Attachment A

Washington Department of Ecology's comments on EPA's proposed regulation at 80 FR No.177, Monday September 14, 2015, pages 55063 – 55077.

Ecology is in the best position to develop human health criteria (HHC) for the state of Washington. Ecology requests that the Environmental Protection Agency (EPA) not finalize this proposed rule and let rule-making for HHC remain with the state. However, if EPA finds it necessary to finalize the draft regulation, Ecology's comments are below.

1. EPA should revise the proposed development of the regulation to include the specific risk management decisions and criteria development approaches that Washington has made in its current HHC rule-making.

EPA's Clean Water Act (CWA) §304(a) HHC guidance values, which are the basis of EPA's proposed regulation for Washington, are based on science, science policy, and risk management. This is explained in the EPA methodology (EPA 2000) at Sec. 2.2 Science, Science Policy, and Risk Management. States have primacy to develop water quality standards (CWA §303(c)), and as such have discretion to develop and adopt water quality criteria that differ from national recommended criteria based on science, science policy and risk management choices and decisions. This is consistent with 40 CFR131.11(b). EPA honored state primacy in its development of the 1992 National Toxics Rule (NTR) (EPA 1992) by requesting public comment on EPA's decision to propose criteria based on a 10^{-6} risk level, specifically soliciting comments on an alternate risk level of 10^{-5}, and issuing a final rule based on Washington's state-specific risk level of 10^{-6} (See 57 FR No. 246, Tuesday Dec. 22, 1992, pp. 60864.) In the case of the new EPA proposed regulation (the proposed new 40CFR131.45) Ecology requests that EPA honor both state primacy and the NTR precedent by using the risk management decisions that Washington has made as a part of its HHC rule-making. Because EPA's proposed regulation only applies to Washington there is no need to base the rule solely on national data and guidance. EPA has acknowledged this in its proposed regulation by using Pacific Northwest information in its development of fish consumption rates (FCRs) and salmonid-based bioaccumulation factors (BAFs), and by its decision to ignore some of the best available science on Washington FCRs (which we interpret as using an approach not aligned with EPA's guidance).

If EPA finalizes the regulation, EPA should revise the proposed development of the regulation to include the specific risk management decisions and criteria development approaches that Washington has made in its current HHC rule-making. These include:

- A FCR of 175 g/day representing highly exposed populations based on Washington-specific survey information
- A Relative Source Contribution (RSC) = 1
- Use of the bioconcentration (BCF)-based approach for criteria calculation
- A Safe Drinking Water Act-based arsenic criterion
- An arithmetic mean as the statistic representing the FCR of the highly exposed population for criteria calculation
- No change to the current risk level in the water quality standards (WAC 173-201A-240(6)) of 10^{-6}.

As discussed in more detail below, if EPA finalizes the regulation, EPA should revise its proposed regulation to honor these risk management decisions and criteria development approaches.

2. Fish consumption rate value.

Ecology agrees with EPA's draft fish consumption rate of 175 g/day. This is the same rate proposed in Washington's first draft rule (January 2015) and is the same rate that will be proposed in the second draft rule, expected to be released in early winter 2016.

3. Ecology disagrees with EPA's development methods for its proposed fish consumption rate.

Ecology disagrees with the rationale and scope of information EPA used to develop its proposed fish consumption rate of 175 g/day. EPA relied on information from only one study (CRITFC 1994) that included tribal consumers from three different states and did not account for the shellfish consumption that is an important part of aquatic organism consumption for both the general population and highly exposed consumer populations in Washington. Ecology disagrees with EPA's approach because it ignores some of the best available science on FCRs in Washington. The approach Ecology used accounts for highly exposed populations, utilizes the best available science on FCRs in Washington by accounting for shellfish consumption, and is consistent with EPA's 2000 guidance on developing human health criteria. EPA should honor the Washington-specific risk management decision and not try to modify a risk management choice so inherently a part of the WQS primacy granted to states by the CWA. Ecology requests that EPA change its approach to conform to the approach used by Ecology, which is outlined below.

Ecology's approach to development of the 175 g/day FCR is based on Washington-specific information on consumption patterns from surveys of populations that not only include the highest consumption rates in the state but also include the important food source of marine and estuarine shellfish as well as fish. 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 and shellfish 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: tribes, Asian Pacific Islanders, recreational and subsistence fishers, immigrant populations, etc. The FCR of 175 g/day includes "all fish and shellfish," including all salmon, restaurant, locally caught, imported, and from other sources. Fish consumption rates developed in several surveys around the Pacific Northwest are summarized and discussed in a recent Ecology publication (Ecology, 2013).

Washington applied the risk framework developed by EPA for the current federal HHC rule (the NTR) to highly exposed populations in Washington in the following manner:

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- Washington is currently under the federal National Toxics Rule (NTR) for HHC. Those criteria are set at a 10^{-6} risk level and the risk level is applied to the arithmetic mean (average) of the general population.

- For Washington's upcoming second draft rule, the current state risk level of 10^{-6} will be applied to a FCR of 175 g/day that represents the arithmetic means (averages) of highly exposed populations (instead of the general population).

Most states follow EPA's 2000 approach and apply a default risk level to a general population (as EPA also does in its CWA §304(a) national recommended criteria), and then ensure that highly exposed populations do not exceed EPA's upper levels of allowed risk. In this case Washington has taken the extra protective measure of basing the FCR on Washington's most highly exposed populations and the important local food sources of fish and shellfish (including "all fish and shellfish," for which Washington has taken the additional protective step of including local and non-local sources: all salmon, restaurant, locally caught, imported, and from other sources). Washington then takes the additional protective step of applying that rate to a risk level most frequently applied to the general population. We request that EPA follow this same approach if it finalizes its proposed regulation for Washington.

4. Toxicity factors: cancer slope factors (CSFs) and reference doses (RfDs).

Ecology generally agrees with the toxicity factors used by EPA in the proposed regulation (with the exceptions of the CSFs used for dioxin and arsenic, discussed elsewhere in these comments), with the caveat and recommendation below.

EPA explained the information hierarchy it used to choose new toxicity factors in its response to comments on the draft 2014 national recommended water quality criteria (NRWQC). EPA used a variety of sources for new toxicity factors, most from within EPA but including different programs, and some from outside EPA. This approach creates a patchwork of sources that could have differing levels of data quality requirements and peer review. EPA has not yet fully explained the different processes (including data sources and internal and external peer reviews) used to develop the new toxicity factors that are not part of the Integrated Risk Information System (IRIS) used in the §304(a) NRWQC. Ecology strongly recommends that EPA provide more support for its IRIS development.

Ecology supports use of EPA's IRIS database for HHC development because the IRIS process is transparent and extremely rigorous, results in toxicity values that entities can confidently use without wondering how they were derived, and promotes consistency among programs.
So, while Ecology is willing to accept the majority of the toxicity factors as used in the CWA §304(a) NRWQC and in EPA's proposed regulation for Washington, Ecology strongly recommends that EPA provide more support for its IRIS development.

5. Arsenic: EPA should modify the proposed arsenic criteria in its proposed regulation to 10 ug/L, consistent with Washington's risk management decision for this chemical.

Washington made a clear risk management decision that the Safe Drinking Water Act (SDWA) Maximum Contaminant Level (MCL) for arsenic (10 µg/L) is the appropriate criterion for Washington surface waters. This risk-management decision is based on both (1) state and federal precedent and (2) concerns regarding the uncertainty around the science of any risk-based arsenic criterion calculated at present.

After review of what other states have done in setting HHC for arsenic, with subsequent CWA-approval by EPA, and consideration of naturally high concentrations of arsenic in Washington, Ecology has determined that use of the SDWA MCL for arsenic is appropriate for Washington. EPA should use this state-specific risk management decision if it finalizes its proposed new regulation.

State and federal precedent. Development, use, and CWA-approval of SDWA-based criteria is an approach used by EPA in the past and present. Nationwide, nearly half of the states use the SDWA MCL value of 10 µg/L for their arsenic HHC (ODEQ, 2011, p. 19). Use of SDWA regulatory levels as HHC is not unusual for both EPA and states. EPA developed CWA §304(a) national recommended HHC (for freshwater) for asbestos in 1991 and copper in 1998 based on SDWA regulatory levels (EPA 2002). The SDWA-based asbestos criterion (7,000,000 fibers/L) is currently in EPA's NTR: it was issued to several states in the 1992 NTR, and was retained in the 1999 NTR revision. EPA's SDWA-based copper criterion (1,300 mg/L) was issued by EPA in the California Toxics Rule (EPA 2000). EPA's 2015 proposed regulation for Washington includes retention of the SDWA-based asbestos criterion currently in the NTR, as well as the addition of the SDWA-based copper criterion.

EPA's draft regulation for Washington ignores the realities of naturally occurring arsenic in the western United States even though values aligned with the federal Safe Drinking Water Act have been approved for other western states. Washington's approach to arsenic, which combines the SDWA regulatory level combined with arsenic source control requirements, takes into account the naturally high levels of arsenic in the state's geology and puts real reduction programs in place for dischargers that might be adding arsenic to waters. EPA's proposed value of 4.5 parts per trillion for Washington is over two thousand times more stringent than what you have approved for most other western states, and nearly 500 times more stringent than Oregon's criteria you approved just 4 years ago.

Uncertain science used by EPA for the proposed new arsenic regulation. The proposed criteria for arsenic are based on an older cancer slope factor (CSF) value of 1.75 per (mg/kg)/day, first derived in 1988, which is currently not a final IRIS value and that EPA has not supported in past revision to the NTR.

The older CSF value of 1.75 per (mg/kg)/day was derived from the drinking water unit risk of 5E-5 per (ug/L), and was used to calculate the 1992 NTR arsenic criteria. EPA also used the older CSF value in its 1998 and 2002 national *recommended guidance* criteria calculations. However, EPA did *not* use it as the basis of new *regulations* in either EPA's promulgation of the 2000 California Toxics Rule or the new 2001 SDWA MCL for arsenic.

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In 2000, EPA promulgated HHC for the state of California (the California Toxics Rule; EPA 2000) but did not promulgate criteria for arsenic and acknowledged the limitations associated with using the 1988 IRIS CSF. The following is language from the EPA's 2000 promulgation of the California Toxics Rule (EPA, 2000):

> *"EPA is not promulgating human health criteria for arsenic in today's rule. EPA recognizes that it promulgated human health water quality criteria for arsenic for a number of States in 1992, in the NTR, based on EPA's 1980 section 304(a) criteria guidance for arsenic established, in part, from IRIS values current at that time. However, a number of issues and uncertainties existed at the time of the CTR proposal concerning the health effects of arsenic...."*
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> *"...Today's rule defers promulgating arsenic criteria based on the Agency's previous risk assessment of skin cancer....."*

EPA is currently in the process of reviewing inorganic arsenic toxicity information in its Integrated Risk Information System (IRIS). EPA just released it draft 2015 *Assessment Development Plan for the Integrated Risk Information System (IRIS) Toxicological Review of Inorganic Arsenic [CASRN 7440-38-2]* (EPA/630/R-14/101, November 2015) to the National Research Council (available at http://www2.epa.gov/iris/inorganic-arsenic-meetings-webinars#4thmtg , accessed 12/3/15). At its recent December 2015 meeting, the National Academies' National Research Council was provided with materials on the progress of the arsenic reassessment including the Assessment Development Plan. The plan characterizes the scoping, problem formulation, and overarching approach for the IRIS assessment. The plan was previously released in April 2014 and discussed at an IRIS public science meeting in June 2014. The plan has been revised based on comments from the previous NRC committee, stakeholders, and the public. The date for finalization of the IRIS review of inorganic arsenic has not been made available by EPA. *In the interim, EPA should follow its own precedent and not deliberately use a CSF that it has acknowledged to be in need of revision.*

In addition to the problems with the CSF described above, the bioconcentration factor (BCF) that EPA uses for arsenic is also questionable. This BCF is based on total arsenic instead of the inorganic arsenic fraction that EPA specifies as the basis of its proposed criteria in footnote (a) of Table 1 of the proposed regulation. As such, it is not applicable to an inorganic arsenic criterion.

If EPA finalizes the proposed regulation, EPA should acknowledge the uncertainty in the inputs it used to calculate its proposed arsenic criteria, follow its own precedent in approving the SDWA MCL for arsenic for states, and respect and use Washington's state-specific risk management decision on arsenic by modifying its proposed regulation to the criteria concentrations proposed by Washington: 10 ug/L.

6. Dioxin: EPA should use the updated IRIS reference dose (RfD) to revise the dioxin criteria in the proposed rule.

Ecology has made the decision not to use a cancer slope factor (CSF) in HHC calculations for 2,3,7,8-TCDD based on recent scientific information and uncertainty surrounding assessment of

carcinogenicity. At any given time, there will be some IRIS toxicity factors undergoing review. In these cases, EPA has a specific IRIS process that is followed to review and develop revised factors. At present, among many other chemicals, the carcinogenicity of 2,3,7,8-TCDD is under review. The uncertainty around an agreed-upon cancer slope factor for 2,3,7,8-TCDD is considerable, as evidenced by the long history of the review processes as well as the lack of a prospective date for completion.

Based on these uncertainties, Ecology has made the decision not to use CSFs in HHC calculations for 2,3,7,8-TCDD. The approach taken for 2,3,7,8-TCDD is to use the most recent IRIS non-cancer RfD for HHC calculation. This RfD in IRIS was finalized in 2012. Ecology requests that EPA use the most current RfD for dioxin if it finalizes the proposed regulation.

7. If EPA moves forward with the proposed rule for Washington, it should modify the Relative Source Contribution (RSC) values used to calculate the draft criteria to reflect Washington's risk management decision to use a RSC = 1.

EPA used RSC values ranging from 0.2 to 0.8 (and 2.7×10^{-5} mg/kg-day for methylmercury, discussed separately in comments below) to calculate the proposed criteria for the non-carcinogen priority pollutants (except for copper, which is based on the SDWA). EPA developed this policy approach in it 2000 guidance as part of a process to "harmonize" the SDWA and the CWA (see EPA 2000: last paragraph section 1.5.) Washington Department of Ecology also commented on this previously. (attachment B)

The HHC are used to regulate pollution sources that discharge to waters of the state and fall under Clean Water Act regulation, in order to control chemical exposure from untreated surface-water used for drinking water, and eating fish and shellfish that live in those waters. The RSC is intended to account for secondary sources of pollutants, such as atmospheric deposition or marine fish sources (e.g. mercury in tuna) that are not regulated by Clean Water Act authorities. EPA acknowledges the limitations of addressing this issue in the proposed regulation (EPA 2015, pages 55072-55073):

> *"...Also, data on instream and discharge levels of the pollutants of concern after dischargers have implemented controls to meet current WQS, total maximum daily loads (TMDLs) for impaired waters, or other water quality improvement plans, are not available. Therefore, trying to determine which sources would not achieve WQS based on the revised human health criteria after complying with existing regulations and policies may not be possible.*
>
> *Finally, legacy contamination (e.g., in sediment) may be a source of ongoing loading. Atmospheric deposition may also contribute loadings of the pollutants of concern (e.g., mercury). EPA did not estimate sediment remediation costs, or air pollution controls costs, for this preliminary analysis."*

An inherent assumption in how the RSC for HHC is developed is that all other sources of the contaminant are required to be accounted for in the exposure scenario, and the HHC get the remainder of the reference dose (RfD) or allowable daily exposure that is assumed to come from

sources under the authority of the Clean Water Act. The resulting situation seems contradictory: as the contribution of a contaminant from water sources becomes smaller, the HHC becomes more stringent and in effect becomes a larger driver for more restrictive limits.

Because the geographic and regulatory scope of the CWA addresses contaminant discharge directly to waters of the state (not other sources i.e. mercury in tuna or other areas), Ecology has made a risk management decision that Washington's draft rule will use a relative source contribution of one (RSC = 1). Given the limited ability of the Clean Water Act to control sources outside its jurisdiction, Ecology strongly believes that this is a prudent decision.

Incorporated by reference in these comments are pages 21 - 23 of *Washington State Water Quality Standards - Human health criteria and implementation tools: Overview of key decisions in rule amendment* (Ecology 2015) and the 4/17/13 memo by WDOE and IDEQ (Attachment B)

8. Methylmercury: EPA should use a relative source contribution (RSC) of 1 if it moves forward with the proposed regulation, based on its knowledge of the major exposure routes of methylmercury, and based on the rationale EPA used to develop the RSC for methylmercury.

EPA has documented the major exposure routes of methylmercury to consumers (EPA 2001) where tables 5-27 through 5-28 demonstrate that the overwhelming exposure routes of methylmercury are marine, estuarine, and freshwater fish. EPA summarizes the effect of non-aquatic organism intake as follows:

> *"Based on the available data, human exposures to methylmercury from all sources except freshwater/estuarine and marine fish are negligible, both in comparison to exposures from fish and compared to the RfD..."*
>
> and,
>
> *"The combined methylmercury exposure estimates from water ingestion, (non-fish) diet, air, and soil represent approximately 0.07% of total estimated exposure to methylmercury (and less than 1/100 of the 1% of the RfD) for adults in the general population. Therefore, these exposures are not factored into the RSC because they will not quantitatively affect the final criterion value."* (EPA 2001, pages 5-27 – 5-28)

In its proposed regulation for Washington EPA used the RSC that is based on exposure to freshwater and estuarine fish only:

> *"The RSC factor in this case is determined by adding the estimated intakes that are quantitatively relevant for methylmercury; that is, only the intake from marine fish consumption of 2.7 x 10-5 mg/kg-day has any affect in the calculation. This amount is subtracted from the RfD of 0.1 ug methylmercury/kg body weight-day ..."* ,
>
> and,

"This results in an amount of methylmercury that is allowable in freshwater/estuarine fish that will not exceed the RfD, considering the additional exposure from marine fish consumption." (EPA 2001, page 5-58)

Because Washington's proposed FCR of 175 g/day includes all sources of marine, freshwater, and estuarine fish and shellfish (see comments on FCR above), if EPA moves forward with the proposed rule it should use an RSC = 1.0 to recalculate a tissue residue criterion for methylmercury.

9. EPA should use already-developed bioconcentration factors (BCFs) for calculating criteria in the proposed regulation.

In Ecology's comments on EPA's draft 2014 NRWQC we asked for more details about EPA's use of EPISUITE to calculate bioaccumulation factors (BAFs), and expressed reservations about the use of BAFs in criteria development. As a result of public comment EPA changed its BAF approach for the final criteria development documents and based its new BAFs on its 2000 HHC methodology. This was briefly addressed in EPA's response to comments, but the approach used to develop the new BAFs has resulted in as much uncertainty as we had over the initial use of the EPISUITE models. These concerns are discussed below:

EPA guidance documents and BAF development. EPA cites its 2000 guidance, using identical language, in each of its new chemical-specific 304(a) guidance documents. Unfortunately, out of approximately 2 pages devoted to BAF development in each document, only approximately 3-5 unique sentences are actually present in each document to address chemical-specific information. In some cases EPA cites multiple sources for inputs to its BAF development method, but the sources contain values that do not appear to clearly lead to replication of all of EPA's results. EPA has obviously taken steps to adjust or combine inputs but has not made that evident to users of the documents. Reviewing the steps and the inputs EPA took to develop all the BAFs is not possible with the information in the individual criteria documents.

This point is especially troubling because 40CFR131.11 recommends that states consider EPA's CWA 304(a) guidelines when adopting criteria. However, we have found it virtually impossible to evaluate all of the proposed BAFs with the lack of information provided in the chemical specific 304(a) guidance documents. Please see the bullets below for additional circumstances that cause us to use BCFs in lieu of the new BAFs:

- In EPA's *Water Quality Criterion for the Protection of Human Health: Methylmercury* (USEPA 2001) substantial coverage is given to the development of BAFs and the rationale for *not* developing national trophic level-specific BAFs for this chemical. In the methylmercury implementation document (EPA 2009) detailed information on alternatives for different BAF development pathways is provided. These documents underwent extensive peer and public review, and because only one chemical was being addressed, a detailed focus on the information and approaches was part of the process. EPA's recent 2015 publication of 304(a) guidance values included 73 new chemical-specific BAFs, and, as mentioned above, included virtually no chemical specific information on the inputs used in BAF derivation. The disparity in the process taken for

developing new chemical specific BAFs, in comparison with the transparency and thoughtful approach in the methylmercury BAF development, is troubling.

- EPA recently (EPA, 2015) published a new draft aquatic life criteria document for cadmium. This document includes 2 pages of discussion on cadmium-specific BAF/BCF information, and 11 pages of tables with cadmium-specific BAF/BCF data. The document does not cite EPA 2000 as a method development approach for BAFs for aquatic life criteria, yet we would expect EPA to depend on its guidance in evaluation of cadmium accumulation. The draft cadmium document does not directly use a BAF or BCF estimate to calculate the draft criteria, yet the BAF/BCF write-up provides clarity and information. This more informative approach was used in the older chemical-specific criteria guidance documents but appears to have been dropped in the new 2015 HHC NRWQC documents. This brevity of information is likely to affect states for many years to come as they attempt to evaluate the EPA 304(a) guideline documents, which states will be inclined to do because the 40CFR131.11 recommends it.

- The development of the 2015 NRWQC appears rushed, and EPA did not take the time for a thoughtful external review of individual BAFs, as was done for the methylmercury criteria document.

Ecology has fewer concerns about use of BCF in criteria development. Ecology finds the BCFs to be a better input to criteria for Washington because BCFs: (1) are more closely related to the specific environmental media – water- that is regulated under the CWA, (2) include fewer assumptions about ambient water and/or sediment parameters that influence accumulation (the parameters used in the national BAFs do not necessarily reflect Washington waters and sediments), and (3) are developed with far fewer input values and thus have far fewer sources of directly introduced uncertainty.

If EPA finalizes the proposed new regulation using BAFs, then EPA should use BAFs based on trophic levels 2-4, instead of only trophic level 4. Please see comments above on development of the FCR of 175 g/day. Ecology's approach to development of the 175 g/day FCR is based on Washington-specific information on consumption patterns from surveys of populations that not only include the highest consumption rates in the state but also include the important food source of marine and estuarine shellfish as well as fish. 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 and shellfish both recreationally and for subsistence (Ecology, 2013). The FCR of 175 g/day includes "all fish and shellfish," including all salmon, restaurant, locally caught, imported, and from other sources, thus includes trophic levels 2-4. EPA should use this local fish consumption information to expand BAFs beyond just trophic level 4 if they proceed with this rule.

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10. EPA's new language on use of harmonic mean flow.

EPA proposes the following new language for 40CFR131.45(2)(ii) on page 55077 of the proposal:

> *"(ii) The state must not use a low flow value below which numeric noncarcinogen and carcinogen human health criteria can be exceeded that is less stringent than the harmonic mean flow for waters suitable for the establishment of low flow return frequencies (i.e., streams and rivers). Harmonic mean flow is a long-term mean flow value calculated by dividing the number of daily flows analyzed by the sum of the reciprocals of those daily flows."*

The proposed new language is somewhat ambiguous. If we interpret the language correctly, it would not affect Ecology's current practices. The Ecology Permit Writer's Manual lists the appropriate flow for modeling as harmonic mean flow for carcinogens and 30Q5 for non-carcinogens. We allow substitution of the 7Q10 if the 30Q5 is unknown. In all cases, the harmonic mean flow would be the highest flow. So – although somewhat unclear – Ecology does not object to the language so long as it does not affect our current permitting approaches. Please confirm that this language does not affect Ecology's current permitting approaches.

11. Effectiveness of Washington human health criteria if given CWA-approval by EPA.

EPA specifically asked for comments on the following approach, found on page 55071 of the proposed regulation:

> *"If EPA finalizes this proposed rule, and Washington subsequently adopts and submits human health criteria, EPA proposes that once EPA approves Washington's WQS, the pollutant- pollutant-specific or site-specific EPA-approved criteria in Washington's WQS would become effective for CWA purposes and EPA's promulgated criteria for those pollutants or for that site would no longer apply. EPA would still undertake a rulemaking to withdraw the federal criteria for those pollutants, but any delay in that process would not delay Washington's approved criteria from becoming the sole applicable criteria for CWA purposes. EPA solicits comment on this approach."*

Ecology agrees with this approach, and with the proposed 40CFR131.45(c) language (page 55076 of the proposed regulation) that would implement this:

> *"(c) Applicability. (1) The criteria in paragraph (b) of this section apply to waters with Washington's designated uses cited in paragraph (d) of this section and apply concurrently with any water quality criteria adopted by the state, except where pollutant- or waterbody-specific state human health criteria regulations determined by EPA to meet the requirements of Clean Water Act section 303(c) and 40 CFR part 131 apply, in which case Washington's pollutant- or waterbody-specific criteria will apply and not the criteria in paragraph (b) of this section."*

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References

CRITFC (Columbia River Inter-Tribal Fish Commission). 1994. *A Fish Consumption Survey of the Umatilla, Nez Perce, Yakama, and Warm Springs Tribes of the Columbia River Basin.* Portland, OR: CRITFC. Technical Report 94-3.

Ecology, 2013. Washington Department of Ecology. *Fish Consumption Rates Technical Support Document* – Chapter 6.4. Available online at: *https://fortress.wa.gov/ecy/publications/publications/1209058.pdf*

Ecology 2015. *Washington State Water Quality Standards - Human health criteria and implementation tools: Overview of key decisions in rule amendment.* Ecology pub. 14-10-058, January 2015.

EPA, 1992. U.S. Environmental Protection Agency. *Toxics criteria for those states not complying with Clean Water Act section 303(c)(2)(B).* 40 CFR Part 131.36. Also known as the National Toxics Rule.

EPA, 1999. U.S. Environmental Protection Agency. *Toxics criteria for those states not complying with Clean Water Act section 303(c)(2)(B)*, originally published in 1992, amended in 1999 for PCBs. *http://www.ecfr.gov/cgi-bin/text-idx?SID=76816a2f92256bf94a548ed3115cee23&node=40:23.0.1.1.18.4.16.6&rgn=div8*

EPA, 2000. U.S. Environmental Protection Agency. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health Technical Support Document. Volume 2: Development of National Bioaccumulation Factors.* Available online at: *http://water.epa.gov/scitech/swguidance/standards/upload/2005_05_06_criteria_humanhealth_method_tsdvol2.pdf*

EPA, 2000. U.S. Environmental Protection Agency. 40 CFR Part 131.38 California Toxic's Rule, at *http://www.epa.gov/fedrgstr/EPA-WATER/2000/May/Day-18/w11106.pdf.*

EPA 2001. U.S. Environmental Protection Agency. *Water Quality Criterion for the Protection of Human Health: Methylmercury*. EPA-823-R-01-001.EPA 2002. *National recommended water quality criteria: 2002 – Human health criteria calculation matrix.* EPA 822-R-02-012, November 2002.

EPA. 2009. U.S. Environmental Protection Agency. *Guidance for Implementing the January 2001 Methylmercury Water Quality Criterion*. EPA 823-R-09-002. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

EPA 2014. U.S. Environmental Protection Agency. *Updated national recommended water quality criteria for the protection of human health.* 79 FR No. 120/Monday, June 23, 2014, 27303.

ED_002709_00032848-00011

EPA 2015. U.S. Environmental Protection Agency. *Proposed Rule: Revision of certain federal water quality criteria applicable to Washington.* 80 FR No. 177, Monday, September 14, 2015. Pages 55063 – 55077)

EPA 2015. U.S. Environmental Protection Agency. . *Draft aquatic life ambient water quality criteria cadmium – 2015.* EPA-820-D-15-003, November 2015

ODEQ, 2011. Oregon Department of Environmental Quality. *Water Quality Standards Review and Recommendations: Arsenic.* *http://www.deq.state.or.us/wq/standards/docs/toxics/metals/AppEArsenicIssuePaper.pdf*.

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