COMMENTS OF ATTORNEYS GENERAL OF THE STATES OF WASHINGTON, CONNECTICUT, VERMONT, OREGON, AND RHODE ISLAND.

October 30, 2023

Via Email and Certified U.S. Mail
Michael S. Regan, Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
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RE: Citizen Petition under TSCA Section 21 to Prohibit 6PPD in Tires

Dear Administrator Regan:

The undersigned Attorneys General (States) strongly support the petition[1] filed August 1, 2023, by three Northwest Indian Tribes under Section 21 of the Toxic Substances Control Act ("TSCA"), asking that EPA adopt rules barring production and use of the anti-oxidant N-(1,3-Dimethylbutyl)-N'- phenyl-p-phenylenediamine ("6PPD").

I. INTRODUCTION

The Pacific Northwest's salmon and steelhead runs, including those returning to rivers in Washington and Oregon, are true icons of the region with great cultural, symbolic, and nutritional value. They are a "First Food" for the nine federally recognized Tribes in Oregon and for many Tribes in Washington. Salmon and steelhead hold a meaning that reaches deep into the way of life, history, and basic sustenance for Tribes. They are also highly sought-after game fish, with a large number of passionate anglers spending significant time and effort fishing for them. Salmon and steelhead are a defining element of "Northwest cuisine," known throughout the country and world for locally sourced and healthy fare. Finally, the Northwest salmon runs provide a unique opportunity to experience one of nature's great migrations in an urban setting. Thousands of local residents and tourists visit the Bonneville and Rocky Reach Dams on the Columbia River, or the Hiram M. Chittenden Locks in Seattle, each year to view salmon and steelhead as they migrate back upstream to spawn.[2]

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[1] Citizen Petition under TSCA Section 21 to Prohibit 6PPD in Tires (Aug. 1, 2023) ("TSCA Petition"), https://www.epa.gov/system/files/documents/2023-08/TSCA%20Section%2021%20Petition%20to%20EPA%20re%206PPD%20in%20tires.pdf.

[2] *See* Or. Dep't of Fish and Wildlife, *Bonneville Hatchery Visitors' Guide* (last visited Oct. 26, 2023), https://myodfw.com/bonneville-hatchery-visitors-guide; Scenic Wash., *Rocky Reach Dam Visitor Center* (last visited Oct. 26, 2023), https://www.scenicwa.com/poi/rocky-reach-dam-visitor-center; Hiram M. Chittenden-Ballard Locks, *Salmon Education Center*, Fish Ladder Viewing Room (last visited Oct. 26, 2023), https://ballardlocks.org/fish-salmon-ladder.html.

Economically, salmon and steelhead support Tribal and non-Tribal commercial fishers, processors, and dealers, generating hundreds of millions of dollars region-wide and creating thousands of jobs. Additionally, the economy supported by these fish is intertwined with their social and cultural significance – with substantial, local economic benefits associated with the pursuit (e.g., boats, trucks, gas, fishing gear, hotels) and consumption (at home and in restaurants) of salmon. In Oregon, over 600,000 anglers participate in recreational fisheries generating over $400 million to the economy, often in rural, underserved communities.

Ecologically, salmon and steelhead are highly migratory species, travelling from natal freshwater streams and rivers to various and wide-ranging parts of the ocean, before returning to freshwater to complete their life cycle. They provide a critical food source for the endangered Southern Resident Orcas,[3] support numerous other species in freshwater bodies and the ocean, and transfer valuable marine-derived nutrients from the ocean to forests when they return to the streams and rivers to spawn. All of this makes them significant contributors to Northwest ecosystems and food webs.

Unfortunately, more than 150 years of development, habitat alteration, and overfishing have severely depleted salmon and steelhead stocks, and most runs are only a small fraction of their previous numbers. Salmon harvest in many parts of Washington peaked in the late 1800s.[4] Since then, dams have blocked thousands of miles of spawning habitat that once produced millions of fish, notably, large parts of the Columbia and Snake River watersheds.[5] The nearshore and freshwater habitat, that once supported juvenile salmon and the smaller fish they feed upon, has degraded from development and shoreline armoring.[6] Water pollution, due to industrialization and development, has degraded both marine and riparian habitats.

As a result, fish populations have continued to fall.[7] Since the 1970s, total harvest of Chinook salmon in Washington has reduced by over half, and Coho salmon harvest is less than a third of the 1974 level.[8] Numerous salmon and steelhead populations are now listed under the federal Endangered Species Act.[9] In Washington, Puget Sound and Lower Columbia River Chinook, and Puget Sound steelhead, are listed as Threatened. The Lower Columbia River, Oregon Coast, Southern Oregon, and Northern California Coho Evolutionarily Significant Units are also listed as Threatened. The California Central Coast Coho ESU is listed as Endangered.

Well over a billion dollars has been invested in habitat restoration in Washington, and even more resources will be needed in the future. Through the efforts of federal, Tribal, state and

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[3] Chinook, Coho and Chum salmon are especially important as food sources for the orcas. *See* NOAA Fisheries, *Diversity of Fish Species Support Killer Whale Diet Throughout the Year*, News (March 3, 2021), https://www.fisheries.noaa.gov/feature-story/diversity-fish-species-support-killer-whale-diet-throughout-year.

[4] Governor's Salmon Recovery Office, *2022 State of Salmon in Watershed,* Executive Summary (Feb. 2023), https://stateofsalmon.wa.gov/wp-content/uploads/2023/02/SOS-ExecSummary-2022.pdf (SOS Report), at 18.

[5] *Id.* at 20.

[6] *Id.* at 14.

[7] Many runs are far below goals for recovery. *See,* for example, Puget Sound Steelhead DPS (2022) | Data.WA | State of Washington (steelhead); Puget Sound Chinook ESU (2022) | Data.WA | State of Washington (Puget Sound Chinook).

[8] SOS Report at 18.

[9] NOAA Fisheries, *Pacific Salmon and Steelhead*, Species Directory, ESA Protected Species (last updated Jan. 1, 2023), https://www.fisheries.noaa.gov/species/pacific-salmon-and-steelhead#esa-protected-species.

local governments, as well as NGOs, riparian areas have been restored,[10] and in some cases, dams have been or will be removed.[11] Despite these efforts and expenditures, salmon runs are still declining in most of Washington's rivers.[12]

In recognition of the importance of salmon and steelhead, the Oregon legislature established the Oregon Plan for Salmon and Watersheds ("Plan") in 1997. The Plan intends to restore native fish populations and the aquatic systems they rely on to productive and sustainable levels by supporting a broad-based effort of citizens, local watershed groups, the State of Oregon, and federal agencies. As a result of the Plan, Oregon has directly invested hundreds of millions of dollars in habitat restoration and fish passage. Additionally, Oregonians have foregone fishing opportunities, along with land and water development opportunities, to ensure progress toward plan goals. With the removal of a number of large hydroelectric dams on the Klamath River in 2023 and 2024,[13] salmon are expected to return to the Klamath Basin in Oregon in the not-too-distant future.

Water pollution has been identified as a major reason for the failure to recover fish runs.[14] Pollution risks all of the work done on habitat restoration and fish passage, as the restored aquatic habitat is only as good as the water flowing through it. Recent research showed that a compound called 6PPD,[15] used in essentially all tires to prevent ozone damage, reacts in the environment to form a pollutant known as 6PPD-quinone ("6PPD-q") that is highly toxic to fish including Coho salmon and steelhead.[16] 6PPD-q kills Coho salmon when they return to their natal streams to spawn.

Removing 6PPD and 6PPD-quinone from the environment would be of great benefit to fish populations, in particular Coho salmon and steelhead. On August 1, 2023, three Indian Tribes in Washington and California filed a petition with EPA under Section 21 of the Toxic Substances Control Act ("TSCA"), 15 U.S.C. § 2620.[17] The Petition asks that EPA establish

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[10] SOS Report at 15.

[11] NOAA Fisheries, *Dam Removal Brings Hope for Salmon in Washington's Middle Fork Nooksack River*, News (July 16, 2020), https://www.fisheries.noaa.gov/feature-story/dam-removal-brings-hope-salmon-washingtons-middle-fork-nooksack-river; NOAA Fisheries, *A River Reconnected: Removing the Pilchuck River Diversion Dam*, News (Aug. 27, 2020), https://www.fisheries.noaa.gov/feature-story/river-reconnected-removing-pilchuck-river-diversion-dam; Nat'l Park Service, *Elwha River Restoration*, Olympic National Park, Learn About the Park (last updated July 3, 2023), https://www.nps.gov/olym/learn/nature/elwha-ecosystem-restoration.htm#:~:text=After%20two%20decades%20of%20planning,Strait%20of%20Juan%20de%20Fuca..

[12] Lynda V. Mapes, *After 20 years and $1 billion spent on Washington state salmon programs, fish still declining, new report says,* Seattle Times (Jan 17, 2019), https://www.seattletimes.com/seattle-news/environment/after-20-years-and-1-billion-spent-on-washington-state-salmon-programs-fish-still-declining-new-report-says/; SOS Report at 6-7.

[13] NOAA Fisheries, As Dam Removals Move Forward, *NOAA Explores Next Steps for Habitat Restoration in Klamath Watershed*, News (Dec. 7, 2022), https://www.fisheries.noaa.gov/feature-story/dam-removals-move-forward-noaa-explores-next-steps-habitat-restoration-klamath.

[14] *See* SOS Report at 16.

[15] N-(1,3-Dimethylbutyl)-N'- phenyl-p-phenylenediamine.

[16] Tian et al. (2022) *A ubiquitous tire rubber-derived chemical induces acute mortality in Coho salmon*, 371 Science 185-9. 6PPD-q is also acutely toxic to fish species including Chinook salmon, rainbow and brook trout, white spotted char, and other aquatic organisms. *See* B.F. French, et al. (2022) *Urban Roadway Runoff Is Lethal to Juvenile Coho, Steelhead, and Chinook Salmonids, But Not Congeneric Sockeye*, 9 ENV'T. SCI. TECH. LETTERS 733, 735 (2022) and references cited therein.

[17] TSCA Petition.

regulations barring manufacturing, processing, use, and distribution of 6PPD. The Petitioners contend, and the undersigned States agree, that continued use of 6PPD presents an unreasonable risk of injury to the environment. The States strongly urge EPA to grant the Tribes' petition and act to protect the environment from this extremely harmful pollutant.

A. 6PPD-Q Enters Streams via Stormwater and Poses an Unreasonable Risk of Injury to the Environment

In recent years, studies of salmon restoration efforts in Puget Sound's urban drainages identified significant mortality of returning Coho salmon. A large fraction (up to one hundred percent in some cases) of the fish died shortly after entering streams, before they were able to spawn.[18] This mortality was not seen in streams in non-urbanized watersheds.[19]

The Coho salmon deaths were traced to exposure from street and highway runoffs, correlating with fall rain events that increased freshwater flow and attracted the Coho salmon into streams for spawning.[20] In laboratory studies, a significant fraction of Coho salmon are killed by exposure to concentrations of stormwater runoff as low as 5%.[21] Contaminated stormwater is also toxic to rainbow trout (steelhead is the ocean-going form of rainbow trout), and to a lesser degree Chinook salmon.[22] The phenomenon was termed Urban Runoff Mortality Syndrome, or "URMS." While filtration of stormwater through soil columns removed the factor(s) that caused URMS,[23,24] the identity of the pollutant responsible was unknown until very recently.

The primary causative agent of URMS was identified in 2021 as a compound called 6PPD-quinone ("6PPD-q"), derived from vehicle tires. [25] 6PPD-q is generated when N-(1,3-Dimethylbutyl)-N'- phenyl-p-phenylenediamine ("6PPD"), a compound used in essentially all tires to protect against ozone damage, reacts with ozone in the air. [26] 6PPD and 6PPD-q are contained in particles that wear from tires as vehicles drive on the road. 6PPD and 6PPD-q then reach streams and rivers as part of stormwater runoff.

6PPD-q is the second-most toxic chemical towards aquatic species ever evaluated by EPA.[27] The LC50[28] for Coho salmon was found to be as low as 95 ng/L (parts per trillion).[29] As use of rubber tires is ubiquitous on our roads, any watershed receiving significant runoff from

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[18] Nathaniel L. Scholz *et al.* (2011), *Recurrent Die-Offs of Adult Coho Salmon Returning to Spawn in Puget Sound Lowland Urban Streams*, 12 PLOS ONEat 6.

[19] *Id.* at 7.

[20] *Id.* at 1.

[21] French *et al.* 2022 at 735.

[22] *Id.*

[23] Julann A. Spromberg et al. (2016), *Coho Salmon Spawner Mortality in Western U.S. Watersheds: Bioinfiltration Prevents Lethal Storm Impacts*, 53 J. APPLIED ECOLOGY 398, 402.

[24] While the States recognize that stormwater treatment measures could reduce input of 6PPD-q to waterways, a comprehensive solution to this widespread pollution issue will require addressing 6PPD at the source.

[25] Tian *et al.* 2022 at 185, 187.

[26] *Id.*

[27] Zhenyu Tian et al. (2022), *6PPD-Quinone: Revised Toxicity Assessment and Quantification with a Commercial Standard*, 9 ENV'T. SCI. & TECH. LETTERS 140, 144.

[28] LC50 is the concentration of a substance that is lethal to 50% of a test population.

[29] Tian *et al.* 2022 at 143.

roads and highways is at risk from 6PPD-q pollution. Given that the migratory corridors and spawning areas for many salmon populations are in close proximity to roadways, the documented impacts of 6PPD-q on mortality in Coho salmon, Chinook salmon, and trout are of great concern. This includes the Puget Sound and Oregon watersheds where so much effort and expense has been put into salmon restoration. The high mortality associated with URMS counteracts much of this effort and creates a very high risk of extinction. Modeling studies show that URMS could drive local Coho salmon populations to extinction within a few decades in urbanized watersheds.[30] By creating a "sink" effect, in which urbanized watersheds draw fish as strays from less urbanized catchments, URMS can also depress populations in more rural areas.[31]

Although salmon face many sources of mortality (including predation, ocean conditions, and weather conditions affecting their ability to return to the streams for spawning) throughout their life cycle, URMS is especially harmful, as the fish killed are those that have survived all other threats and are would be spawning imminently.[32] In many Puget Sound streams, the number of returning Coho salmon in any given year is relatively small,[33] and any significant loss of these fish can threaten the survival of a run.

While Coho salmon are the most sensitive species yet identified to 6PPD-q, other salmonids are also susceptible. Rainbow trout (steelhead) are killed by 6PPD-q at levels higher than those affecting Coho salmon, but still within the range found in stormwater runoff. 6PPD-q has been detected in roadway runoff in the Los Angeles region at 4.1 – 6.1 µg/L (parts per billion), in creeks in the San Francisco region at 1.0 to 3.5 µg/L, and in Seattle area runoff at .3 to 3.2 µg/L.[34] All of these concentrations are high enough to kill Coho salmon and most would be toxic to rainbow trout. One study found that 5-20% of steelhead were killed by exposure to highway runoff for as little as 24 hours, and longer exposures killed up to 50%.[35] Chinook salmon are also affected by 6PPD-q. Although the relevant concentrations for Chinook salmon appear to be much higher than for Coho salmon or steelhead,[36] untreated stormwater runoff has shown to kill a fraction of juvenile Chinook salmon as well.[37] The lethal impacts of 6PPD-q are the most obvious, however, the significance of any sublethal impacts is currently unknown given this was only recently determined to be a chemical of concern for aquatic life.

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[30] Julann A. Spromberg & Nathaniel Scholz, (2011) *Estimating the future decline of wild Coho salmon populations resulting from early spawner die-offs in urbanizing watersheds of the Pacific Northwest, USA*, 7 Integrated Env't Assessment & Mgmt. 648, 655.

[31] *Id.* at 655.

[32] Scholz *et al*. 2011 at 7.

[33] For example, in 2022 only 153 adult Coho returned to Piper's Creek in Seattle, with over 50% of these fish dying before spawning. *See* Our Wild Puget Sound, *The Returning Salmon of Piper's Creek Watershed*, Wildlife (last visited Oct. 26, 2023), https://www.ourwildpugetsound.com/journal/the-returning-salmon-of-pipers-creek-watershed.

[34] Tian *et al.* 2022 at 144.

[35] French *et al.* 2022 at 735. Relevant to Puget Sound watersheds, the runoff used in these experiments was collected as drainage from the Montlake Boulevard onramp to SR520 in Seattle.

[36] In a laboratory study, the 6PPD-q concentration that killed 50% of juvenile chinook was found to be at least three orders of magnitude higher than for Coho salmon. Ten percent of Coho and chinook were killed with exposure to 20.8 ng/L and 20859 ng/L of 6PPD-q, respectively. *See* Bonnie P. Lo et al., *Acute toxicity of 6PPD-quinone to early life stage juvenile Chinook (Oncorhynchus tshawytscha) and coho (Oncorhynchus kisutch) salmon*, 42 ENV'T. TOXICOLOGY & CHEM. 815, 820 (2023).

[37] French *et al*. 2022 at 735.

B. 6PPD Poses an Unreasonable Risk of Injury to the States' Environments

By unavoidably generating and releasing 6PPD-q, an incredibly toxic compound and the most important causal agent for the runoff-related mortality that threatens fish populations, including several ESA-listed ESUs, continued use of 6PPD creates an unreasonable risk to salmon and salmon-dependent aspects of the environment. The hazard posed by 6PPD-q is not minor. It is not theoretical, or a potential problem in the future. 6PPD-q is, at present, causing great and demonstrable harm to the environment of the undersigned States and in other parts of the country.

This is precisely the kind of risk that TSCA was designed to address. When a "chemical substance or mixture . . . presents an unreasonable risk of injury to health or the environment, the Administrator shall" take action "to the extent necessary so that the chemical substance or mixture no longer presents such risk." 15 USC § 2605(a). In this case, the solution is clear and unambiguous: TSCA requires that the Administrator take action to address the risk posed by 6PPD and 6PPD-q.

II. CONCLUSION

6PPD, along with its highly toxic product 6PPD-q, poses an unreasonable threat to the States' waters and fish resources, and to the continued existence of Northwest salmon and steelhead runs. The undersigned States[38] urge EPA in the strongest possible terms to grant the Tribes' petition and to use its authority under TSCA to address the environmental harms caused by widespread 6PPD contamination.

Respectfully submitted this 30th day of October, 2023,

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[38] These Comments were amended October 30, 2023, solely to reflect addition of Peter Neronha, Attorney General of Rhode Island, as a signatory.

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