



State of Washington
DEPARTMENT OF FISH AND WILDLIFE

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Marla Koberstein
Washington Department of Ecology
Water Quality Program
PO Box 47696
Olympia, WA 98504-7696

April 30, 2024

Subject: **Proposed revisions to chapter 173-201A WAC, Water Quality Standards for Surface Waters of the State of Washington**

Dear Ms. Koberstein:

On behalf of the Washington Department of Fish and Wildlife (WDFW), thank you for the opportunity to review and comment on the Department of Ecology's (Ecology's) proposed changes to the Aquatic Life Toxics Criteria. Our agency has a vested interest in improving Washington state's water quality. As part of our mission to preserve, protect, and perpetuate the state's fish, wildlife, and ecosystems, WDFW has spent the last 34 years monitoring aquatic species for many of the contaminants listed in the criteria.

We applaud Ecology's decision to update the aquatic life criteria using the best available science on the adverse impacts of toxic contaminants. In particular, we strongly support Ecology's decision to include criteria for emerging toxic contaminants, such as 6PPD-quinone, that are clearly hazardous to aquatic life. To further enhance the impact of the Aquatic Life Toxics Criteria, we encourage the department to consider the following comments when revising the criteria:

1. We commend Ecology's inclusion of the United States Environmental Protection Agency's (EPA's) draft criteria for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) in the Aquatic Life Toxics Criteria. To ensure prompt actions are taken to address these pervasive and toxic chemicals in surface waters, **we strongly encourage Ecology to adopt criteria for PFOA and PFOS in the final rule, regardless of the status of the EPA criteria.**
2. We applaud Ecology's decision to propose criteria for 6PPD-quinone. 6PPD-quinone is an emerging contaminant of concern for WDFW and many of the effects on salmonid species and other aquatic life are still unknown. Although criteria are typically derived using 96-hour toxicity tests, we agree with Ecology's decision to use the currently available data from 24-hour toxicity tests to derive a value based on the 5th percentile species sensitivity distribution. Given the high toxicity of 6PPD-quinone to coho salmon, a culturally, ecologically, and economically important species to Washington state, **we would also support Ecology using the 1st percentile species sensitivity distribution instead of the 5th percentile to ensure 6PPD-quinone criteria are sufficiently protective of salmonids.**
3. **We recommend Ecology revise the polychlorinated biphenyl (PCB) criteria to add tissue values for salt and freshwater exposures.** Monitoring studies, such as those used to inform the Toxics in Aquatic Life vital sign reported by the Puget Sound Partnership, show PCB



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concentrations in the tissues of aquatic organisms, including threatened Chinook salmon, continue to exceed concentrations associated with significant mortality in many parts of the Puget Sound. Since PCBs are lipophilic and therefore accumulate in sediment, surface water monitoring alone may not identify areas with significant PCB contamination. We suggest Ecology add tissue values to the Aquatic Life Toxics Criteria for PCBs to address this issue.¹

4. Finally, while we strongly support the proposed Aquatic Life Toxics Criteria, we note that the criteria currently omit polybrominated diethers (PBDEs). We understand that adding new PBDE criteria would require significant time investment from Ecology. However, the Toxics Biological Observation System (TBIOS) at WDFW continues to document PBDEs in aquatic species at levels associated with sublethal effects in species listed under the Endangered Species Act, such as Puget Sound juvenile Chinook salmon. We believe state action is still needed to address PBDE contamination in surface waters in Washington.

We believe there is sufficient data in the scientific literature to support the development of tissue-based criteria for these chemical classes, as was done by EPA for PFOA and PFOS.² To reduce the impact of these toxic contaminants on aquatic species, **we encourage Ecology to consider adopting tissue-based values for these contaminants in the Aquatic Life Toxics Criteria.**

We appreciate the work done by Ecology to protect aquatic life in Washington state from toxic contaminants. Please contact Rae Eaton at 564-669-8393, rae.eaton@dfw.wa.gov, or me, with any questions or to discuss our comments further. We are happy to share any information that could help further support and improve the proposed Aquatic Life Toxic Criteria.

Sincerely,

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¹ We recommend the meta-analysis of PCB threshold responses published by Berninger and Tillitt from the United States Geological Survey as a resource. This paper can be found as: Berninger JP, Tillitt DE. Polychlorinated biphenyl tissue-concentration thresholds for survival, growth, and reproduction in fish. *Environ Toxicol Chem.* 2019 Apr;38(4):712-736. doi: 10.1002/etc.4335.

² We recommend Ecology consider the laboratory PBDEs exposure studies conducted by Mary Arkoosh from the National Oceanic and Atmospheric Administration as a resource on the disease susceptibility of juvenile Chinook salmon. These papers can be found as: Arkoosh et al. Disease susceptibility of salmon exposed to polybrominated diphenyl ethers (PBDEs). *Aquat Toxicol.* 2010. 98:51-59. doi: [10.1016/j.aquatox.2010.01.013](https://doi.org/10.1016/j.aquatox.2010.01.013) and Arkoosh et al. Dietary exposure to a binary mixture of polybrominated diphenyl ethers alters innate immunity and disease susceptibility in juvenile Chinook salmon (*Oncorhynchus tshawytscha*). *Ecotoxicol Environ Saf.* 2018, 163:96-103. doi: [10.1016/j.ecoenv.2018.07.052](https://doi.org/10.1016/j.ecoenv.2018.07.052).