



May 31, 2022

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U.S. Environmental Protection Agency  
Office of Water, Standards and Health Protection Division (4305T)  
1200 Pennsylvania Avenue NW  
Washington, DC 20460  
***Submitted via Federal eRulemaking Portal***

RE: Comments on Restoring Protective Human Health Criteria in Washington  
Docket ID No. EPA-HQ-OW-2015-0174

Dear Ms. Fleisig:

This comment is submitted by Earthjustice on behalf of Puget Soundkeeper Alliance, Columbia Riverkeeper, Spokane Riverkeeper, RE Sources, the Pacific Coast Federation of Fishermen’s Associations, and the Institute for Fisheries Resources (collectively “Waterkeepers Washington”). The commenters are all non-profit organizations dedicated to protecting the environment and natural resources of Washington State and the Pacific Northwest region; ensuring that all communities of Washington and the Pacific Northwest have fishable and swimmable water; protecting the family-wage jobs that depend on fishing in Washington waters through scientifically sound policy; and seeking positive solutions to the challenge of water pollution and its human health implications. Waterkeepers Washington generally supports the proposed rule, Restoring Protective Human Health Criteria in Washington, 87 Fed. Reg. 19,046 (Apr. 1, 2022), and urges the Environmental Protection Agency (“EPA”) to quickly finalize the rule to protect people in Washington State, the cleanliness and health of Washington’s waters, and to comply with EPA’s duties under the Clean Water Act, 33 U.S.C. § 1313(c)(4).

#### BACKGROUND

On August 1, 2016, the Washington State Department of Ecology (“Ecology”) submitted new and revised human health criteria to EPA for review and approval or disapproval. Ecology’s proposed criteria used the less-protective option for nearly every step of the human health criteria equation, often rejecting EPA’s best-science instruction and recommendations from EPA’s 2000 methodology and updated 304(a) Guidance. In November 2016, pursuant to its obligation under the Clean Water Act, EPA disapproved 143 of Ecology’s proposed human health criteria and simultaneously promulgated 144 human health criteria that would adequately protect Washington’s people and waters. 81 Fed. Reg. 85,417, 85,419 (Nov. 28, 2016). The EPA-promulgated human health criteria became effective on December 28, 2016, and Washington began working to implement those criteria.

In 2019, under a new presidential administration and in response to a petition by several polluting industries, EPA reversed course and, on the same record, approved Ecology's original proposed criteria. EPA took this action despite objections by the State of Washington<sup>1</sup> and against the recommendation of EPA staff.<sup>2</sup> EPA's 2019 reconsidered human health criteria ("2019 Reconsidered HHC") reduced Washington's health protections for many chemicals—including some of the most dangerous toxins, such as PCBs and dioxins, and EPA failed to provide record evidence showing that the very same 2016 criteria that it previously rejected were now sufficiently protective of designated uses.

The proposed rule essentially seeks to reinstate the more protective 2016 federally promulgated criteria and is supported by the extensive record before EPA. Waterkeepers Washington urges EPA to quickly finalize the proposed rule to protect Washington's people, wildlife, and waters.

I. THE 2019 RECONSIDERED HHC ARE UNLAWFUL BECAUSE THEY FAILED TO PROTECT DESIGNATED USES AND ARE NOT BASED ON SOUND SCIENTIFIC RATIONALE.

Waterkeepers Washington agrees with EPA's conclusion that "the Washington [criteria] that EPA disapproved in 2016 and later approved in 2019 [] are not based on sound scientific rationale and are therefore not protective of the applicable designated uses in Washington." 87 Fed. Reg. at 19,051; *see also* 40 C.F.R. § 131.11(a)(1), (b)(1). As Waterkeepers Washington explain in prior comments, EPA's 2019 Reconsidered HHC constituted arbitrary agency action that failed to meet the requirements of the Clean Water Act and resulted in scientifically indefensible human health criteria for Washington's waters. EPA-HQ-OW-2015-0174-0949.

EPA acknowledged that its 2019 Reconsidered HHC would result in water quality standards that are less stringent—that is, less protective of human health—than the 2016 federally promulgated criteria.<sup>3</sup> 84 Fed. Reg. 38,150, 38,153 (Aug. 6, 2019); *see also* 2019 EPA TSD at 25-29 (table comparing 2016 federally promulgated standards with standards under the

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<sup>1</sup> *See* Ecology Director Maia Bellon's letters to EPA: EPA-HQ-OW-2015-0174-0581 (July 22, 2019); EPA-HQ-OW-2015-0174-0451 (June 12, 2019); EPA-HQ-OW-2015-0174-0446 (May 7, 2019); EPA-HQ-OW-2015-0174-435 (Aug. 7, 2018).

<sup>2</sup> *See* Ex. A at 15, *Background Information: Human Health Criteria and Fish Consumption Rates and March 2018 Washington Human Health Criteria Issue Paper*, obtained through the Freedom of Information Act, EPA-HQ-2019-005479 ("Granting the [2017 Industry] petition would not address all of the implementation issues or the lack of sound scientific basis for the criteria.").

<sup>3</sup> Under the 2019 Reconsidered HHC, criteria for seven polycyclic aromatic hydrocarbons ("PAHs"), which are potentially carcinogenic, were weakened by two orders of magnitude when compared to the 2016 federally promulgated criteria. EPA-HQ-OW-2015-0174-0949, Attachment 2, Expert Report of Allan Chartrand ("Chartrand Report") at 11. Likewise, the allowable concentration of anthracene is 31 times higher, fluorene is 42 times higher, and hexachlorocyclopentadiene is 150 times higher. *See* EPA's May 10, 2019 Technical Support Document ("2019 EPA TSD") at 25-29, EPA-HQ-OW-2015-0174-0455.

2019 Reconsidered HHC). This is because Ecology's 2016 proposed criteria doctored the math or failed to use the proper equation at all to reach a predetermined end-result. *See* 2019 EPA TSD at 16-18 (describing Ecology's process of offsetting protective inputs with other inputs that are less stringent than EPA's guidance), EPA-HQ-OW-2015-0174-0455. Despite rejecting 143 of Ecology's proposed criteria in 2016 as not protective of designated uses, in 2019, EPA suddenly determined, on the same record, that Ecology's outcome-oriented approach to arithmetic was adequate. *See id.* at 15 ("the protectiveness of the criteria must be evaluated based on the suite of risk-management decisions, the totality of the inputs into the equations, and the resulting numeric criteria"). EPA provided no new data, and no new legal rationale. Overall, EPA's position did not square with the law or EPA's own regulations. The use of arbitrary inputs necessarily resulted in arbitrary criteria. *See Dep't of Commerce v. New York*, 139 S. Ct. 2551, 2577-78 (2019) ("the APA requires courts to 'hold unlawful and set aside' agency action that is 'arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law'") (quoting 5 U.S.C. §706(2)(A)); *see also* 40 C.F.R. § 131.5(a)(2) (EPA must determine that state-adopted criteria "protect the designated water uses based on sound scientific rationale").

First, the 2019 Reconsidered HHC did not follow EPA's own recommendation (and indeed the scientific community's recommendation) to use bioaccumulation factors ("BAFs") instead of bioconcentration factors ("BCFs") in the water quality standards equation. Since as early as 2000, EPA has made clear that it favors use of the more protective BAFs over BCFs because BAFs account for all routes through which aquatic organisms are exposed to toxins. EPA 2000 Guidance at 1-5. Indeed, Ecology's use of BCFs instead of BAFs was the driver for EPA's disapproving 129 out of 192 of Washington's 2016 proposed criteria. Ex. A at 14. In a March 2018 white paper, EPA Office of Water staff noted, "Given the 15-year Agency science-based record that BAFs more accurately represent pollutant bioaccumulation than BCFs, EPA could not defensibly approve WA's use of BCFs as being 'based on sound scientific rationale.'" *Id.* at 15. EPA disregarded well-established science, the agency's own guidance, and even its own staff when it later finalized the 2019 Reconsidered HHC and weakened Washington's water quality standards.

Second, the 2019 Reconsidered HHC assumes a relative source contribution value for all its calculations of 1.0—that is, it assumes with no foundation in fact or research, that a person in Washington ingests toxics only from fish or shellfish and not from any other source. This is particularly unsupported in the cases of arsenic and PCBs where it is known that humans ingest these toxins in drinking water. In its 2016 proposal, Ecology failed to provide evidence of good scientific data in Washington about sources of toxics or that sources of exposures are "well-known and documented." Likewise, EPA's 2019 Reconsidered HHC and accompanying technical support document failed to point to a scientifically sound rationale for this unsupported assumption, and rather deferred to Ecology's "risk management decision" and supposed "more conservative inputs" elsewhere in the water quality standards equation. *See* 2019 EPA TSD at 15-18. EPA did not provide a reasoned explanation for departing from its earlier science-based decision that properly accounted for other routes of exposure. *See* 81 Fed. Reg. at 85,421 (relative source contribution accounts for exposures to pollutants from ocean fish and shellfish (which are not accounted for in the fish consumption rate), non-fish food consumption, dermal

exposure, and inhalation exposure).<sup>4</sup> The use of a relative source contribution of 1.0 is arbitrary and scientifically indefensible.

Finally, the 2019 Reconsidered HHC reinstated the unprotective and inadequate National Toxics Rule for PCBs of 0.00017 ug/L. PCBs are some of the most dangerous chemicals in Washington's waters:

Health effects that have been associated with exposure to PCBs include acne-like skin conditions in adults, and neurobehavioral and immunological changes in children. PCBs have been shown to cause cancer in animals (EPA 2014). Studies of exposed workers have shown changes in blood and urine that may indicate liver damage.

Ecology, *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment* (Jan. 2016) at 52 ("Overview"), available at <https://perma.cc/SX88-PU2W>. Despite these dangers, Ecology proposed to use a state-specific risk level exclusively for PCBs, placing PCBs entirely outside of the proper equation for determining protective human health criteria and allowing a dramatically higher cancer risk rate for PCBs. Rather than one in one million—the cancer risk rate for all other pollutant criteria—Ecology selected a cancer risk level of  $4 \times 10^{-5}$ , or one in 25,000, for PCBs alone. Ecology Proposed Rule at 11-12 & n.E; Ecology Overview of Proposed Rule at 53-54.

Ecology never explained (nor did EPA in the 2019 Reconsidered HHC) why it would allow a significantly increased cancer risk—forty times higher—for fish-consuming residents of Washington for this known and prevalent carcinogen and produced no scientific evidence to support its decision to allow the public to be at increased risk from PCBs relative to other pollutants. As EPA now seems to acknowledge, Ecology tinkered with the human health criteria math and methodology until the PCB criteria ended up where Ecology wanted it to land—at a standard unchanged from the woefully underprotective National Toxics Rule. *See* 87 Fed. Reg. at 19,054 ("Washington arrived at the PCB CRL by solving for what the CRL would be if the body weight and FCR inputs into the equation were updated and the desired end result was the NTR PCB criteria already in effect at the time."). Waterkeepers Washington agrees with EPA's conclusion that this "PCB-specific change to the [cancer risk level] offset any additional health protection afforded by the [fish consumption rate] adjustment and therefore failed to remedy EPA's previous finding that the criteria did not adequately protect fish consumers in Washington." *Id.* As such, the human health criteria "currently in effect for PCBs are not sufficient to protect Washington's designated uses and do not meet the requirements of the [Clean Water Act]." *Id.*

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<sup>4</sup> *See also* EPA-HQ-OW-2015-0174-0428, EPA's 2016 Partial Approval/Disapproval Technical Support Document. EPA found that Ecology did not "adequately explain[] why it is appropriate to disregard all other routes of exposure, including air, soil, other marine fish and shellfish, non-fish food, etc." and that "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."

EPA's 2019 Reconsidered HHC reduced Washington's health protections for many chemicals—including some of the most dangerous toxins, such as PCBs. The 2019 Reconsidered HHC accepted the use of a manipulated human health criteria equation and resulted in significantly less stringent criteria that fail to protect the designated uses. Protecting designated uses is a basic requirement for setting water quality standards under the Clean Water Act—a requirement that the 2019 Reconsidered HHC fails to meet.

## II. THE PROPOSED RULE CORRECTS THE FAILINGS OF THE 2019 RECONSIDERED HHC AND SHOULD BE FINALIZED

The overarching commitment and directive of the Clean Water Act is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” 33 U.S.C. § 1251(a). To that end, the Clean Water Act sets national goals to eliminate all discharges of pollutants by 1985, to attain water quality which provides for the protection and propagation of fish and shellfish by 1983 (the “fishable” goal), and sets national policy to prohibit toxic pollutants in toxic amounts. 33 U.S.C. § 1251(a)(1), (2), and (3). “Fishability” is shorthand for and encompasses the ability of people to engage in harvest of fish and shellfish and to safely eat the harvested fish and shellfish in quantities that those individuals would normally consume. As EPA recognizes, for Washington’s water quality standards, the designated use must recognize and encompass the way Tribes use their treaty-reserved fishing rights. *See* 87 Fed. Reg. at 19,050 (citing 80 Fed. Reg. 55,063, 55,067 (Sep. 14, 2015)). Thus, in Washington, harvesting and eating fish, including for subsistence fishing by Tribes, is the designated use of the waterbody that the Clean Water Act requires be protected. *See* Wash. Admin. Code 173-201A-600, -610; *see also* 81 Fed. Reg. 85,417, 85,422-27 (Nov. 28, 2016).

While states are obligated to promulgate protective and science-based water quality standards, it is up to EPA to review and approve or disapprove a state’s efforts and, most importantly, it is up to EPA to be the backstop should the state fail to develop adequately protective standards. 33 U.S.C. § 1313(a), (b), and (c); 40 C.F.R. § 131.21. EPA has independent authority to ensure that a state’s standards are up to date and adequate to meet the requirements of the Clean Water Act—at any time, when “the Administrator determines that a revised or new standard is necessary to meet the requirements” of the Clean Water Act, EPA “*shall* promptly prepare and publish proposed [revised] regulations.” 33 U.S.C. § 1313(c)(4) (emphasis added). Because the EPA Administrator has determined that the 2019 Reconsidered HHC are not based on sound scientific rationale and do not protect Washington’s designated uses, 87 Fed. Reg. at 19,051, EPA must issue revised criteria for Washington, 33 U.S.C. § 1313(c)(4). EPA should quickly finalize the Proposed Rule.

### A. EPA Properly Applies the Relative Source Contribution Risk Factor Based on EPA Guidance and Available Science.

Waterkeepers Washington supports EPA’s approach to the relative source contribution factor. EPA’s 2015 304(a) guidance recommends that, absent scientific data about relative contributions of sources of toxins to the populations that are to be protected by the water quality

standards, states should use a default value of 20 percent (.20) in the human health criteria equation to account for the obvious fact that not all toxins a person ingests will necessarily come from fish. *See* EPA, Human Health Ambient Water Quality Criteria and Fish Consumption Rates: Frequently Asked Questions, <https://www.epa.gov/sites/default/files/2015-12/documents/hh-fish-consumption-faqs.pdf>. EPA further states that if the sources of exposure to a chemical are well-known and documented, a state may use a calculated relative source contribution, but EPA recommends that the value not be greater than 80 percent (.80). *Id.* EPA has rightly followed the 2015 304(a) guidance. As stated above, EPA correctly found that an RSC of 1 is not scientifically defensible because it ignores other ways that humans are exposed to toxic pollutants. *See* 87 Fed. Reg. at 19,052. Moreover, EPA correctly disavows the agency's 2019 decision to approve an RSC level of 1 based on the state's "risk management" decisions and "conservative" inputs elsewhere in the criteria equation. *Id.*

B. The Proposed Rule Properly Applies Bioaccumulation and Bioconcentration Factors Based on EPA Guidance and Available Science.

EPA's use of bioaccumulation factors ("BAF") rather than bioconcentration factors ("BCF") for most of the criteria (allowing the use of BCFs only when it would be more protective than BAFs or where BAF data are not available) is supported by the science and the law. EPA rightly rejects the 2019 Reconsidered HHC's use of BCFs when BAF data were available. 87 Fed. Reg. at 19,052.

Bioaccumulation reflects how toxins move in the environment and how they ultimately affect people consuming fish and shellfish. It is the accurate figure to use for assessing how much of a toxin a person takes in when eating fish and shellfish and must be the figure used if EPA is properly assessing risk and exposure from eating fish. While those fish and shellfish may have accumulated toxins in a variety of ways—directly from the water, from contaminated sediments in the water (that became contaminated because of pollution discharges to the water), from eating smaller fish that were contaminated from the water/sediments—the basic fact remains that toxins get into fish that people consume because of pollutants entering the water. The BCF captures only a subset of the BAF because it does not measure all routes through which aquatic organisms are exposed to toxins.<sup>5</sup> As EPA notes, "BCFs only account for accumulation of a contaminant through water, whereas BAFs account for bioaccumulation through food, sediment, and water." 87 Fed. Reg. at 19,053. EPA generally recommends the use of BAFs because "[f]or some chemicals (particularly those that are highly persistent and hydrophobic), the magnitude of bioaccumulation by aquatic organisms can be substantially greater than the magnitude of bioconcentration. Thus, an assessment of bioconcentration alone would underestimate the extent of accumulation in aquatic biota for these chemicals." EPA 2000 Guidance at 5-2. EPA has recommended the use of BAFs in establishing human health criteria for over 20 years and EPA correctly follows that approach in the Proposed Rule.

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<sup>5</sup> Jon A. Arnot and Frank Gobas, *A review of bioconcentration factor (BCF) and bioaccumulation factor (BAF) assessments for organic chemicals in aquatic organisms*, 14 Environ. Rev. 257, 259-62 (2006).

C. EPA Properly Retained a Fish Consumption Rate of 175g/day as a Compromise.

EPA rightly notes that a fish consumption rate of 175g/day is a compromise, 87 Fed. Reg. at 19,055 n.78, as surveys of Washington communities show far higher fish consumption rates, even without considering suppressed consumption due to severely reduced stocks of salmon, shellfish, and other fish relied upon by many Washington residents. In its earlier determination that Washington's water quality standards were inadequate, EPA noted consumption survey data as high as 1,600 g/day and a Suquamish 95th percentile fish consumption rate of 767 g/day. *See* 80 Fed. Reg. 55,063, 55,066 n.18 (Sept. 14, 2015). Another recent EPA document noted survey data showing adult Suquamish tribal members have a fish consumption rate totaling 584.2 g/day. EPA, Record of Decision: Lower Duwamish Waterway Superfund Site App'x B at 33 & n.46 (Nov. 2014). EPA also highlighted that the Muckleshoot and Suquamish Tribes have raised the issue of their fish consumption rates being suppressed because of fishing conditions. *Id.*; 80 Fed. Reg. at 55,066 n.18 ("Extensively researched historical average FCRs for the Columbia River Basin Tribes range from 401 to 995 g/day . . ."); *see also* Comment Letters from Confederated Tribes and Bands of the Yakama Nation, March 25, 2014 (noting Yakama has higher consumption rates and never "agreed" to 175 g/day); The Tulalip Tribes, March 28, 2014; Puyallup Tribe of Indians, April 9, 2014; Stillaguamish Tribe of Indians, April 2, 2014 (noting that consumption has been suppressed due to efforts to build up salmon runs decimated by non-Indian actions); and Northwest Indian Fisheries Commission ("NWIFC"), September 5, 2014, including table showing surveys in NWIFC previous comments.

The 175 g/day fish consumption rate is the result of years of process and negotiation between the State and several Tribes, but it must be (and has been) acknowledged that many Washington residents eat fish at higher rates. Survey data supports setting even higher rates (requiring stronger protections) based on actual amounts of fish consumed by many members of the community affected by this rule. This is doubly important because of the substantial environmental justice concern the fish consumption rate presents as its effects are most acutely felt by people of color such as Tribes, certain immigrant groups, and subsistence fishers.

Because state and federal regulators have an obligation to set water quality standards to allow individuals and communities to harvest and eat shellfish safely in the quantities they would normally eat, it is incumbent upon the regulators to determine the amount of fish people actually consume when setting the human health water quality criteria for toxic pollutants. In numerous guidance documents, EPA has made clear that states must use locally accurate and protective fish consumption rates to set water quality standards. *See, e.g.,* EPA, *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health* at 2-13 (Oct. 2000) ("EPA 2000 Guidance"). Accurately determining the fish consumption rate is integral to regulators' ability to set protective human health water quality standards such that the level of toxic pollutants is low enough that fish remain safe to eat, even for people who eat greater amounts of fish than others. *Id.*; *see generally* National Environmental Justice Advisory Council, *Fish Consumption and Environmental Justice* at 30-32 (Dec. 2001). If a state sets the foundational fish consumption rate lower than the amounts actually consumed, the commensurate human health water quality standards will be too lenient and people consuming fish may ingest levels of

toxics that will put them at increased and unacceptable risk for adverse health consequences. EPA 2000 Guidance. Failure to adopt human health water quality standards based on an accurate fish consumption rate, including a rate adequate to protect sustenance fishing by Tribes and other cultures, is a failure to promulgate water quality standards that meet the requirements of the Clean Water Act.

D. EPA Properly Retained a  $1 \times 10^{-6}$  Cancer Risk Rate.

As important as the fish consumption rate is the acceptable cancer risk rate—that is, the risk that a person consuming fish will contract cancer during his or her lifetime because of exposure to toxics that may accumulate in fish. A  $1 \times 10^{-6}$  risk factor, or one in one million, is generally considered protective, 40 C.F.R. § 131.36(b)(1), and Washington’s cancer risk rate for human health criteria water quality standards has always been  $1 \times 10^{-6}$  as part of the National Toxics Rule (“NTR”), 40 C.F.R. § 131.36. Indeed, in its official comments on the NTR, Washington asked EPA to use a  $10^{-6}$  cancer risk level. 80 Fed. Reg. at 55,068 (citing 57 Fed. Reg. 60,848 (Dec. 22, 1992)). EPA, in its 2016 rule, maintained the one in one million cancer risk rate. 81 Fed. Reg. at 85,427. EPA found that that rate was consistent with its 2000 Methodology, Tribal treaty rights, and was proper given Oregon’s 175 g/day fish consumption rate and  $10^{-6}$  risk rate, as many of Washington’s rivers are upstream of Oregon. *Id.* EPA’s use of the  $10^{-6}$  cancer risk rate is further consistent with general agreement overall in the scientific and regulatory community. Chartrand Report at 6. The strong scientific and regulatory bases for using this rate are in part to ensure that most of the population is protected, including more vulnerable persons, and to address the potential of additive or even synergistic toxicity from exposure to multiple toxins, often the situation with consumption of fish. *Id.*

The cancer risk rate is crucial to determining in-water protections. The very point of protecting fish consumers under the Clean Water Act would be compromised by a rate of less than one in one million, because those who eat the most fish make up the exact population for whom these numbers matter most and the group for which EPA must not compromise protections. A greater risk tolerance would mean that cancer risk for one segment of the population, high fish consumers, can be ten to 100 times higher than for the general population. Valuing the health of one group of people differently from another is unacceptable, a violation of the express direction in the Clean Water Act, and a likely violation of state and federal civil rights law. Use of a  $1 \times 10^{-6}$  cancer risk rate is appropriate and indeed necessary to ensure protection of designated uses of catching and eating fish over a lifetime.

For this reason, Waterkeepers Washington also supports EPA’s decision to use a  $1 \times 10^{-6}$  cancer risk rate for PCBs. As EPA admits, there is no legal or scientific support for using a cancer risk level of  $2.3 \times 10^{-5}$  (cancer risk of approximately one in 43,478) for PCBs, which are highly persistent probable carcinogens, while using a cancer risk level of  $1 \times 10^{-6}$  (cancer risk of one in a million) for all other pollutants. *See* 87 Fed. Reg. 19,053.



E. EPA Properly Applies Other Exposure Assumptions from Its Own Guidance in Deriving the Criteria in the Proposed Rule.

Additional components of the human health criteria equation that affect the outcome include assumptions about a person's body weight and drinking water intake. 87 Fed. Reg. at 19,048-49. EPA elected to use its most recent national data on drinking water intake, *id.*, and there is no local data that shows a drinking water rate lower than 2.4 L/day, so that decision is correct.

While we continue to believe that EPA should use a more protective 70 kg body weight assumption, this factor should not stand in the way of EPA quickly finalizing the proposed rule, which is overall more protective. It is important to note, however, that the use of a higher body weight assumption is directly contrary to best science and EPA guidance and counter-productive to the requirements that water quality standards protect uses such as traditional food uses. Traditional foods are crucial to the health of native people and to Tribes and reduced access to traditional foods has resulted in many health problems in Tribal areas, including increased body weights. It is a double injustice for the loss of traditional foods to result in increased body weight and to then use that increased figure to provide less protection for consuming traditional foods.

A study commissioned by the Karuk Tribe found that “[t]he loss of traditional food sources is now recognized as being directly responsible for a host of diet-related illnesses among Native Americans, including diabetes, obesity, heart disease, tuberculosis, hypertension, kidney troubles, and strokes.”<sup>6</sup> The United States Centers for Disease Control and Prevention has also recognized the importance of traditional foods in fighting diseases in American Indian communities.<sup>7</sup> This effort is of crucial importance because the rate of diabetes for American Indians and Alaska Natives is two to three times that of other groups in the United States. Centers for Disease Control and Prevention, MMRW Weekly Summary (Aug. 1, 2003). For the Yakama Nation, the rate of diabetes is twice that of other populations in Washington. See O’Neill, *Washington State’s Weakened Water Quality Standards*.

As for other communities that consume high amounts of fish and shellfish, using an 80 kg body weight significantly overstates weight, particularly for those in Asian-American/Pacific Islander communities, again resulting in reduced protections for those communities. A study of fish consumption by ten such communities in King County indicated an average body weight of 62 kg for men and women.<sup>8</sup> A dietary survey assessing fish consumption of Japanese and Korean women found similar body weight results to the King County study of the Asian and Pacific Islander community for women (57 kg, according to a presentation by one of the study’s

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<sup>6</sup> Kari Marie Norgaard, *The Effects of Altered Diet on the Health of the Karuk People* at 5 (2004).

<sup>7</sup> See Native Diabetes Wellness Program, Centers for Disease Control and Prevention, *Traditional Foods in Native America: A Compendium of Stories from the Indigenous Food Sovereignty Movement in American Indian and Alaska Native Communities* (2013).

<sup>8</sup> Ruth Sechena *et al.*, *Asian and Pacific Islander Seafood Consumption Study* at 62 (May 27, 1999).

co-authors).<sup>9</sup> The mean weight of the participants in the Tsuchiya *et al.* study was 55 kg for the Japanese women and 59 kg for the Korean women. *Id.* Based on this evidence of local body weights of one of the most-affected groups, EPA should have used a 70 kg body weight assumption.

### III. WHILE EPA SHOULD ACT QUICKLY TO FINALIZE THE PROPOSED RULE, MORE STRINGENT PROTECTIONS ARE NEEDED TO PROTECT WASHINGTONIANS FROM DIOXINS AND PFAS COMPOUNDS

While we urge EPA to quickly finalize the proposed rule as is, we expect EPA to take separate and prompt action strengthening dioxin criteria and establishing criteria for PFAS and PAHs if Washington fails to move quickly to address these toxic pollutants.

#### A. EPA's 2019 Approval of Dioxin Criteria Resulted in Criteria That Do Not Protect Designated Uses.

In 2019, EPA belatedly approved Ecology's 2016 proposed human health criteria for dioxins, which are less protective than the 1992 National Toxics Rule standards, and 25 times less protective than Oregon's dioxin criteria. Ecology reached this result by calculating 2,3,7,8-Tetrachloro-dibenzo-p-dioxin (2,3,7,8-TCDD) only based on its non-cancer health effects. Overview at 30. The 2016 federally promulgated criteria value was  $1.3 \times 10^{-7}$  and  $1.4 \times 10^{-7}$  ug/L, for water + organisms and organisms only, respectively. Ecology's 2016 proposed criteria for dioxin—approved by EPA in 2019 and currently in effect in Washington—represents older, less defensible input parameters for highly toxic TCDD mixtures and is not protective of designated uses. *See* Chartrand Report at 11. If Ecology does not propose more stringent dioxin criteria that are based on sound scientific rationale and will protect designated uses within the next year, then EPA must act to protect Washingtonians from this highly toxic pollutant.

#### B. The Clean Water Act Requires Protective Criteria for PFAS compounds.

EPA also should develop human health criteria for PFAS compounds—particularly PFOS and PFOA—if Ecology fails to do so. Ecology has been studying and sampling for PFAS in Washington waters since at least 2008 and has found PFAS chemicals in fish tissue.<sup>10</sup> Decades of scientific research demonstrates that PFOS and PFOA are persistent, bioaccumulative, and toxic chemicals. Among the thousands of known PFAS chemicals, PFOS and PFOA are the most well-studied and belong to a subclass of PFAS called perfluoroalkyl acids (“PFAAs”). Both chemicals are comprised of a fully fluorinated 8-carbon chain backbone and are thus

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<sup>9</sup> Ami Tsuchiya *et al.*, *Fish intake guidelines: incorporating n-3 fatty acid intake and contaminant exposure in the Korean and Japanese communities*, 87 *Am. J. Clinical Nutrition* 1867-75 (2008).

<sup>10</sup> <https://ecology.wa.gov/Blog/Posts/October-2020/PFAS-Sampling-in-Lake-Washington>; *see also* Ecology, *Survey of Per- and Poly-fluoroalkyl Substances (PFASs) in Rivers and Lakes, 2016* (Sep. 2017); Ecology, *Perfluorinated Compounds in Washington Rivers and Lakes* (Aug. 2010).

considered “long-chain” PFAS.<sup>11</sup> Because the carbon-fluorine bond is “one of the strongest bonds ever created by man,”<sup>12</sup> PFOS and PFOA are extremely persistent in the environment and resistant to degradation.<sup>13</sup>

PFOS and PFOA are also highly mobile in the environment, particularly through water, and can migrate thousands of miles following environmental release through a process known as long-range transport.<sup>14</sup> Indeed, PFOS and PFOA have also been found in remote and pristine environments in the Arctic, thousands of miles from the facilities that released them.<sup>15</sup> Due to their widespread presence in freshwater and oceans, PFOA and PFOS are considered ubiquitous in the aqueous environment<sup>16</sup> and have been detected in aquatic organisms ranging from marine algae to beluga whales.<sup>17</sup>

Once in the environment, PFOA and PFOS concentrate and accumulate over time in biological organisms through a process called bioaccumulation. Both chemicals have also been shown to biomagnify, or increase in concentration up the food chain, with the highest concentrations found in larger predator organisms.<sup>18</sup> While the bioaccumulation potential of PFOA in aquatic organisms is much lower than that of PFOS,<sup>19</sup> studies have found that PFOA biomagnifies in larger aquatic and terrestrial organisms,<sup>20</sup> suggesting that PFOA can significantly accumulate and concentrate in living organisms. In fact, the Stockholm Convention on

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<sup>11</sup> Carol F. Kwiatkowski *et al.*, *Scientific Basis for Managing PFAS as a Chemical Class*, 7 *Env'tl Sci. & Tech. Letters* 532 (2020); Zhanyun Wang *et al.*, *A Never-Ending Story of Per- and Polyfluoroalkyl Substances (PFASs)?*, 51 *Env't Sci. & Tech.* 2508 (2017).

<sup>12</sup> *See Examining the Federal Response to the Risks Associated with Per- and Polyfluoroalkyl Substances (PFAS): Hearing Before the S. Comm. on Env't & Pub. Works*, 116th Cong. 2 (2019) (testimony of Linda S. Birnbaum, Dir., Nat'l Inst. Env'tl Health Sci. & Nat'l Toxicology Program, Nat'l Ins. Health).

<sup>13</sup> *See Kwiatkowski, supra* note 5 at 532; Wang, *supra* note 5 at 2508.

<sup>14</sup> *See Konstantinos Prevedouros et al.*, *Sources, Fate and Transport of Perfluorocarboxylates*, 40 *Env'tl Sci. & Tech.* 32 (2006).

<sup>15</sup> *See Samuel Byrne et al.*, *Exposure to Polybrominated Diphenyl Ethers and Perfluoroalkyl Substances in a Remote Population of Alaska Natives*, 231 *Env'tl Pollution* 387 (2017), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6945979/pdf/nihms-967862.pdf>.

<sup>16</sup> *See Lutz Ahrens*, *Polyfluoroalkyl Compounds in the Aquatic Environment: A Review of Their Occurrence and Fate* 13 *J. Env'tl Monitoring* 20–31 (2011).

<sup>17</sup> *See Barry C. Kelly et al.*, *Perfluoroalkyl Contaminants in an Arctic Marine Food Web: Trophic Magnification and Wildlife Exposure* 43 *Env'tl Sci. & Tech.*, 4037 (2009).

<sup>18</sup> *See C. E. Müller et al.*, *Biomagnification of Perfluorinated Compounds in a Remote Terrestrial Food Chain: Lichen-Caribou-Wolf* 45 *Env'tl Sci. & Tech.* 8665 (2011).

<sup>19</sup> *See Lutz Ahrens & Mirco Bundschuh*, *Fate and Effects of Poly- and Perfluoroalkyl Substances in the Aquatic Environment: A Review*, 33 *Env'tl Toxicology & Chemistry* 1921 (2014).

<sup>20</sup> *See Gregg T. Tomy et al.*, *Fluorinated Organic Compounds in an Eastern Arctic Marine Food Web* 38 *Env'tl Sci. & Tech.* 6475 (2004); Müller *et al.*, *supra* note 28; Magali Houde *et al.*, *Biomagnification of Perfluoroalkyl Compounds in the Bottlenose Dolphin (Tursiops Truncatus) Food Web* 40 *Env'tl Sci. & Tech.* 4138 (2006); Craig M. Butt *et al.*, *Spatial Trends of Perfluoroalkyl Compounds in Ringed Seals (Phoca Hispidus) From the Canadian Arctic* 27 *Env'tl Toxicology Chemistry* 542 (2008).

Persistent Organic Pollutants listed PFOA under Annex A for global elimination<sup>21</sup> based on its “persistence, bioaccumulation, toxicity in mammals including humans and widespread occurrence in environmental compartments,” and that “global action is warranted” to reduce adverse effects to human and environmental health.<sup>22</sup>

In addition to being highly persistent and bioaccumulative, PFOA and PFOS are also toxic to both humans and animals, even at extremely low levels of exposure.<sup>23</sup> In aquatic species ranging from algae to fish, short and long-term exposures to PFOS have been linked to increased mortality, immunotoxicity, and a range of growth and developmental effects.<sup>24</sup>

Due to shared persistent, bioaccumulative, and toxic properties, PFOA and PFOS can build up to dangerous levels in fish and pose health risks to humans that consume contaminated fish. For example, PFOS has been detected in U.S. freshwater fish<sup>25</sup> at levels that exceed the minimum risk level<sup>26</sup> for ingestion of PFOS—a level derived by the Agency for Toxic Substances and Disease (“ATSDR”)—and one that has been criticized as not being health protective.<sup>27</sup> PFOS levels in U.S. fish also exceed the U.S. Food and Drug Administration’s recommended highest allowable mercury levels in fish per serving when eating 2–3 servings per

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<sup>21</sup> See *The New POPs Under the Stockholm Convention*, UN Env’tl Programme Stockholm Convention, <http://www.pops.int/TheConvention/ThePOPs/TheNewPOPs/tabid/2511/Default.aspx> (last updated 2019).

<sup>22</sup> Addenda to Reports: Risk Profile on PFOA, UN Env’tl Programme Stockholm Convention, <http://chm.pops.int/Default.aspx?tabid=2301> (last updated 2019).

<sup>23</sup> See U.S. Dep’t Health & Hum. Servs., Agency for Toxic Substances and Disease Registry (ATSDR), *Toxicological Profile for Perfluoroalkyls* (2021), <https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf> (hereinafter “Profile for Perfluoroalkyls”).

<sup>24</sup> See Lutz Ahrens & Mirco Bundschuh, *Fate and Effects of Poly- and Perfluoroalkyl Substances in the Aquatic Environment: A Review*, 33 *Env’tl Toxicology & Chemistry* 1921 (2014); John P. Giesy *et al.*, *Aquatic Toxicology of Perfluorinated Chemicals* 202 Rev. *Env’tl Contamination & Toxicology* 1 (2010); R. Wesley Flynn *et al.*, *Chronic Per-/Polyfluoroalkyl Substance Exposure Under Environmentally Relevant Conditions Delays Development in Northern Leopard Frog (*Rana pipiens*) Larvae*, 40 *Env’tl Toxicology & Chemistry* 711 (2020); R. Wesley Flynn *et al.*, *Dietary Exposure and Accumulation of Per- and Polyfluoroalkyl Substances Alters Growth and Reduces Body Condition of Post-Metamorphic Salamanders*, 765 *Sci. Total Env’t* 142730 (2021); Gerald T. Ankley *et al.*, *Assessing the Ecological Risks of Per- and Polyfluoroalkyl Substances: Current State-of-the Science and a Proposed Path Forward* 40 *Env’tl Toxicology & Chemistry* 564 (2020); Georgia M. Sinclair *et al.*, *What Are the Effects of PFAS Exposure at Environmentally Relevant Concentrations?*, 258 *Chemosphere* 127340 (2020).

<sup>25</sup> See *Profile for Perfluoroalkyls*, *supra* note 17.

<sup>26</sup> See *id.* at 15. ATSDR defines Minimal Risk Levels (“MRLs”) as “an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse noncancer health effects over a specified route and duration of exposure.”

<sup>27</sup> See Letter from Anna Reade, Staff Scientist, Nat. Res. Def. Council, to ATSDR (Sept. 6, 2018), <https://www.nrdc.org/sites/default/files/comments-on-atsdr-toxicological-profile-on-perfluoroalkyls-2018-draft-2018-08-21.pdf>.

week.<sup>28</sup> Consumption of these contaminated fish remains a relevant source of exposure to PFOA and PFOS in certain populations. As such, it is critical that Washington have fish consumption criteria for both PFOA and PFOS to reduce harmful exposures and protect human health.

Epidemiological studies have further shown that ingestion of PFAS-contaminated fish remains a relevant source of exposure to PFOS and PFOA, despite recent widespread bans on the use of both chemicals in consumer products. For example, a study examining temporal trends of PFAS in children from the Faroe Islands between 1993–2012 revealed that PFOA and PFOS levels persisted in children’s serum throughout the study period despite decreased use of both chemicals in consumer products, indicating that consumption of contamination of fish and marine mammals remained a significant source of exposure to both chemicals.<sup>29</sup>

Once ingested, PFOA and PFOS are difficult to metabolize and eliminate in humans. A toxicity assessment conducted by ATSDR concluded that both PFOA and PFOS can take decades to be eliminated from the body.<sup>30</sup> Coupled with their widespread presence in the environment, PFOA and PFOS have been detected in the blood of more than 98% of people living in the United States.<sup>31</sup>

Human exposure to PFOS and PFOA, even at extremely low levels, has been linked to serious health effects, including cancer, elevated cholesterol, pre-eclampsia, liver and kidney damage, and endocrine disruption.<sup>32</sup> Perhaps the most well-established human health outcome is immunosuppression; multiple lines of evidence suggest that PFOA and PFOS can suppress and weaken the immune system. In fact, in 2016, the National Toxicology Program concluded that PFOA and PFOS are presumed to pose “an immune hazard to humans based on a high level of evidence that PFOA [and PFOS] suppressed the antibody response.”<sup>33</sup> These conclusions were

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<sup>28</sup> *Profile for Perfluoroalkyls*, *supra* note 17 at 705; see also *Technical Information on Development of FDA/EPA Advice about Eating Fish for Those Who Might Become or Are Pregnant or Breastfeeding and Children Ages 1-11 Years*, U.S. Food & Drug Admin., <https://www.fda.gov/food/metals-and-your-food/technical-information-development-fdaepa-advice-about-eating-fish-those-who-might-become-or-are> (last updated Oct. 28, 2021).

<sup>29</sup> See Clifton Dassuncao *et al.* (2018). *Shifting Global Exposures to Poly- and Perfluoroalkyl Substances (PFASs) Evident in Longitudinal Birth Cohorts from a Seafood-Consuming Population* 52 *Env’tl Sci. & Tech.* 3738 (2018).

<sup>30</sup> See *Profile for Perfluoroalkyls*, *supra* note 17.

<sup>31</sup> Antonia M. Calafat *et al.*, *Polyfluoroalkyl Chemicals in the US population: Data from the National Health and Nutrition Examination Survey (NHANES) 2003–2004 and Comparisons with NHANES 1999–2000*, 115 *Env’tl Health Persps.* 1596 (2007).

<sup>32</sup> See *Profile for Perfluoroalkyls*, *supra* note 17.

<sup>33</sup> Nat’l Toxicology Program, U.S. Dep’t Health & Hum. Servs., *NTP Monograph on Immunotoxicity Associated with Exposure to Perfluorooctanoic Acid (PFOA) or Perfluorooctane Sulfonate (PFOS)* 1 (2016), [https://ntp.niehs.nih.gov/ntp/ohat/pfoa\\_pfos/pfoa\\_pfosmonograph\\_508.pdf](https://ntp.niehs.nih.gov/ntp/ohat/pfoa_pfos/pfoa_pfosmonograph_508.pdf).

based in part upon a study examining a cohort of children that linked high serum concentrations of PFOA and PFOS in the children to a weakened antibody response following vaccination.<sup>34</sup>

Given the persistent, bioaccumulative, and toxic nature of PFOS and PFOA and the dangers that consumption of PFAS-contaminated fish pose to human health, Washington should adopt standards that protect human health from fish consumption exposure. Given that Washington has a process for developing fish consumption-based human health standards and there is strong evidence of human exposure to PFOA and PFOS through fish consumption, either Ecology or EPA should establish fish consumption standards for these chemicals.

### CONCLUSION

EPA should work quickly to finalize the Proposed Rule, although it could be strengthened in places to better protect all fish consumers in Washington. Until EPA finalizes the Proposed Rule, the 2019 Reconsidered HHC, which EPA has found are not supported by sound scientific rationale and are not protective of designated uses, remain in place. The Proposed Rule would better protect all people in the state who consume fish, from average fish-consumers to those at the highest fish consumption levels—native people and subsistence fishers.

Thank you for the opportunity to comment on this important rulemaking. Please feel free to contact the undersigned with any questions. We look forward to working with EPA in ensuring that compliant, more protective standards are developed quickly.

Respectfully submitted this 31st day of May, 2022.



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On behalf of:

Puget Soundkeeper Alliance  
Columbia Riverkeeper  
Spokane Riverkeeper  
RE Sources  
Pacific Coast Federation of Fishermen's Associations  
Institute for Fisheries Resources

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<sup>34</sup> Philippe Grandjean *et al.*, *Serum Vaccine Antibody Concentrations in Children Exposed to Perfluorinated Compounds*, 307 J. Am. Med. Ass'n 1142 (2012).