecology derived criteria to protect human health from the non-carcinogenic effects of thallium and dioxin, and used a RSC value of 1 that does not account for potential exposure from other sources of thallium and dioxin.

The EPA did not update the 304(a) national recommended criteria for these two pollutants in 2015. As noted earlier, IRIS was the primary source of toxicity values (i.e., RfD and CSF) for the EPA's 2015 updated 304(a) human health criteria. For thallium, the EPA's IRIS database does not currently contain an estimate of thallium's toxicity (i.e., a RfD).[39] For dioxin, IRIS does not currently contain a measure of dioxin's cancer-causing ability (i.e., a CSF).[40] Without such values, the EPA has concluded that further analysis is necessary in order to promulgate scientifically sound revised criteria for these two pollutants.

The EPA is withdrawing its federal proposal of revised criteria for these two pollutants, given the uncertainty regarding aspects of the science, and the EPA is taking no action on Washington's four criteria for these two pollutants at this time. The existing criteria from the NTR remain in effect for CWA purposes.

The EPA intends to reevaluate the existing federal dioxin and thallium human health criteria for Washington by 2018, particularly taking into account the latest toxicity and bioaccumulation information.

[39] http://cfpub.epa.gov/ncea/iris/index.cfm?fuseaction=iris.showQuickView&substance_nmbr=1012.
[40] http://cfpub.epa.gov/ncea/iris/index.cfm?fuseaction=iris.showQuickView&substance_nmbr=1024.

F. *The EPA Action on Footnotes to Table 240*

Along with Ecology's revisions to Table 240, the state submitted the following seven new footnotes for human health criteria:

Footnotes for human health criteria in Table 240:

A. This criterion for total arsenic is the maximum contaminant level (MCL) developed under the Safe Drinking Water Act. The MCL for total arsenic is applied to surface waters where consumption of organisms-only and where consumption of water + organisms reflect the designated uses. When the department determines that a direct or indirect industrial discharge to surface waters designated for domestic water supply may be adding arsenic to its wastewater, the department will require the discharger to develop and implement a pollution prevention plan to reduce arsenic through the use of AKART. Industrial wastewater discharges to a privately or publicly owned wastewater treatment facility are considered indirect discharges.

B. This criterion was calculated based on an additional lifetime cancer risk of one-in-one-million (1 x 10-6 risk level).

C. This criterion is based on a regulatory level developed under the Safe Drinking Water Act.

D. This recommended water quality criterion is expressed as total cyanide, even though the integrated risk information system RFD used to derive the criterion is based on free cyanide. The multiple forms of cyanide that are present in ambient water have significant differences in toxicity due to their differing abilities to liberate the CN-moiety. Some complex cyanides require even more extreme conditions than refluxing with sulfuric acid to liberate the CN-moiety. Thus, these complex cyanides are expected to have little or no "bioavailability" to humans. If a substantial fraction of the cyanide present in a water body is present in a complexed form (e.g., Fe4[Fe(CN)6]3), this criterion may be overly conservative.

E. This criterion applies to total PCBs, (e.g., the sum of all congener or all isomer or homolog or Aroclor analyses). The PCBs criteria were calculated using a chemical-specific risk level of 4 x 10-5. Because that calculation resulted in a higher (less protective) concentration than the current criterion concentration (40 C.F.R. 131.36) the state made a chemical-specific decision to stay at the current criterion concentration.

F. This criterion was derived using the cancer slope factor of 1.4 (linearized multistage model with a twofold increase to 1.4 per mg/kg-day to account for continuous lifetime exposure from birth).

G. The human health criteria for mercury are contained in 40 C.F.R. 131.36.

The EPA Action

Based upon the above evaluation regarding the human health criteria, the EPA is taking no action on Footnotes B, C, and F.

Based upon the above evaluation regarding the human health criteria and in accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR Part 131, the EPA is disapproving Footnotes A, D, E, and G.

The EPA Rationale

The EPA is disapproving Footnote A because it pertains to the arsenic human health criteria, which the EPA is disapproving as noted above.

The EPA is taking no action on Footnote B because it describes the cancer risk level input parameter (10^{-6}) that Ecology used to calculate the human health criteria for carcinogens.

Because this footnote does not establish a legally binding requirement under state law and it does not describe a desired ambient condition of a waterbody to support a particular designated use, it is not considered a WQS subject to the EPA's review and approval under 303(c) of the CWA.

The EPA is taking no action on Footnote C because it clarifies the source of Ecology's asbestos and copper criteria. Because this footnote does not establish a legally binding requirement under state law and it does not describe a desired ambient condition of a waterbody to support a particular designated use it is not considered a WQS subject to the EPA review and approval under 303(c) of the CWA.

The EPA is disapproving Footnote D because it pertains to the cyanide human health criteria, which the EPA is disapproving as noted above.

The EPA is disapproving Footnote E because it pertains to the human health criteria for PCBs, which the EPA is disapproving as noted above.

The EPA is taking no action on Footnote F because it describes the cancer slope factor input parameter that Ecology used to calculate the human health criteria for vinyl chloride. Because the EPA is approving the water & organisms human health criterion for vinyl chloride, this footnote remains applicable to Table 240. However, because this footnote does not establish a legally binding requirement under state law and it does not describe a desired ambient condition of a waterbody to support a particular designated use, it is not considered a WQS subject to the EPA review and approval under CWA section 303(c).

The EPA is disapproving Footnote G because it is no longer accurate. The EPA has removed Washington from the National Toxics Rule at 40 CFR 131.36 for mercury and promulgated new human health criteria for methylmercury in the EPA's final federal rule at 40 CFR 131.45.

G. *The EPA Action on Downstream Waters and Other Narrative Revisions*

Along with Ecology's revisions to Table 240, Ecology made several revisions to the narrative provisions at WAC 173-201A-240 below, which provide background and organize the toxic substances section of Washington's WQS.

All underlined text indicates language that is new and strikeout text indicates the language that Ecology removed.

WAC 173-201A-240 Toxic substances.

(3) USEPA Quality Criteria for Water, 1986, as revised, shall be used in the use and interpretation of the values listed in subsection (5) of this section.

(4) Concentrations of toxic, and other substances with toxic propensities not listed in Table 240 of this section shall be determined in consideration of USEPA Quality Criteria for Water, 1986, and as revised, and other relevant information as appropriate.

(5) The following criteria, found in Table 240(((~~3~~))), shall be applied to all surface waters of the state of Washington ((~~for the protection of aquatic life~~)). Values are µg/L for all substances except ammonia and chloride which are mg/L, and asbestos which is million fibers/L. The department shall formally adopt any appropriate revised criteria as part of this chapter in accordance with the provisions established in chapter 34.05 RCW, the Administrative Procedure Act. The department shall ensure there are early opportunities for public review and comment on proposals to develop revised criteria.

(a) **Aquatic life protection.** The department may revise the ((~~following~~)) criteria in Table 240 for aquatic life on a statewide or water body-specific basis as needed to protect aquatic life occurring in waters of the state and to increase the technical accuracy of the criteria being applied. The department shall formally adopt any appropriate revised criteria as part of this chapter in accordance with the provisions established in chapter 34.05 RCW, the Administrative Procedure Act. ((~~The department shall ensure there are early opportunities for public review and comment on proposals to develop revised criteria. Values are µg/L for all substances except Ammonia and Chloride which are mg/L:~~))

(b) **Human health protection.** The following provisions apply to the human health criteria in Table 240. All waters shall maintain a level of water quality when entering downstream waters that provides for the attainment and maintenance of the water quality standards of those downstream waters, including the waters of another state. The human health criteria in the tables were calculated using a fish consumption rate of 175 g/day. Criteria for carcinogenic substances were calculated using a cancer risk level equal to one-in-one-million, or as otherwise specified in this chapter. The human health criteria calculations and variables include chronic durations of exposure up to seventy years. All human health criteria for metals are for total metal concentrations, unless otherwise noted. Dischargers have the obligation to reduce toxics in discharges through the use of AKART.

(((~~(4) USEPA Quality Criteria for Water, 1986, as revised, shall be used in the use and interpretation of the values listed in subsection (3) of this section.~~

~~(5) Concentrations of toxic, and other substances with toxic propensities not listed in subsection (3) of this section shall be determined in consideration of USEPA Quality Criteria for Water, 1986, and as revised, and other relevant information as appropriate. Human health based water quality criteria used by the state are contained in 40 C.F.R. 131.36 (known as the National Toxics Rule).~~

~~(6) Risk based criteria for carcinogenic substances shall be selected such that the upper bound excess cancer risk is less than or equal to one in one million.~~))

The EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR Part 131, the EPA disapproves Ecology's revisions to WAC 173-201A-240(3), is taking no action on WAC 173-201A-240(4) because it is not a reviewable WQS, and approves Ecology's revisions and new language at WAC 173-201A-240(5), (5)(a), and (5)(b), in part.

The EPA Rationale

Most aspects of the language in these provisions have been part of Washington's WQS and were re-organized and updated to reflect the re-structuring of Table 240. This section includes the aquatic life criteria and associated footnotes, which were not revised but replicated in the new Table 240. The EPA is not reviewing these aquatic life criteria and their associated footnotes because the underlying WQS have not been revised.

The EPA is disapproving the language at WAC 173-201A-240(3). Although this language is largely unrevised, it references WAC 173-201A-240(5), which now includes human health criteria. Washington derived these human health criteria using various sources of information, including some information from the EPA's 2015 304(a) recommendations. Therefore, it is not scientifically defensible for Washington to solely rely on the EPA's 1986 criteria document to interpret the newly adopted human health criteria. To remedy this disapproval, Ecology could delete this provision or revise it to clarify that Ecology will refer to the EPA's most current national 304(a) recommendations to use and interpret their human health and aquatic life criteria in Table 240.

The EPA is taking no action under 303(c) of the CWA on the language at WAC 173-201A-240(4). This provision is not legally binding because of the words "in consideration of" and, therefore, the provision is not a WQS reviewable under CWA section 303(c). The EPA expects Washington to consider the EPA's most current national 304(a) criteria recommendations when developing any aquatic life or human health criteria in the future.

The EPA is approving the revised language at WAC 173-201A-240(5) because this provision establishes that the criteria in Table 240 apply to all surface waters of the state and clearly identifies the units of the criteria. In addition, the provision states Washington's rulemaking and public participation requirements, which are consistent with the EPA's expectations.

The EPA is approving the revised language at WAC 173-201A-240(5)(a) as non-substantive changes. The EPA approves these editorial, non-substantive changes as consistent with the CWA and the EPA's implementing regulations. The EPA notes, however, that its approval of these editorial, non-substantive changes do not re-open the EPA's prior approval of the underlying substantive water quality standards.

The EPA is approving the new language at WAC 173-201A-240(5)(b), in part. In general, this provision explains the purpose of the criteria, criteria derivation, and the format of Table 240. The EPA is approving the following sentences:

> (b) **Human health protection.** The following provisions apply to the human health criteria in Table 240. All waters shall maintain a level of water quality when entering downstream waters that provides for the attainment and maintenance of the water quality standards of those downstream waters, including the waters of another state.
>
> The human health criteria calculations and variables include chronic durations of exposure up to seventy years. All human health criteria for metals are for total metal concentrations, unless otherwise noted.

WAC 173-201A-240(5)(b) addresses protection of downstream waters. This language is consistent with the EPA's regulation at 40 CFR 131.10(b). 40 CFR 131.10(b) provides that "[i]n designating uses of a water body and the appropriate criteria for those uses, the state shall take into consideration the water quality standards of downstream waters and ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters."

The EPA's 2014 guidance on Protection of Downstream Waters states that:

> *"Adoption of narrative criteria or numeric criteria (or both) that are protective of downstream waters are viable options under 40 CFR 131.10(b). States/tribes have discretion in choosing their preferred approach. The EPA expects that many states/tribes will consider using a combination of narrative and numeric criteria depending on their circumstances."* [41]

The EPA's guidance also suggests that states and tribes can consider a more tailored and specific narrative criterion and/or a numeric criterion in certain situations, such as when more stringent numeric criteria are in place downstream and/or environmental justice issues are relevant. The EPA supports Washington's consideration and recognition of the need to ensure protection of downstream water quality.

In addition, the EPA is approving the sentence that indicates the duration of exposure for the human health criteria calculations is 70 years, consistent with the EPA guidance. The EPA is also approving the sentence which indicates most of the human health criteria are for total metal concentrations, consistent with the EPA guidance.

The EPA is taking no action on the following sentences:

> The human health criteria in the tables were calculated using a fish consumption rate of 175 g/day. Criteria for carcinogenic substances were calculated using a cancer risk level equal to one-in-one-million, or as otherwise specified in this chapter.
>
> Dischargers have the obligation to reduce toxics in discharges through the use of AKART.

Ecology has moved language previously contained at WAC 173-201A-240(6), which pertains to protection from carcinogens at a one-in-one-million cancer risk level, to this section. Ecology has also specified that a FCR of 175 g/day was used to calculate the human health criteria. The EPA has addressed the new and revised underlying human health criteria in its action on the final criteria outputs and, therefore, is not acting on individual input parameters. These sentences do not establish legally binding requirements under state law and do not, by themselves, describe a desired ambient condition of a waterbody to support a particular designated use. Therefore, the EPA did not consider these sentences to be WQS subject to the EPA's review and approval under 303(c) of the CWA. Additionally, the EPA is taking no action on the sentence regarding AKART because it relates to implementation, not the criteria themselves, and therefore is not a WQS subject to the EPA's review and approval under 303(c) of the CWA.

VI. THE EPA PARTIAL APPROVAL OF NEW AND REVISED IMPLEMENTATION TOOLS AND DEFINITIONS

Ecology has revised procedures/authorizing provisions for two of the state's existing implementation tools (variances and compliance schedules) and added a new tool for intake

[41] USEPA. June 2014. *Protection of Downstream Waters in Water Quality Standards: Frequently Asked Questions.* https://www.epa.gov/wqs-tech/protection-downstream-waters-water-quality-standards.

credits. Ecology has also added an implementation clarification for combined sewer overflows (CSO) from treatment plants. In addition, Ecology adopted a new definition for each of these implementation tools at WAC 173-201A-020.

As explained in further detail below, the EPA does not consider the intake credit rule and provision regarding CSOs to be WQS under CWA Section 303(c); rather they are NPDES permitting implementation provisions. These implementation tools revise the state's NPDES program and are subject to independent review, comment, and approval by the EPA under 40 CFR 123.62.

A. *Variance Provision*

Ecology adopted a new definition to define "variance" and revised language in the state's general authorizing provision for variances at WAC 173-201A-420.[42] Below is Ecology's new definition for "variance" and the revised general authorizing provision for variances. All underlined text indicates language that is new and strikeout text indicates the language that was removed.

"**Variance**" is a time-limited designated use and criterion as defined in 40 C.F.R. 131.3, and must be adopted by rule.

WAC 173-201A-420 Variance.

~~(((1) The criteria established in WAC 173-201A-200 through 173-201A-260 and 173-201A-600 through 173-201A-612 may be modified for individual facilities, or stretches of waters, through the use of a variance. Variances may be approved by the department when:~~

~~(a) The modification is consistent with the requirements of federal law (currently 40 C.F.R. 131.10(g) and 131.10(h));~~

~~(b) The water body is assigned variances for specific criteria and all other applicable criteria must be met; and~~

~~(c) Reasonable progress is being made toward meeting the original criteria.~~

~~(2) The decision to approve a variance is subject to a public and intergovernmental involvement process.~~

~~(3) The department may issue a variance for up to five years, and may renew the variance after providing for another opportunity for public and intergovernmental involvement and review.~~

~~(4) Variances are not in effect until they have been incorporated into this chapter and approved by the USEPA.~~)) (1) **General provisions.** Variances for individual facilities, a group of facilities, or stretches of waters may be issued for the criteria and designated uses established in WAC 173-201A-200 through 173-201A-260 and 173-201A-600 through 173-201A-612. The following conditions apply when considering issuance of a variance:

(a) A variance may be considered when the standards are expected to be attained by the end of the variance period or the attainable use cannot be reliably determined.

(b) The variance applies to specific parameters and all other applicable standards remain in effect for the water body.

(c) The modification must be consistent with the requirements of federal regulations (currently 40 C.F.R. 131.14).

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[42] Department of Ecology. *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment.* August 2016. Ecology Publication no. 16-10-025. Page 92. https://fortress.wa.gov/ecy/publications/documents/1610025.pdf

(d) Reasonable progress must be made toward meeting the underlying standards during the variance period.

(e) A variance renewal may be considered if the renewal request meets the above conditions.

(2) **Types of variances.** Upon request or on its own initiative, the department will consider granting the following types of variances to existing water quality standards:

(a) An individual variance is a time-limited designated use and parameter-specific change to the standard(s) of the receiving water body for a specific discharger. The temporary standard(s) only apply at the point(s) of compliance for the individual facility.

(b) A multidischarger variance is a time-limited designated use and parameter-specific change to the standard(s) of any water body that receives discharges from a permitted facility defined within the scope of the multidischarger variance. Any permitted discharger that is defined within the scope of the variance may be covered under the variance that is granted by the department, provided all requirements of the variance for that discharger are met.

(c) A water body variance is a time-limited designated use and parameter-specific change to the standard(s) for a stretch of waters. Any discharger of the specific parameter that is defined within the geographic scope of the water body variance may be covered under the variance that is granted by the department, provided all requirements of the variance for that discharger are met.

(3) **Requirements.** Any entity initiating a variance request or applying for coverage for an individual, multidischarger, or water body variance must submit the following information to the department:

(a) The pollutant-specific criteria and designated use(s) proposed to be modified by the variance, and the proposed duration of the variance.

(b) A demonstration that attaining the water quality standard for a specific pollutant is not feasible for the requested duration of the variance based on 40 C.F.R. 131.14.

(c) An evaluation of treatment or alternative actions that were considered to meet effluent limits based on the underlying water quality criteria, and a description of why these options are not technically, economically, or otherwise feasible.

(d) Sufficient water quality data and analyses to characterize receiving and discharge water pollutant concentrations.

(e) A description and schedule of actions that the discharger(s) proposes to ensure the underlying water quality standard(s) are met or the highest attainable use is attained within the variance period. Dischargers are also required to submit a schedule for development and implementation of a pollutant minimization plan for the subject pollutant(s).

(f) If the variance is for a water body or stretch of water, the following information must also be provided to the department:

(i) The results from a pollutant source assessment that quantifies the contribution of pollution from permitted sources and nonpermitted sources;

(ii) All cost-effective and reasonable best management practices for permitted sources that address the pollutant the variance is based upon; and

(iii) Best management practices for nonpermitted sources that meet the requirements of chapter 90.48 RCW.

(g) Any additional information the department deems necessary to evaluate the application.

(4) **Public review and notification.** The decision to grant a variance is a formal rule making subject to a public and intergovernmental involvement process.

(a) The department will provide notice of the proposed variance and consult with Indian tribes or other states that have jurisdiction over adjacent and downstream waters of the proposed variance.

(b) The department shall maintain and make publicly available a list of dischargers that are covered under the variances that are in effect.

(5) **Period during which the variance is in effect.** A variance is a time-limited designated use and criterion.

(a) Each variance will be granted for the minimum time estimated to meet the underlying standard(s) or, if during the period of the variance it is determined that a designated use cannot be attained, then a use attainability analysis (WAC 173-201A-440) will be initiated.

(b) The ability to apply a variance in permits or other actions may be terminated by the department as a result of a mandatory interim review.

(c) Variances are in effect after they have been incorporated into this chapter and approved by the USEPA.

(6) **Contents of a variance.** At a minimum a variance adopted into rule will include the following:

(a) The time period for which the variance is applicable.

(b) The geographic area or specific waters in which the variance is applicable.

(c) A description of the permitted and unpermitted dischargers covered by the variance.

(d) Identification of required actions and a schedule, including any measurable milestones, for all pollution sources (permitted and unpermitted) subject to the variance. Dischargers are required to use adaptive management to fine-tune and update actions, schedules, and milestones in order to achieve the goals of the variance.

(e) A provision allowing the department to reopen and modify any permits and to revise BMP requirements for unpermitted dischargers as a result of the mandatory interim review of the variance (see subsection (8) of this section).

(7) **Variance permit conditions.** The department must establish and incorporate into NPDES permits all conditions necessary to implement and enforce an approved variance, including:

(a) Effluent limits that represent currently achieved or achievable effluent conditions, or effluent limits that are sufficient to meet the underlying water quality standard upon expiration of the variance;

(b) Monitoring and reporting requirements; and

(c) A provision allowing the department to reopen and modify the permits based on the mandatory interim review of the variance.

(8) **Mandatory interim review.** The department will conduct an interim review of each variance at least once every five years after the variance is adopted and approved to determine that conditions of the variance are being met and to evaluate whether the variance is still necessary.

(a) Review process for individual discharger and multidischarger variances:

(i) The review shall be coordinated with the public review process of the permit renewal if the variance is being implemented in a permit.

(ii) The review will be focused on the discharger's compliance with permit conditions that are required by the variance as well as an evaluation of whether the variance is still necessary.

(b) Review process for water body variances:

(i) Variances for stretches of waters will be reviewed in a public process conducted by the department every five years after the variance is adopted into this chapter and approved by the USEPA.

(ii) The review will evaluate whether the variance is still necessary, any new information on sources of the pollutant that indicates that reductions could be made that would allow water quality standards to be met in a shorter time frame, as well as any new information that indicates water quality improvements may require more time.

(c) A variance that applies to a permit will be shortened or terminated if the review determines that:

(i) The conditions and requirements of the variance and associated permit requirements have not been complied with unless reasons outside the control of the discharger prevented meeting any condition or requirement; or

(ii) Water quality standards could be met in a shorter time frame, based on new information submitted to the department.

The EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR Part 131, the EPA approves Ecology's new definition at WAC 173-201A-020 and the revised general authorizing procedures for variances at WAC 173-201A-420, with the exception that the EPA is disapproving the provision at WAC 173-201A-420(5)(a).

The EPA Rationale

In August 2015, the EPA finalized water quality standards regulatory revisions that included specific federal requirements for variances at 40 CFR 131.14.[43] 40 CFR 131.3(o) defines a water quality standards variance as a time-limited designated use and criterion for a specific pollutant(s) or water quality parameter(s) that reflect the highest attainable condition during the term of the WQS variance. 40 CFR 131.10(g) establishes six factors under which a variance may be appropriate, and 40 CFR 131.14 provides for a variance if actions necessary to facilitate lake, wetland, or stream restoration through dam removal or other significant reconfiguration activities preclude attainment of the designated use and criterion while the actions are being implemented.

In addition, 40 CFR 131.14 provides a comprehensive regulatory structure for and explicitly authorizes the use of WQS variances specifying:

- that each individual WQS variance is a water quality standard subject to the EPA review and approval or disapproval,
- a prohibition against lowering currently attained water quality,
- discharger-specific WQS variances must express the highest attainable condition of the water body or waterbody segment as a quantifiable expression of either the highest attainable interim criterion, the interim effluent condition that reflects the greatest pollutant reduction achievable, or if no additional feasible pollutant control technology can be identified, the interim criterion or interim effluent condition that reflects the greatest pollutant reduction achievable with the pollutant control technologies installed at the time the State adopts the WQS variance, and the adoption and implementation of a Pollutant Minimization Program,
- WQS variances applicable to a water body or waterbody segment must express the highest attainable condition as a quantifiable expression of the highest attainable interim use and interim criterion, or if no additional feasible pollutant control technology can be identified, the interim use and interim criterion that reflects the greatest pollutant reduction achievable with the pollutant control technologies installed at the time the State adopts the WQS variance, and the adoption and implementation of a Pollutant Minimization Program,
- a provision must be included in any WQS variance that states the WQS variance will no longer be the applicable water quality standard for purposes of the Act if the State does not conduct a reevaluation consistent with the frequency specified in the WQS variance or the results are not submitted to the EPA within 30 days of completion,
- a statement must be included in any WQS variance providing that the requirements of the WQS variance are either the highest attainable condition identified at the time of the

[43] USEPA. August 21, 2015. *Water Quality Standards Regulatory Revisions; Final Rule (40 CFR Part 131).* Federal Register Vol. 80, No. 162. 51019-51050. https://www.gpo.gov/fdsys/pkg/FR-2015-08-21/html/2015-19821.htm.

adoption of the WQS variance, or the highest attainable condition later identified during any reevaluation, whichever is more stringent,

- the results of reevaluations must be submitted to the EPA within 30 days of completion of the reevaluation.

The EPA has determined that Ecology's variance procedures, except WAC 173-201A-420(5)(a) as discussed below, are generally not inconsistent with the CWA and the EPA's regulations at 40 CFR 131.14. However, the EPA's review only determined that the procedure does not prevent Ecology from submitting subsequent WQS variances to the EPA that are consistent with 40 CFR 131.14. The EPA is disapproving WAC 173-201A-420(5)(a), which states that a variance will be granted for the minimum time estimated to meet the underlying standard(s). This language appears to conflict with 40 CFR 131.14 and Ecology's own variance provision at WAC 173-201A-420(1)(c) that requires any subsequent variance to be consistent with 40 CFR 131.14. 40 CFR 131.14(b)(2)(ii) requires a demonstration that the term of each individual variance is only as long as necessary to achieve the highest attainable condition. The time to achieve the highest attainable condition is likely to be different than the time to meet the underlying standard(s), and a compliance schedule may be more appropriate than a variance where the highest attainable condition is the underlying standard. Therefore, the EPA is disapproving WAC 173-201A-420(5)(a) and recommends Ecology delete or revise this provision in a future rulemaking to ensure that the language is consistent with 40 CFR 131.14. The EPA will review the duration of the variance term for consistency with 40 CFR 131.14(b)(2)(ii) when acting on individual variances under CWA 303(c).

The EPA is approving the remainder of the general variance procedure. Ecology is still required to submit each individual WQS variance to the EPA for review and action before it is effective for purposes of the CWA because the individual variances themselves are new or revised WQS. Accordingly, each variance submitted for the EPA's review must include the Attorney General's certification and be consistent with the CWA and the EPA's implementing regulations, including 40 CFR 131.14 and all applicable public participation requirements. Thus, the EPA's review of Ecology's variance procedures at WAC 173-201A-420 need not evaluate each hypothetical variance the state could issue under this regulation and consider whether such a variance would be consistent with the CWA and the EPA's implementing regulation. The EPA's approval of Ecology's general authorizing procedures for variances is not an automatic approval of any future variance the state wishes to grant nor does it bind the EPA to reviewing the subsequent variance on any basis other than the CWA and the EPA's regulation. The EPA anticipates working closely with Ecology, especially for multiple discharger variances[44] or waterbody variances, to ensure that each variance meets all applicable federal requirements.

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[44] USEPA. March 2013. *Discharger-specific Variances on a Broader Scale: Developing Credible Rationales for Variances that Apply to Multiple Dischargers. Frequently Asked Questions.* https://nepis.epa.gov/Exe/ZyNET.exe/P100IRYU.TXT?ZyActionD=ZyDocument&Client=EPA&Index=2011+Thru+2015&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C11thru15%5CTxt%5C00000010%5CP100IRYU.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSe

B. *Intake Credit Provision*

Ecology added a new provision at WAC 173-201A-460 and an associated definition at WAC 173-201A-020 that addresses situations where a pollutant that a facility discharges also exists in the facility's intake water. This language is patterned after the language from the EPA's Great Lakes Initiative (GLI) as promulgated at 40 CFR 132, Appendix F, Procedure 5.D and 5.E and Oregon's intake credit procedures. The new language clarifies the conditions where intake credits would be allowed for determining reasonable potential and water quality-based effluent limits (WQBELs).[45]

Ecology states the following conditions must be met for an intake credit to apply:[46]

- The facility must not contribute any additional mass of the identified intake pollutant to its wastewater unless an equal or greater mass is removed prior to discharge.
- Intake water must come from the same body of water to which the discharge is made.
- The facility must not alter the identified intake pollutant chemically or physically in a manner that would cause adverse water quality impacts to occur that would not occur if the pollutants were left in-stream.
- The facility must not increase the identified intake pollutant concentration at the point of compliance as compared to the pollutant concentration in the intake water.
- The timing and location of the discharge must not cause adverse water quality impacts to occur that would not occur if the identified intake pollutant were left in-stream.

Below is Ecology's new definition for "intake credit" and new procedures for intake credits.

"Intake credit" is a procedure for establishing effluent limits that takes into account the amount of a pollutant that is present in waters of the state, at the time water is removed from the same body of water by the discharger or other facility supplying the discharger with intake water.

WAC 173-201A-460 Intake credits.

(1) **General provisions.** The following provisions apply to the consideration of intake credits in determining reasonable potential and establishing water quality based effluent limits (WQBELs).

(a) An "intake pollutant" is the amount of a pollutant that is present in waters of the state (including groundwater except as provided in (c) of this subsection) at the time water is removed from the same body of water by the discharger or other facility supplying the discharger with intake water.

(b) An intake pollutant must be from the "same body of water" as the discharge in order to be eligible for an intake credit. An intake pollutant is considered to be from the "same body of water" as the discharge if the department finds that the intake pollutant would have reached the vicinity of the outfall point in the receiving water within a reasonable period had it not been removed by the permittee. This finding will be established if a discharger demonstrates:

(i) The background concentration of the pollutant in the receiving water (excluding any amount of the pollutant in the facility's discharge) is similar to that in the intake water; and

(ii) There is a direct hydrological connection between the intake and discharge points.

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[45] Department of Ecology. *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment.* August 2016. Ecology Publication no. 16-10-025. Page 84. https://fortress.wa.gov/ecy/publications/documents/1610025.pdf

[46] Id.

(c) An intake pollutant in groundwater partially or entirely due to human activity is not eligible for use of an intake credit.

(d) Where intake water for a facility is provided by a municipal water supply system and the supplier provides treatment of the raw water that removes an intake water pollutant, the concentration of the intake water pollutant will be determined at the point where the water enters the water supplier's distribution system.

(e) Where a facility discharges intake pollutants from multiple sources that originate from the receiving water body and from other water bodies, the department may derive an effluent limit reflecting the flow-weighted amount of each source of the pollutant provided that conditions in subsection (3) of this section are met and adequate monitoring to determine compliance can be established and is included in the permit.

(f) The department may also consider other site-specific factors relevant to the transport and fate of the pollutant to make the finding in a particular case that a pollutant would or would not have reached the vicinity of the outfall point in the receiving water within a reasonable period had it not been removed by the permittee.

(2) **Consideration of intake pollutants in reasonable potential determination.**

(a) The department may determine there is no reasonable potential for the discharge of an identified intake pollutant to cause or contribute to an exceedance of a narrative or numeric water quality criterion where a discharger demonstrates that all the following conditions are met:

(i) The facility removes the intake water containing the pollutant from the same body of water into which the discharge is made;

(ii) The facility does not alter the identified intake pollutant chemically or physically in a manner that would cause adverse water quality impacts to occur that would not occur if the pollutant had not been removed from the body of water;

(iii) The timing and location of the discharge would not cause adverse water quality impacts to occur that would not occur if the identified intake pollutant had not been removed from the body of water;

(iv) The facility does not increase the identified intake pollutant concentration at the edge of the mixing zone, or at the point of discharge if a mixing zone is not allowed, as compared to the pollutant concentration in the intake water, unless the increased concentration does not cause or contribute to an excursion above an applicable water quality standard; and

(v) The facility does not contribute any additional mass of the identified intake pollutant to its wastewater.

(b) Upon a finding under (a) of this subsection that an intake pollutant in the discharge does not cause, have the reasonable potential to cause, or contribute to an exceedance of an applicable water quality standard, the department is not required to include a water quality-based effluent limit for the identified intake pollutant in the facility's permit.

(3) **Consideration of intake pollutants in establishing water quality based effluent limits.**

(a) This subsection applies only when the ambient background concentration of the intake pollutant does not meet the most stringent applicable water quality criterion for that pollutant;

(b) The requirements of subsection (2)(a)(i) and (iv) also apply to this subsection.

(c) A discharger may add mass of the pollutant to its waste stream if an equal or greater mass is removed prior to discharge, so there is no net addition of the pollutant in the discharge compared to the intake water.

(d) Where the conditions of this subsection are met, the department may establish effluent limits using an intake credit. The facility's permit must specify how compliance with the limits will be assessed.

The EPA Action

The EPA is taking no action on Ecology's intake credit provision at WAC 173-201A-460. The EPA does not consider this new implementation tool to be a WQS under CWA section 303(c); rather it is a NPDES permitting implementation provision.

The EPA is approving the new definition for intake credit because it provides the meaning of the term used in Washington's WQS.

C. *Compliance Schedule Provision*

Ecology adopted a new definition of "compliance schedule" and revised language in the state's "General allowance for compliance schedules" at WAC 173-201A-510(4). In the revised language, Ecology removed the categorical 10-year time limit for compliance schedules and identified circumstances when a compliance schedule can go beyond the term of a permit. Ecology also added language to describe the interaction of compliance schedules with TMDLs.

Below is Ecology's new definition for "compliance schedule" and the revised general allowance for compliance schedules. All underlined text indicates language that is new and strikeout text indicates the language that was removed.

"Compliance schedule" or **"schedule of compliance"** is a schedule of remedial measures included in a permit or an order, including an enforceable sequence of interim requirements (for example, actions, operations, or milestone events) leading to compliance with an effluent limit, other prohibition, or standard.

WAC 173-201A-510 Means of implementation.

(4) **General allowance for compliance schedules.**

(a) Permits((;)) and orders((, and directives of)) issued by the department for existing discharges may include a schedule for achieving compliance with effluent limits and water quality ((criteria contained in this chapter)) standards that apply to:

(i) Aquatic life uses; and

(ii) Uses other than aquatic life.

((Such)) (b) Schedules of compliance shall be developed to ensure final compliance with all water quality-based effluent limits ((in the shortest practicable time. Decisions regarding)) and the water quality standards as soon as possible. The department will decide whether to issue schedules of compliance ((will be made)) on a case-by-case basis ((by the department)). Schedules of compliance may not be issued for new discharges. Examples of schedules of compliance that may be issued ((to allow for)) include:

(i) Construction of necessary treatment capability;

(ii) Implementation of necessary best management practices;

(iii) Implementation of additional storm water best management practices for discharges determined not to meet water quality ((criteria)) standards following implementation of an initial set of best management practices; and

(iv) Completion of necessary water quality studies((; or (v) resolution of a pending water quality standards' issue through rule making action)) related to implementation of permit requirements to meet effluent limits.

(((b))) (c) For the period of time during which compliance with water quality ((criteria)) standards is deferred, interim effluent ((limitations)) limits shall be formally established, based on the best professional judgment of the department. Interim effluent ((limitations)) limits may be numeric or nonnumeric (e.g., construction of necessary facilities by a specified date as contained in an ((ecology)) order or permit), or both.

(((c))) (d) Prior to establishing a schedule of compliance, the department shall require the discharger to evaluate the possibility of achieving water quality ((criteria)) standards via nonconstruction changes (e.g., facility operation, pollution prevention). Schedules of compliance ((may in no case exceed

~~ten years, and~~)) shall require compliance with the specified requirements as soon as possible. Compliance schedules shall generally not exceed the term of any permit unless the department determines that a longer time period is needed to come into compliance with the applicable water quality standards.

(e) When an approved total maximum daily load has established waste load allocations for permitted dischargers, the department may authorize a compliance schedule longer than ten years if:

(i) The permittee is not able to meet its waste load allocation in the TMDL solely by controlling and treating its own effluent;

(ii) The permittee has made significant progress to reduce pollutant loading during the term of the permit;

(iii) The permittee is meeting all of its requirements under the TMDL as soon as possible; and

(iv) Actions specified in the compliance schedule are sufficient to achieve water quality standards as soon as possible.

The EPA Action

In accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR Part 131, the EPA approves the new compliance schedule definition at WAC 173-201A-020 and the revised "General allowance for compliance schedules" at WAC 173-201A-510(4), except for WAC 173-201A-510(4)(a)(i).

The EPA is taking no action on WAC 173-201A-510(4)(a)(i), which pertains to aquatic life uses. Before the EPA can act on that provision, the EPA must complete Endangered Species Act (ESA) consultation on the language revised in the "General allowance for compliance schedules" provision. Therefore, at this time, Ecology's revised version of the "General allowance for compliance schedules" provision is effective for CWA purposes only for uses other than aquatic life. For aquatic life uses, the previously approved version of Ecology's "General allowance for compliance schedules" provision remains in effect for CWA purposes.

Unlike individual variances, which must be approved by the EPA as water quality standards pursuant to 40 CFR 131.14, the inclusion of individual compliance schedules in NPDES permits is not subject to the EPA's approval under CWA section 303(c). Under CWA section 402(d), the EPA maintains NPDES permit oversight to ensure, among other things, that compliance schedules are implemented in a manner consistent with the CWA. Additionally, in approving the "General allowance for compliance schedules" submission pursuant to 303(c), the EPA is not reviewing or taking action on this provision as a NPDES program modification.

The EPA Rationale

A compliance schedule refers to an enforceable sequence of actions or operations in a NPDES permit that leads to compliance with WQBELs contained in a NPDES permit in accordance with the CWA. Compliance schedules provide a method by which dischargers are given a limited time period to comply with their NPDES permit limits, generally due to technological or financial inability to comply immediately. A compliance schedule may only be included in a NPDES permit if a state or tribe has clearly indicated in its WQS or implementing regulations that it intends to allow them.

In August 2015, the EPA finalized water quality standards regulatory revisions that included specific federal requirements for compliance schedule authorizing provisions at 40 CFR

131.15.[47] The rule clarified that a permitting authority may only issue compliance schedules for water quality-based effluent limitations in NPDES permits if the state or tribe has authorized the use of such compliance schedules in their WQS or implementing regulations. The final rule also requires that, if adopted by the state, such authorizing provisions must be approved by the EPA as WQS under CWA section 303(c).

In Ecology's submittal, the state removed the categorical 10-year time limit for compliance schedules and identified circumstances when a compliance schedule can go beyond the term of a permit. Ecology also added language to describe the interaction of compliance schedules with TMDLs. The revised regulations specify that, in all situations, the actions specified in the compliance schedule must be sufficient to achieve WQBELs based on WQS *as soon as possible* according to WAC 173-201A-510(4)(d) and (e)(iv). This is consistent with applicable the EPA guidance[48] and applicable NPDES regulations.

The EPA is also approving Ecology's revision to delete WAC 173-201A-510(4)(a)(v). The deleted language regarding "resolution of pending water quality standards issues" is inconsistent with the EPA's guidance and applicable law.

In addition, the EPA is approving the language Ecology added to WAC 173-201A-510(4)(b)(iv). This language clarifies that compliance schedules can be issued for the completion of water quality studies only if such studies are related to implementation of permit requirements to meet WQBELs. Without this clarification, it was unclear if Ecology envisioned such studies to include support for a Use Attainability Analysis (UAA) or a site-specific criteria revision, which would be inconsistent with the EPA's guidance and applicable NPDES regulations.

D. *Implementation Clarification for Combined Sewer Overflows Treatment Plants*

Ecology adopted a new definition to define Combined Sewer Overflow (CSO) Treatment Plants and added new language at WAC 173-201A-510(6), Means of Implementation, to clarify implementation of human health criteria in NPDES permits for CSO Treatment Plants. Because of the episodic and short-term nature of CSO discharges, Ecology states that it is infeasible to calculate effluent limits that are based on criteria with durations of exposure up to 70 years.[49]

Below is Ecology's new definition for "CSO treatment plant" and new implementation clarification for CSO Treatment Plants.

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[47] USEPA. August 21, 2015. *Water Quality Standards Regulatory Revisions; Final Rule (40 CFR Part 131).* Federal Register Vol. 80, No. 162. 51019-51050. https://www.gpo.gov/fdsys/pkg/FR-2015-08-21/html/2015-19821.htm.
[48] USEPA. May 10, 2007. *Compliance Schedules for Water Quality-Based Effluent Limitations in NPDES Permits.* Memorandum from James A. Hanlon, Director, Office of Wastewater Management. https://www.epa.gov/npdes/compliance-schedules-water-quality-based-effluent-limitations-npdes-permits.
[49] Department of Ecology. *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment.* August 2016. Ecology Publication no. 16-10-025. Page 98. https://fortress.wa.gov/ecy/publications/documents/1610025.pdf

"Combined sewer overflow (CSO) treatment plant" is a facility that provides at-site treatment as provided for in chapter 173-245 WAC. A CSO treatment plant is a specific facility identified in a department-approved CSO reduction plan (long-term control plan) that is designed, operated and controlled by a municipal utility to capture and treat excess combined sanitary sewage and storm water from a combined sewer system.

WAC 173-201A-510 Means of implementation.

(6) **Combined sewer overflow treatment plant.** The influent to these facilities is highly variable in frequency, volume, duration, and pollutant concentration. The primary means to be used for requiring compliance with the human health criteria shall be through the application of narrative limitations which include, but are not limited to, best management practices required in waste discharge permits, rules, orders and directives issued by the department.

The EPA Action

The EPA is approving the new definition for CSO treatment plants because it provides the meaning of the term used in Washington's WQS.

The EPA is taking no action on Ecology's implementation clarification for CSO Treatment Plants at WAC 173-201A-510(6). The EPA does not consider this new implementation language to be a WQS under CWA Section 303(c); rather it is a NPDES permitting implementation provision. This provision provides clarity for the implementation of the human health criteria in NPDES permits, but does not change the underlying human health criteria.

From a permitting perspective, the EPA agrees this provision does not change current practice. Where effluent pollutant concentration data and numeric criteria exist, Ecology must evaluate for reasonable potential. There are flexibilities already identified in the EPA and Ecology guidance[50] to use appropriate averaging periods, dilution design conditions, and point of application of the criteria as ways to address the long duration associated with human health criteria. CSO BMPs (nine minimum controls) are already required to be in CSO permits as technology-based effluent limits (TBELs). In addition, the EPA's CSO policy[51] (codified under CWA 402(q)) requires that controlled CSO discharges not cause or contribute to exceedances of the WQS.

[50] USEPA. March 1991. *Technical Support Document for Water Quality-based Toxics Control.* Section 4.6. Office of Water. https://www3.epa.gov/npdes/pubs/owm0264.pdf; Department of Ecology. January 2015. *Water Quality Program Permit Writer's Manual.* Page 137 and pages 254-258. https://fortress.wa.gov/ecy/publications/publications/92109.pdf.

[51] Federal Register. Vol. 59, No. 75. April 19, 1994. *Combined Sewer Overflow (CSO) Control Policy.* https://www3.epa.gov/npdes/pubs/owm0111.pdf.