



August 1, 2023

Michael S. Regan, Administrator
U.S. Environmental Protection Agency
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Washington, D.C. 20460
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VIA EMAIL AND CERTIFIED U.S. MAIL RETURN RECEIPT REQUESTED

Re: Citizen Petition under TSCA Section 21 to Prohibit 6PPD in Tires

Dear Administrator Regan:

On behalf of the Yurok Tribe, the Port Gamble S’Klallam Tribe, and the Puyallup Tribe of Indians we hereby petition the U.S. Environmental Protection Agency (“EPA”) under Section 21 of the Toxic Substances Control Act (“TSCA”), 15 U.S.C. § 2620, to establish regulations prohibiting the manufacturing,¹ processing, use, and distribution of N-(1,3-Dimethylbutyl)-N’-phenyl-p-phenylenediamine (“6PPD”), CASRN 793-24-8, for and in tires under EPA’s TSCA Section 6(a) authority, 15 U.S.C. § 2605(a), with such regulation to take effect as soon as practicable, in order to eliminate the unreasonable risk 6PPD in tires presents to the environment.

6PPD is present in most if not all tires, and has been used since approximately the 1950s or 1960s as an antioxidant and antiozonant to prevent tire degradation.² It is highly reactive, and by design transforms at the surface of the tire or when released into the environment into transformation products or byproducts, including 6PPD-quinone, or “6PPD-q.”³ The primary if not sole source of 6PPD-q in the environment is 6PPD from tires.⁴

6PPD-q is the second most toxic chemical to aquatic species ever evaluated by EPA.⁵ The only chemical more toxic to aquatic species—the chemical war agent parathion—has been

¹ Under TSCA, “manufacture” includes importing. 15 U.S.C. § 2602(9).

² Letter from Sarah E. Amick, Vice President EHS&S and Senior Counsel, U.S. Tire Manufacturers Association, to Meredith Williams, Director, California Department of Toxic Substances Control (Sept. 17, 2021); CAL. DEP’T OF TOXIC SUBSTANCES CONTROL, PRODUCT – CHEMICAL PROFILE FOR MOTOR VEHICLE TIRES CONTAINING N-(1,3-DIMETHYLBUTYL)-N’-PHENYL-P-PHENYLENEDIAMINE (6PPD), 27 (2022) (“DTSC Profile”).

³ DTSC Profile at 5; *see* 40 C.F.R. § 710.3(d) (defining “byproduct” as “a chemical substance produced without a separate commercial intent during the manufacture, processing, use, or disposal of another chemical substance(s) or mixture(s).”).

⁴ DTSC Profile at 45.

⁵ Zhenyu Tian et al., *6PPD-Quinone: Revised Toxicity Assessment and Quantification with a Commercial Standard*, 9 ENV’T. SCI. & TECH. LETTERS 140, 144 tbl. 1 (2022).

widely banned due to its toxicity and is no longer on the market in the United States.⁶ Exposure to 6PPD-q can kill a coho salmon within hours, and the chemical is responsible for “urban runoff mortality syndrome,” which kills up to 100% of coho returning to spawn in urban streams.⁷ These mass mortality events undermine, among other restoration efforts, Washington State’s billion-dollar effort to recover salmon in Puget Sound.⁸ 6PPD-q from tires is also now known to be ubiquitous in our environment. It is present not only in stormwater runoff and urban watersheds at levels that can kill salmon, steelhead trout, and other aquatic organisms, but also in sediments and soils,⁹ road and household dust,¹⁰ and the urine of pregnant women,¹¹ with emerging science pointing to toxicity in mammals and therefore potential risk to human health as well.¹²

Salmon and steelhead populations, central to the ecosystems, Tribal cultures, and economies of the West Coast, have already declined dramatically, due in part to exposure to 6PPD-q, and they cannot recover without its removal from the environment.¹³ We therefore call on EPA to exercise its authority under TSCA to protect the environment from the unreasonable risk presented by the use of 6PPD in tires.

I. Interests of Petitioners

A. The Yurok Tribe

Within its constitution the Yurok Tribe is mandated to carry forward the aboriginal and sovereign rights of the Yurok People to continue forever the Tribe’s traditions of self-governance; cultural and spiritual preservation; stewardship of Yurok lands, waters, and other natural endowments; balanced social and economic development; peace and reciprocity; and

⁶ U.S. Env’t Prot. Agency, *R.E.D. Facts Ethyl Parathion* 4 (Sept. 2000).

⁷ Tian et al. 2022 at 140–42.

⁸ 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).

⁹ Lixi Zeng et al., *Widespread Occurrence and Transport of p-Phenylenediamines and Their Quinones in Sediments across Urban Rivers, Estuaries, Coasts, and Deep-Sea Regions*, 57 ENV’T. SCI. & TECH. 2393, 2394 (2023); Guodong Cao et al., *New Evidence of Rubber-Derived Quinones in Water, Air, and Soil*, 56 ENV’T. SCI. & TECH. 4142 (2022).

¹⁰ Ruihe Jin et al., *Ubiquity of Amino Accelerators and Antioxidants in Road Dust from Multiple Land Types: Targeted and Nontargeted Analysis*, ENV’T. SCI. & TECH. (forthcoming 2023); Wei Huang et al., *Occurrence of Substituted p-Phenylenediamine Antioxidants in Dusts*, 8 ENV’T. SCI. & TECH. LETTERS 381 (2021).

¹¹ Bibai Du et al., *First Report on the Occurrence of N-(1, 3-Dimethylbutyl)-N’-phenyl-p-phenylenediamine (6PPD) and 6PPD-Quinone as Pervasive Pollutants in Human Urine from South China*, 9 ENV’T. SCI. & TECH. LETTERS 1056 (2022).

¹² Liya Fang et al., *Oral exposure to tire rubber-derived contaminant 6PPD and 6PPD-quinone induce hepatotoxicity in mice*, 869 SCI. OF THE TOTAL ENV’T. 161836, 161846 (2023).

¹³ See, e.g., Julann A Spromberg & Nathaniel Scholz, *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 (2011).

respect for the dignity and individual rights of all persons living within the jurisdiction of the Yurok Tribe. As the largest Native nation within California, this includes the health and welfare of more than 6,400 enrolled members and many others living in the numerous communities on the Yurok Reservation and within the Tribe's Ancestral Territory. The Tribe's Ancestral Territory comprises 7.5 percent of the California coastline, spanning from the Little River to the south and Damnation Creek to the north. The traditional eastern boundary is Bluff Creek on the Klamath River and Hoopa Bluffs on the Trinity River.

The health, wellbeing, and culture of the Yurok People are intimately connected to the health of the Klamath Basin ecosystem. Often self-described as salmon, water, forest, and prayer people, the Yurok Tribe values management of, and reliance on, a traditional subsistence diet and practices, which are a vital part of Yurok cultural identity. Abundant and thriving salmonids, other fish populations, and shellfish are essential for the continuation of subsistence, cultural, and economic lifeways of the Yurok people. These important connections to the Klamath River make the River a culturally significant riverscape to the Yurok people which is treated as a cultural resource under federal and state law. The Klamath River is often described as the lifeline of the Yurok Tribe and continues to provide for Yurok People in numerous ways. Accordingly, the Yurok Tribe has significant interests in the water quality and corresponding health of the ecosystem and species that reside within the Tribe's Ancestral Territory and within the Klamath River Basin.

Unfortunately, the Yurok fishery has experienced substantial decline during recent decades, which negatively impacts the Yurok Tribe and its people's capacity to access commercial fishing income; to pass traditional ceremonial and ecological knowledge to future generations; and to ensure Tribal food security, health, and wellbeing. When the health of salmon populations in the Klamath Basin suffers, the health of Yurok people suffers as well. Declining salmon populations lead to loss of Yurok cultural identity and increased reliance on less healthy sources of food available in rural, low-income communities.¹⁴ Contamination of the Klamath Basin watershed with toxic chemicals such as 6PPD-q contributes to declines in populations of salmon and negatively impacts other subsistence species of critical importance to the Tribe.

6PPD, designed to be highly reactive, undergoes various transformations, both identified and unidentified, at the tire surface or upon its release into the surrounding environment. Among the reaction products, particular attention is given to 6PPD-quinone due to its harmful effects on coho salmon (*Oncorhynchus kisutch*). Recent peer-reviewed scientific research and agency assessments have linked 6PPD-q contamination of streams on the West Coast with catastrophic impacts on vulnerable coho salmon populations, as well as serious toxic effects on steelhead trout and other fish species. In the Yurok Reservation in particular, there are several roads and bridges that run parallel to and directly above the Klamath River and its tributaries. These locations serve as points of contamination that would result in harm to coho salmon and other aquatic species living in the Klamath River. Due to the frequency and intensity of contamination

¹⁴ DeAmaral, Ella, *The Klamath River Crisis: Environmental Degradation and Indigenous Food Insecurity*, UNIVERSITY OF CALIFORNIA, SANTA BARBARA UNDERGRADUATE RESEARCH AND CREATIVE ACTIVITIES JOURNAL (2023); DTSC Profile at 57–58.

and the Tribe's connection to the Klamath River, salmon, and other aquatic species, 6PPD-q presents an unreasonable risk to the health and environment for the Yurok Tribe.

6PPD-q may also present risk to the health of Yurok Tribal members due to the presence of 6PPD-q in plants and mushrooms. Yurok Tribal members practice cultural and subsistence terrestrial gathering, which can often occur at the side of roads. 6PPD-q pollution concentrations have been detected in road dust,¹⁵ which poses a risk to humans who ingest plants that grow near dirt roads. Specific examples of species gathered at roadside include various species of ferns, various species of mushrooms, various species of berries, bear grass and other grasses, stinging nettle, swamp tea, Indian tea, hazel sticks, pussy willow, willow root, alder bark, lemon balm, wild potato, wild onion, wild carrot, spruce root, and more.

B. The Port Gamble S'Klallam Tribe

The Port Gamble S'Klallam Tribe is a federally recognized tribe and a signatory to the 1855 Treaty of Point No Point. The Tribe has about 1200 enrolled members and about half reside on its ~1,800-acre reservation, along with other Native Americans and non-Indians. It is located near the tip of the Kitsap Peninsula and currently operates its own hatchery, which produces chum and coho salmon.

Salmon are one of the most important resources to the Tribe. Tribal members rely on salmon for their economic, physical, and spiritual well-being, and have since time immemorial. The Treaty of Point No Point guarantees the Tribe access to salmon, and the Tribe asserts that any action that reduces the number of salmon available for harvest by Tribal members is a violation of its rights under this treaty.

The Tribe construes the use of 6PPD in tires as a violation of the Tribe's treaty rights, as well as EPA and Washington State's failure to adequately deal with stormwater runoff. Port Gamble Bay is fed by multiple stream systems, many of which are outside the Tribe's jurisdiction and do not have adequate buffers to prevent stormwater from entering them. As Kitsap County continues to grow, especially in the vicinity of the Tribe, this problem will only become worse. The Tribe faces threats to salmon from 6PPD both throughout its Usual and Accustomed Area, as well as harm from 6PPD to salmon that are reared in its own streams and from its own hatchery.

C. The Puyallup Tribe of Indians

The Puyallup Tribe of Indians is a federally recognized Indian Tribe with its Reservation located in Tacoma, Washington. In the Tribe's Lushootseed language, they are known as the spuyaləpabš. The literal translation of this word means "people from the bend at the bottom of the river." The Tribe's Reservation includes the Puyallup River, and the Tribe owns the bed and banks of the Puyallup River within its reservation. Salmon was traditionally the main food for

¹⁵ Kyoshiro Hiki and Hiroshi Yamamoto, *Concentration and leachability of N-(1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine (6PPD) and its quinone transformation product (6PPD-Q) in road dust collected in Tokyo, Japan*, 302 ENV'T. POLLUTION 119082 (2022).

the Tribe, and the Tribe and its members have, since time immemorial, fished the waters of the Puyallup River, the Puyallup River Watershed, and Commencement Bay. The Tribe's treaty fishing rights are protected under the Medicine Creek Treaty and confirmed by the Puyallup Tribe of Indians Settlement Act of 1989. These Treaty Fishing rights are essential to the Tribe and its members' existence and culture.

The Puyallup River originates on Mount Rainier in the Cascade Mountains in Washington before flowing approximately 65 miles to Commencement Bay in Puget Sound, and the watershed forms the third largest tributary to Puget Sound. The Puyallup River watershed encompasses approximately 665,000 acres (approximately 1000 square miles) and includes three major tributaries: the Carbon River, Mowich River and South Prairie Creek. Nine native salmonid species inhabit the Puyallup River watershed, including Chinook salmon, coho salmon, and steelhead trout, which are known to be impacted by 6PPD-q.

Today, the once abundant salmon and steelhead stocks in the Puyallup River watershed are a fraction of their historic populations. Historically, the Puyallup River and its tributaries supported approximately 42,000 Chinook salmon; as of 2007, escapement of Chinook in the Puyallup River watershed (including early/spring returns to the White River) was estimated to be only 1,300 fish, and the species is now listed as threatened with extinction under the Endangered Species Act. Similarly, the Puyallup River once supported an estimated 6,000 steelhead trout; the current population is only 1,500 adults and it is similarly listed as threatened with extinction.

To try to rebuild depressed Chinook and steelhead stocks and remove them from the Endangered Species List, the Tribe operates a tribal fisheries program. The goal of the program is to "preserve, protect, and enhance salmon in usual and accustomed areas, and the water resources that determine their viability." To accomplish this mission, the Tribe operates several fish hatcheries, and it leads efforts to preserve and restore salmon and steelhead habitat throughout a watershed that is showing many symptoms associated with logging, urbanization, and a rapidly expanding human population. The fisheries department also closely monitors the status of salmon and steelhead populations both within and outside its jurisdiction and strives to maintain healthy, harvestable populations for the benefit of all.

The Puyallup River watershed is rapidly urbanizing, and water quality in the Puyallup River is already impacted by roads and urban runoff. The continued presence of 6PPD-q in the watershed harms the Puyallup Tribal Fisheries Department's efforts to restore salmon and steelhead populations in the Puyallup River, as well as the cultural and subsistence practices of Puyallup Tribal members who have depended on these species since time immemorial.

II. 6PPD in Tires Presents Unreasonable Risk to the Environment

The extraordinary toxic effects of 6PPD-q generated from the use of 6PPD are precisely what TSCA was designed to address: TSCA requires EPA to "regulate chemical substances and mixtures which present an unreasonable risk of injury to health or the environment, and to take action with respect to chemical substances and mixtures which are imminent hazards." 15 U.S.C. § 2601(b); *see also* 15 U.S.C. § 2605(a) (requiring that upon finding unreasonable risk, the EPA Administrator "shall" apply risk management measures "to the extent necessary so that the chemical substance or mixture no longer presents such risk"). EPA has recognized that this

authority to evaluate and eliminate a chemical’s unreasonable risks under section 6 of TSCA includes the risks posed by chemicals which are produced as transformation or byproducts.¹⁶ Under TSCA, for EPA to prohibit the manufacturing, processing, use, or distribution of a chemical, the agency must first find that these activities alone or in combination “present[] an unreasonable risk of injury to health or the environment.” 15 U.S.C. § 2605(a). “[O]nce EPA determines that a particular chemical substance is associated with an unreasonable risk, the Agency is *required* to regulate that substance.” *Safer Chemicals, Healthy Families v. EPA*, 943 F.3d 397, 406 (9th Cir. 2019) (emphasis added). 6PPD poses such “unreasonable risk” to the environment because of the extreme acute toxicity of its transformation product 6PPD-q to aquatic organisms, and its population-level impacts on fish species, including those protected under the Endangered Species Act and of immense ecological, cultural, and economic value.

The use of 6PPD in tires is the source of 6PPD-q in aquatic habitats.¹⁷ 6PPD is used in most if not all tires, and it is designed to react with ground-level ozone to prevent tire cracking.¹⁸ 6PPD contained in tires migrates over the life of the tire to the tire surface to supply a continual source of 6PPD, with the amount of 6PPD in the tire decreasing over time.¹⁹ When 6PPD reacts with ozone, it creates 6PPD-q.²⁰ This 6PPD-q then enters the roadway, where it is discharged into aquatic habitats during storm events.²¹

6PPD-q is acutely toxic to coho salmon, rainbow trout, steelhead trout, Chinook salmon, brook trout, white spotted char, and other aquatic organisms, and it is likely toxic to other aquatic species that have not yet been studied. When exposed to 6PPD-q, these fish species demonstrate

¹⁶ See, e.g., EPA, FINAL SCOPE OF THE RISK EVALUATION FOR 1, 2-DICHLOROETHANE, 12 (EPA Doc. No. EPA-740-R-20-005) (2020) (explaining that risks posed by specified chemicals produced as byproducts during the manufacturing of 1,2-dichloroethane “will be assessed during the risk evaluation of 1,2-dichloroethane”); see also EPA, DRAFT SUPPLEMENT TO THE RISK EVALUATION FOR 1,4-DIOXANE (EPA Doc. No. EPA-740-D-23-001) (2023) (examining, *inter alia*, risks associated with exposure to 1,4-dioxane produced as a byproduct).

¹⁷ DTSC Profile at 45.

¹⁸ Ximin Hu et al., *Transformation Product Formation upon Heterogeneous Ozonation of the Tire Rubber Antioxidant 6PPD (N-(1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine)*, 9 ENV'T SCI. TECH. LETTERS 413, 417 (2022).

¹⁹ DTSC Profile at 75.

²⁰ *Id.* at 13.

²¹ Zhenyu Tian et al., *A ubiquitous tire rubber-derived chemical induces acute mortality in coho salmon*, 371 SCI. 185, 185 (2021); DTSC Profile at 5.

a characteristic pattern of symptomatic behavior, including “circling, surface gaping, and equilibrium loss,” followed by death.²²

For coho salmon, the concentration of 6PPD-q required to kill 50% of test animals (“LC₅₀”) is estimated to be between 41 to 95 nanograms per liter (“ng/L”) (or .041–.095 micrograms per liter (“μg/L”).²³ This toxicity level suggests that 6PPD-q “is among the most toxic chemicals known for aquatic organisms, at least to coho salmon.”²⁴ In one experiment where juvenile coho salmon were exposed for 24 hours to untreated urban runoff, the fish “began dying soon during exposure (2–4 [hours]), with near-maximal cumulative mortality within 8 [hours].”²⁵ Even when this urban runoff was diluted 95% with clean water, exposure to the diluted stormwater was generally lethal to coho.²⁶ And even when coho were transferred to clean water after exposure to 6PPD-q, they did not recover.²⁷

6PPD-q is also acutely toxic to rainbow and steelhead trout. The LC₅₀ for rainbow trout (the freshwater resident strain of ocean-going steelhead) exposed to 6PPD-q is estimated to be 1.00 μg/L after 72–96 hours.²⁸ Scientists believe the life history differences between rainbow trout and steelhead trout “(i.e., freshwater residence vs ocean migration) is not a determinant of susceptibility [to 6PPD-q],”²⁹ meaning steelhead trout are likely to experience similar levels of mortality. When exposed to untreated stormwater runoff from three different storms, steelhead trout experienced 4%–42% mortality and generally died within 1–2 days of exposure.³⁰

Finally, 6PPD-q is also known to be toxic to other aquatic organisms, including brook trout (LC₅₀ 590 ng/L),³¹ white spotted char (LC₅₀ 510 ng/L),³² Chinook salmon (LC₂₅ 43,698.7

²² Tian et al. 2021 at 185; Markus Brinkmann et al., *Acute Toxicity of the Tire Rubber-Derived Chemical 6PPD-quinone to Four Fishes of Commercial, Cultural, and Ecological Importance*, 9 ENV'T. SCI. & TECH. LETTERS 333, 334 (2022); 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, 815 (2023); Kyoshiro Hiki and Hiroshi Yamamoto, *The Tire-Derived Chemical 6PPD-quinone Is Lethally Toxic to the White-Spotted Char *Salvelinus leucomaenis* Pluvius but Not to Two Other Salmonid Species*, ENV'T. SCI. TECH. LETTERS 1050, 1052 (2022).

²³ Lo et al. 2023 at 819; Tian et al. 2022 at 143.

²⁴ Tian et al. 2022 at 143.

²⁵ B.F. French, et al., *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).

²⁶ *Id.* at 736.

²⁷ *Id.* at 735.

²⁸ Brinkmann et al. 2022 at 336.

²⁹ French et al. 2022 at 736.

³⁰ *Id.* at 733.

³¹ Brinkmann et al. 2022 at 336.

³² Hiki and Yamamoto 2022 at 1052.

ng/L),³³ zebrafish embryos/larvae,³⁴ *Brachionus calyciflorus*,³⁵ *Caenorhabditis elegans*,³⁶ and *Parhyale hawaiiensis*.³⁷ Researchers suspect that it may be toxic to other species that have not yet been studied, including “other salmonids,”³⁸ and that there is “potential for population-relevant sublethal effects” for these and other species.³⁹

6PPD-q is currently “ubiquitous” in urban runoff and surface waters,⁴⁰ and has been repeatedly found in the environment at concentrations above the recorded LC₅₀ values for coho salmon, rainbow trout, brook trout, and white spotted char.⁴¹ For instance, 6PPD-q was detected

³³ Lo et al. 2023 at 820.

³⁴ Marina Ricarte et al., *Environmental concentrations of tire rubber-derived 6PPD-quinone alter CNS function in zebrafish larvae*, 896 SCI. OF THE TOTAL ENV'T 165240, 165240 (2023); Weijuan Peng et al., *Exposure to N-(1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine (6PPD) Affects the Growth and Development of Zebrafish Embryos/Larvae*, 232 ECOTOXICOLOGY & ENV'T SAFETY 113221, 113221 (2022); Shu-Yun Zhang et al., *6PPD and its Metabolite 6PPDQ Induce Different Developmental Toxicities and Phenotypes in Embryonic Zebrafish*, 455 J. OF HAZARDOUS MATERIALS 131601, 131601 (2023).

³⁵ Toni Klauschies & Jana Isanta-Navarro, *The Joint Effects of Salt and 6PPD Contamination on a Freshwater Herbivore*, 829 SCI. OF THE TOTAL ENV'T 154675, 154675 (2022).

³⁶ Xin Hua et al., *Long-term Exposure to Tire-Derived 6PPD Quinone Causes Intestinal Toxicity by Affecting Functional State of Intestinal Barrier in Caenorhabditis elegans*, 861 SCI. OF THE TOTAL ENV'T 131495 (2023); Xin Hua et al., *Exposure to 6-PPD Quinone at Environmentally Relevant Concentrations Causes Abnormal Locomotion Behaviors and Neurodegeneration in Caenorhabditis elegans*, 57 ENV'T. SCI. TECH. 4940 (2023).

³⁷ Marina Tenório Botelho et al, *Toxicity and mutagenicity studies of 6PPD-quinone in a marine invertebrate species and bacteria*, ENVIRON AND MOLECULAR MUTAGENESIS (forthcoming 2023).

³⁸ Brinkmann et al. 2022 at 337.

³⁹ Lo et al. 2023 at 815; see also Shubham Varshney et al., *Toxicological Effects of 6PPD and 6PPD Quinone in Zebrafish Larvae*, 42 J. OF HAZARDOUS MATERIALS 424 (2022); French et al. 2022 at 733–38; Justin Greer et al., *Tire-Derived Transformation Product 6PPD-Quinone Induces Mortality and Transcriptionally Disrupts Vascular Permeability Pathways in Developing Coho Salmon*, ENV'T. SCI. & TECH. (forthcoming 2023).

⁴⁰ Zeng et al. 2023 at 2397; Cassandra Johannessen et al., *Detection of Selected Tire Wear Compounds in Urban Receiving Waters*, 287 ENV'T POLLUTION 117659, 117659 (2021); Jenifer K. McIntyre et al., *Treading Water: Tire Wear Particle Leachate Recreates an Urban Runoff Mortality Syndrome in Coho but Not Chum Salmon*, 55 ENV'T. SCI. & TECH. 11767, 11772 (2021).

⁴¹ Cassandra Johannessen, et al., *The Tire Wear Compounds of 6PPD-Quinone and 1,3-Diphenylguanidine in an Urban Watershed*, 82 ARCHIVES OF ENV'T CONTAMINATION & TOXICOLOGY 171, 172 (2021); J.K. Challis, et al., *Occurrences of Tire Rubber-Derived Contaminants in Cold-Climate Urban Runoff*, 8 ENV'T. SCI. & TECH. LETTERS 961, 961 (2021); Zeng et al. 2023 at 2394; Tian et al. 2021 at 186–88; French et al. 2022 at 736; Tian et al. 2022 at 140.

in Los Angeles region roadway runoff at 4.1 to 6.1 µg/L; in San Francisco region creeks at 1.0 to 3.5 µg/L; and in Seattle-region watersheds from .3 to 3.2 µg/L.⁴²

The high toxicity and ubiquity of 6PPD-q released from 6PPD-containing tires presents an “unreasonable risk” to the environment. EPA’s evaluation of “unreasonable risk” must be conducted “without consideration of costs or other nonrisk factors.” 15 U.S.C. § 2605(a) (requiring EPA to make an unreasonable risk determination “in accordance with” subsection (b)(4)(A)); *id.* § 2605(b)(4)(A) (requiring that EPA “shall conduct risk evaluations pursuant to this paragraph to determine whether a chemical substance presents an unreasonable risk of injury to health or the environment, *without consideration of costs or other nonrisk factors*, including an unreasonable risk to a potentially exposed or susceptible subpopulation identified as relevant to the risk evaluation by the Administrator, under the conditions of use.” (emphasis added)); *see also* 40 C.F.R. § 702.43(a) (EPA regulations confirming that when evaluating risk, it will “not consider costs or other nonrisk factors”). EPA explains that when characterizing risk, it will “take into account, where relevant, the likely duration, intensity, frequency, and number of exposures under the condition(s) of use of the chemical substance.” 40 C.F.R. § 702.43(a). When assessing unreasonable risk to the environment in particular, EPA explains “it may be necessary to discuss the nature and magnitude of the effects, the spatial and temporal patterns of the effects, implications at the individual, species, population, and community level, and the likelihood of recovery subsequent to exposure to the chemical substance.” 40 C.F.R. § 702.43(b).

Under this framework for evaluating risk, 6PPD-q’s toxicity and ubiquity present a level of risk that EPA has previously characterized as “unreasonable” to aquatic organisms. When determining whether a risk to aquatic organisms is unreasonable under TSCA, EPA compares the “concentration of concern” to the “predicted environmental concentration.”⁴³ EPA’s risk evaluation guidance defines the “concentration of concern” or “COC” for aquatic organisms as “the value (effect level) at which harm to the aquatic environment is likely to occur if that concentration is exceeded.”⁴⁴ To calculate the COC, EPA selects “the most sensitive species or the species with the lowest toxicity value” and divides that toxicity value by an “assessment factor” to account for “more sensitive species not specifically represented by the available experimental data” and for “differences in inter- and intra-species variability, as well as laboratory-to-field variability.”⁴⁵ To calculate the acute COC for fish, EPA recommends an assessment factor of 5, such that: acute COC for fish = LC₅₀/(5), rounded up to 1 significant digit.⁴⁶ Applying this methodology, the acute COC for fish for 6PPD-q is .041 µg/L (juvenile coho LC₅₀) / (5) = 0.009 µg/L.

EPA then compares this acute COC to the “predicted environmental concentration” or “PEC”—the concentration of the chemical calculated to be in receiving waters. EPA notes that

⁴² Tian et al. 2021 at 188.

⁴³ EPA OFFICE OF CHEMICAL SAFETY AND POLLUTION PREVENTION, SUSTAINABLE FUTURES / P2 FRAMEWORK MANUAL 2012 EPA-748-B12-001, 13-3 (2012) (“P2 Manual”).

⁴⁴ *Id.* at 13-3; *accord* EPA, RISK EVALUATION FOR PERCHLOROETHYLENE (ETHENE 1,1,2,2-TETRACHLORO-) CASRN: 127-18-4, 281 (2020) (“PCE Risk Evaluation”).

⁴⁵ PCE Risk Evaluation at 281.

⁴⁶ P2 Manual at 13-4.

“[a] potential for risk exists if the PEC is greater than the acute COC,”⁴⁷ which is the same thing as a risk quotient or “RQ” above 1.⁴⁸ Here, receiving water calculations for 6PPD-q have repeatedly been shown to be orders of magnitude higher than the COC for coho; thus the RQ>1.⁴⁹ EPA has generally found “[a]n RQ greater than 1, when the exposure is greater than the effect concentration, supports a determination that there is unreasonable risk of injury to the environment.”⁵⁰ Thus, the toxicity and ubiquity of 6PPD-q alone supports a determination that 6PPD in tires poses an unreasonable risk to the environment under EPA’s established methodology for making such determinations.

Further underscoring that the use of 6PPD in tires creates an unreasonable risk to the environment, 6PPD-q’s ubiquity in coho salmon habitat has already led to population-level impacts that jeopardize the species’ continued survival in urban watersheds, thus also “implicat[ing] . . . species, population, and community level” effects for this species. 40 C.F.R. § 702.43(b). 6PPD-q has recently been identified as the cause of “urban runoff mortality syndrome” observed for decades in coho salmon in urban waterways.⁵¹ Starting in the 1980s,⁵² researchers observed the same abnormal behaviors now known to be characteristic of 6PPD-q exposure in coho salmon returning to spawn in Puget Sound, Washington.⁵³ Surveys of returning coho salmon also revealed premature spawner mortality rates ranging from 60–100% in urban waterways, whereas the comparable rate in non-urban streams was <1%.⁵⁴ Researchers later confirmed that this urban runoff mortality syndrome behavior and mortality was not limited to adult coho salmon, and noted that “lower abundances of juvenile coho have been observed in urban watersheds compared to non-urban ones.”⁵⁵ Researchers have concluded that “[w]ild coho populations cannot withstand the high rates of mortality that are now regularly occurring in urban spawning habitats,”⁵⁶ and that “it will be difficult, if not impossible to reverse historical

⁴⁷ *Id.* at 13-5.

⁴⁸ PCE Risk Evaluation at 501.

⁴⁹ Tian et al. 2021 at 188.

⁵⁰ PCE Risk Evaluation at 501.

⁵¹ Tian et al. 2021 at 185; McIntyre et al. 2021 at 11771.

⁵² WILL KENDRA & ROGER WILLMS, RECURRENT COHO SALMON MORTALITY AT MARITIME HERITAGE FISH HATCHERY, BELLINGHAM: A SYNTHESIS OF DATA COLLECTED FROM 1987–1989, Wash. Dep’t of Ecology 4 (June 1990).

⁵³ Nathaniel L. Scholz et al, *Recurrent Die-Offs of Adult Coho Salmon Returning to Spawn in Puget Sound Lowland Urban Streams*, 6 PLOS ONE (2011).

⁵⁴ *Id.*; Michelle I. Chow et al., *An Urban Stormwater Runoff Mortality Syndrome in Juvenile Coho Salmon*, 214 AQUATIC TOXICOLOGY 1, 9 (2019); Blake E. Feist et al., *Roads to Ruin: Conservation Threats to a Sentinel Species Across an Urban Gradient* 27 ECOLOGICAL APPLICATIONS 2382, 2393 (2018).

⁵⁵ Chow et al. 2019 at 9 (citing J.B. Scott et al., *Effects of Urban Development on Fish Population Dynamics in Kelsey Creek, Washington*, 115 TRANSACTIONS AM. FISHERIES SOC’Y 555 (1986) and C.W. May et al., *Effects of Urbanization on Small Streams in the Puget Sound Ecoregion*, 2 WATERSHED PROT. TECHNIQUES 483 (1997)).

⁵⁶ Julann A. Spromberg et al., *Coho Salmon Spawner Mortality in Western U.S. Watersheds: Bioinfiltration Prevents Lethal Storm Impacts*, 53 53 J. APPLIED ECOLOGY 398, 398 (2016).

coho declines without addressing the toxic pollution dimension of freshwater habitats.”⁵⁷ Indeed, the continued presence of 6PPD-q in the aquatic environment has largely negated the “costly societal investments in physical habitat restoration” conducted to date in the Pacific Northwest.⁵⁸

In addition to population-level harm to coho documented in Washington state, California state officials similarly believe that 6PPD-q generated from 6PPD-containing tires may have been responsible for historic declines of coho salmon in California, and may likewise jeopardize recovery of coho salmon populations in that state.⁵⁹ Coho salmon populations in California are estimated to be less than 6% of their levels in the 1940s, with a 70% decline since the 1960s.⁶⁰ California’s Department of Toxic Substances Control (“CA DTSC”) explains that “[t]he 30-year period from the 1960s to the 1990s, during which [there was a documented] 70% decline in coho, corresponds with the use of 6PPD in tires,” and finds it “notable that during this period coho were extirpated from the San Francisco Bay Area, which arguably has the highest concentration of vehicle traffic in coho territory within California.”⁶¹ CA DTSC concludes that “[t]he presence of 6PPD-quinone in California’s waterways continues to threaten the state’s remaining coho salmon populations and may jeopardize the recovery of this species.”⁶²

As the foregoing discussion establishes, the ubiquity and extreme acute toxicity of 6PPD-q to aquatic organisms alone provides ample justification for EPA to determine that the use of 6PPD in tires presents an unreasonable risk to the environment. But many populations of coho salmon, steelhead trout, and Chinook salmon are also protected under the Endangered Species Act (“ESA”), which further underscores the need for prompt EPA action to respond to the unreasonable environmental risk arising from 6PPD use. Congress enacted the ESA in 1973, recognizing that certain wildlife species “ha[d] been so depleted in numbers that they [we]re in danger of or threatened with extinction,” and seeking “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, [and] to provide a program for the conservation of such endangered species and threatened species.” 16 U.S.C. § 1531(a)(2), (b). Considered “the most comprehensive legislation for the preservation of endangered species ever enacted by any nation,” the ESA embodies the “plain intent” of Congress to “halt and reverse the trend toward species extinction, whatever the cost.” *Tennessee Valley Auth. v. Hill*, 437 U.S. 153, 180, 184 (1978). Under the ESA, all federal departments and agencies must “seek to conserve endangered species and threatened species”

⁵⁷ Feist et al. 2018 at 2390; *see also* Spromberg & Scholz 2011 at 655.

⁵⁸ Tian et al. 2021 at 185; *see also* DTSC Profile at 62 (“The state of California, as well as California’s Native American tribes, have invested millions of dollars to support projects that improve the habitat for salmonids through the Fisheries Restoration Grant Program Reductions in the release of 6PPD-quinone into streams would help to ensure these resource intensive restoration projects will help the recovery of coho.”).

⁵⁹ DTSC Profile at 6, 48.

⁶⁰ Larry R. Brown et al., *Historical Decline and Current Status of Coho Salmon in California*, 14 N. AM. J. FISHERIES MGMT. 237, 250 (1994); *see also* Carri J. LeRoy et al., *Salmon Carcasses Influence Genetic Linkages Between Forests and Streams* 73 CAN. J. FISHERIES & AQUATIC SCI. 910, 919 (2016).

⁶¹ DTSC Profile at 48 (citing Brown et al. 1994 at 250).

⁶² *Id.* at 6.

and, importantly, must “utilize their authorities in furtherance of the purposes [of the ESA].” 16 U.S.C. § 1531(c)(1).

Here, the unreasonable risk that 6PPD presents to the environment harms multiple species protected by the ESA. To afford marine species such as coho salmon, Chinook salmon, and steelhead trout the protections of the ESA, the Secretary of Commerce, acting here through the National Marine Fisheries Service (“NMFS”), must first list the species as either “endangered” or “threatened” pursuant to Section 4 of the ESA, *id.* § 1533. A species is “endangered” when it “is in danger of extinction throughout all or a significant portion of its range,” *id.* § 1532(6), while a species is “threatened” when it is “likely to become an endangered species within the foreseeable future,” *id.* § 1532(20); *see also id.* § 1533(c). For management and ESA-listing purposes, steelhead and salmon populations are grouped into distinct population segments (“DPSs”) (steelhead) or “evolutionary significant units (“ESUs”) (coho salmon and Chinook salmon). These DPSs and ESUs are considered a “species” under the ESA. *See* 16 U.S.C. § 1532(16) (defining “species” under the ESA as including “any distinct population segment of any species of vertebrate fish . . . which interbreeds when mature”). Twenty-three DPSs/ESUs of coho, steelhead, and Chinook are listed as either threatened or endangered under the ESA. These threatened and endangered populations include:

- Central California Coast Coho ESU (endangered)
- Lower Columbia River Coho ESU (threatened)
- Oregon Coast Coho ESU (threatened)
- Southern Oregon/Northern California Coho ESU (threatened)
- Southern California Steelhead DPS (endangered)
- South-Central California Coast Steelhead DPS (threatened)
- California Central Valley Steelhead DPS (threatened)
- Central California Coast Steelhead DPS (threatened)
- Northern California Steelhead DPS (threatened)
- Lower Columbia Steelhead DPS (threatened)
- Middle Columbia River Steelhead DPS (threatened)
- Puget Sound Steelhead DPS (threatened)
- Snake River Basin Steelhead DPS (threatened)
- Upper Columbia River Steelhead DPS (threatened)
- Upper Willamette River Steelhead DPS (threatened)
- Central Valley Spring-run Chinook ESU (threatened)
- California Coast Chinook ESU (threatened)
- Lower Columbia River Chinook ESU (threatened)
- Snake River Spring/Summer-run Chinook ESU (threatened)
- Snake River Fall-run Chinook ESU (threatened)
- Sacramento River Winter-run Chinook ESU (endangered)
- Puget Sound Chinook ESU (threatened)
- Upper Willamette River Chinook ESU (threatened)
- Upper Columbia River Spring-run Chinook ESU (endangered)

50 C.F.R. §§ 223.102, 224.101 (2023). All of these populations inhabit areas that are impacted

by stormwater runoff from roads,⁶³ and all populations are thereby harmed by 6PPD-q in their habitats. EPA must thus utilize its authority under TSCA Section 6 to “further[] ... the purposes” of the ESA, 16 U.S.C. § 1531, by ensuring that 6PPD-q does not cause continued harm to these threatened and endangered species.

Further, an unreasonable risk finding is particularly justified here considering salmon and steelhead’s role as keystone species supporting entire ecosystems, their importance to Tribal nations, including Petitioners, and their role in the economy. At least 135 other species depend

⁶³ See, e.g., NMFS, 2016 5-YEAR REVIEW: SUMMARY & EVALUATION OF CENTRAL CALIFORNIA COAST SALMON VOL. I, 18 (2016); NMFS, 2022 5-YEAR REVIEW: SUMMARY & EVALUATION OF LOWER COLUMBIA RIVER CHINOOK SALMON, COLUMBIA RIVER CHUM SALMON, LOWER COLUMBIA RIVER COHO SALMON, LOWER COLUMBIA STEELHEAD, 34 (2022); NMFS, FINAL ESA RECOVERY PLAN FOR OREGON COAST COHO SALMON (*ONCORHYNCHUS KISUTCH*), 3-3 (2016); NMFS, ESA RECOVERY PLAN FOR LOWER COLUMBIA RIVER COHO SALMON, LOWER COLUMBIA RIVER CHINOOK SALMON, COLUMBIA RIVER CHUM SALMON, AND LOWER COLUMBIA RIVER STEELHEAD, 4-7, 4-10–11 6-14, 5-56 (2013); NMFS, FINAL RECOVERY PLAN FOR THE SOUTHERN OREGON/NORTHERN CALIFORNIA COAST EVOLUTIONARILY SIGNIFICANT UNIT OF COHO SALMON, 3-40 (2014); NMFS SOUTHWEST REGIONAL OFFICE, SOUTHERN CALIFORNIA STEELHEAD RECOVERY PLAN, 4-7 (2012); NMFS WEST COAST REGION, SOUTH-CENTRAL, SOUTHERN CALIFORNIA COAST STEELHEAD RECOVERY PLANNING DOMAIN 5-YEAR REVIEW, 37 (2016); NMFS WEST COAST REGION, SOUTH-CENTRAL/SOUTHERN CALIFORNIA COAST STEELHEAD RECOVERY PLANNING DOMAIN 5-YEAR REVIEW, 33 (2016); NMFS WEST COAST REGION, RECOVERY PLAN FOR THE EVOLUTIONARILY SIGNIFICANT UNITS OF SACRAMENTO RIVER WINTER-RUN CHINOOK SALMON AND CENTRAL VALLEY SPRING-RUN CHINOOK SALMON AND THE DISTINCT POPULATION SEGMENT OF CALIFORNIA CENTRAL VALLEY STEELHEAD, 4-22, Appendix B, 2-25 (2014); NMFS, FINAL COASTAL MULTISPECIES RECOVERY PLAN CALIFORNIA COASTAL CHINOOK SALMON, NORTHERN CALIFORNIA STEELHEAD, CENTRAL CALIFORNIA COAST STEELHEAD, vi (2016); NMFS, MIDDLE COLUMBIA RIVER STEELHEAD DISTINCT POPULATION SEGMENT ESA RECOVERY PLAN, ES-xvii (2009); NMFS, 2022 5-YEAR REVIEW: SUMMARY & EVALUATION OF MIDDLE COLUMBIA RIVER STEELHEAD, 19 (2022); NMFS, ESA RECOVERY PLAN FOR THE PUGET SOUND STEELHEAD DISTINCT POPULATION SEGMENT (*ONCORHYNCHUS MYKISS*), 35 (2019); NMFS, ESA RECOVERY PLAN FOR SNAKE RIVER SPRING/SUMMER CHINOOK SALMON (*ONCORHYNCHUS TSHAWYTSCHA*) & SNAKE RIVER BASIN STEELHEAD (*ONCORHYNCHUS MYKISS*), 126, 161–62 (2017); NMFS, UPPER COLUMBIA SPRING CHINOOK SALMON AND STEELHEAD RECOVERY PLAN, 3-15 (2007); OR DEP’T OF FISH AND WILDLIFE AND NMFS, UPPER WILLAMETTE RIVER CONSERVATION AND RECOVERY PLAN FOR CHINOOK SALMON AND STEELHEAD, 5-11, 5-36 (2011); NMFS, 5-YEAR REVIEW: SUMMARY AND EVALUATION OF CENTRAL VALLEY SPRING-RUN CHINOOK SALMON EVOLUTIONARILY SIGNIFICANT UNIT, 27 (2016); NMFS, 2016 5-YEAR REVIEW: SUMMARY & EVALUATION OF CALIFORNIA COASTAL CHINOOK SALMON AND NORTHERN CALIFORNIA STEELHEAD, 17-18 (2016); NMFS, ESA RECOVERY PLAN FOR SNAKE RIVER FALL CHINOOK SALMON (*ONCORHYNCHUS TSHAWYTSCHA*), 231 (2017); NMFS, 2016 5-YEAR REVIEW: SUMMARY & EVALUATION OF PUGET SOUND CHINOOK SALMON, HOOD CANAL SUMMER-RUN CHUM SALMON, PUGET SOUND STEELHEAD, 19 (2016); NMFS, COLUMBIA RIVER ESTUARY ESA RECOVERY PLAN MODULE FOR SALMON AND STEELHEAD, 4-13, 4-15 (2011).

on salmon and steelhead for food, including southern resident orca whales, eagles, bears, wolves, and seals, making these salmon species the linchpin in entire ecosystems.⁶⁴ For many Tribal nations in particular, salmon and steelhead have been a foundational part of tribal culture, religion, and subsistence use since time immemorial, and EPA must consider the environmental justice impacts of allowing continued harm to these culturally important species.⁶⁵ Robust salmon stocks also are important to the economy, supporting an estimated 16,000 jobs in the commercial and recreational fishing industry.⁶⁶ Populations of salmon and steelhead have already markedly declined, however, with an estimated 29% of nearly 1,400 historical populations of Pacific salmon and steelhead trout already lost.⁶⁷ The loss of these salmon and steelhead populations has already significantly diminished the ecosystems, cultures, and economies of the West Coast. If the continued toxic assault from 6PPD-q to these highly important and already depleted species does not present “an unreasonable risk of injury to . . . the environment” requiring action under TSCA section 6(a), it is hard to imagine what would.

Finally, while the best available scientific information compels regulation under TSCA to address 6PPD’s unreasonable risks to the environment, there is also evidence that 6PPD and 6PPD-q pose risks to human health. Recent peer-reviewed research indicates that both 6PPD and 6PPD-q bioaccumulate in the liver in a dose-dependent manner and induce hepatotoxicity and adverse immune effects in mammals.⁶⁸ 6PPD is classified as a reproductive toxicant and skin sensitizing agent by the European Chemicals Agency and the California Department of Toxic Substances.⁶⁹ Further, 6PPD and 6PPD-q have been detected in “a variety of environmental matrices, including atmospheric particles, indoor dust, road dust, playground dust, roadside soil, runoff water, and surface water,” and both compounds have been detected with very high frequency in human urine.⁷⁰ While this petition seeks regulation of 6PPD in tires based on the well-established unreasonable risk to aquatic species, we also urge EPA to utilize its information-gathering authorities under TSCA to investigate the risks to human health from exposure to 6PPD and 6PPD-q—though not in a manner that would delay urgently needed regulation of 6PPD to protect against unreasonable environmental risk.

⁶⁴ Mary F. Wilson & Karl C. Halupka, *Anadromous Fish as Keystone Species in Vertebrate Communities*, 9 CONSERVATION BIOLOGY 489 (1995); Marie Fazio, *Northwest’s Salmon Population May be Running Out of Time*, New York Times (Jan. 20, 2021); Dukes Seafood and Chowder, *Environmental Impact of Salmon Decline: This Isn’t Just About Fish*, Seattle Times (Jan. 26, 2018).

⁶⁵ See, e.g., EPA, GUIDANCE ON CONSIDERING ENVIRONMENTAL JUSTICE DURING THE DEVELOPMENT OF REGULATORY ACTIONS (2015).

⁶⁶ Marie Fazio, *Northwest’s Salmon Population May be Running Out of Time*, New York Times (Jan. 20, 2021); Dukes Seafood and Chowder, *Environmental Impact of Salmon Decline: This Isn’t Just About Fish*, Seattle Times (Jan. 26, 2018).

⁶⁷ Richard G. Gustafson et al., *Pacific Salmon Extinctions: Quantifying Lost and Remaining Diversity*, 21 CONSERVATION BIOLOGY 1009, (2007).

⁶⁸ Fang et al. 2023 at 161836. see also DTSC Profile at 24–25 (explaining that California DTSC has classified 6PPD as a hepatotoxicant and hematotoxicant based on animal studies).

⁶⁹ DTSC Profile at 24–25.

⁷⁰ Du et al. (2022).

III. EPA Rulemaking Under TSCA Section 6(a) Is Necessary to Eliminate Unreasonable Risk to the Environment from 6PPD in Tires.

As explained above, the continued manufacturing, processing, use, and/or distribution of 6PPD in and for tires “presents an unreasonable risk of injury to . . . the environment, without consideration of costs or other nonrisk factors” because that condition of use exposes aquatic organisms to levels of 6PPD-q that cause acute toxicity and mortality with severe population-level effects. 15 U.S.C. §§ 2605(b)(4)(A), 2620(b)(4)(B)(ii). TSCA Section 6(a) therefore *requires* the EPA Administrator to initiate rulemaking under TSCA Section 6(a) and adopt risk management measures “to the extent necessary” to ensure that 6PPD in tires “no longer presents such risk.” 15 U.S.C. § 2605(a) (requiring that upon finding unreasonable risk, the Administrator “shall” apply requirements “to the extent necessary so that the chemical substance or mixture no longer presents such risk”); *Alabama v. Bozeman*, 533 U.S. 146, 153 (2001) (“[t]he word ‘shall’ is ordinarily the ‘language of command’”) (quoting *Anderson v. Yungkau*, 329 U.S. 482, 485 (1947)); *Gonzalez v. Thaler*, 565 U.S. 134, 146 (2012) (use of the word “shall” is a “mandatory prescription”); *see also* 15 U.S.C. § 2620(b)(4)(B)(ii) (explaining that if the Administrator fails to grant a TSCA Section 21 petition, and petitioners have shown by a preponderance of the evidence that the chemical presents an unreasonable risk of injury to the environment, without consideration of costs or other nonrisk factors, “the court shall order the Administrator to initiate the action requested by the Petitioner”).

There is no known safe level of 6PPD in tires, and no warning or label requirements will eliminate the unreasonable risk from the use of tires containing 6PPD because the formation and release of 6PPD-q is an intended, inherent, and foreseeable result of using 6PPD in tires; 6PPD by design breaks down and releases 6PPD-q into the environment through its normal use in tires. Thus, EPA must use its authority under TSCA Section 6(a)(2)(A)(i) and 6(a)(5), 15 U.S.C. § 2605(a)(2)(A)(i), (a)(5), to adopt a rule that prohibits the manufacture, processing, use, and distribution of 6PPD in and for tires. EPA must ensure that such rule takes effect “as soon as practicable” and “not later than 5 years after the date of promulgation of the rule.” 15 U.S.C. § 2605(d).

EPA regulation under TSCA Section 6(a) is necessary to prevent unreasonable risk. Under TSCA, EPA bears the primary responsibility of preventing unreasonable risks from chemical substances, which includes regulatory authority over 6PPD in tires. *See* 15 U.S.C. § 2601; *compare* TSCA Section 21 Petition for Rulemaking Under TSCA Section 6; Reasons for Agency Response, 86 Fed. Reg. 64,129 (Nov. 17, 2021) (denying TSCA Section 21 Petition regarding cosmetics on the basis that cosmetics are not chemical substances under TSCA). And, assuming *arguendo* that it was a valid consideration under Section 21 of TSCA, no other state, federal, or local government agency is currently taking action to ban 6PPD in tires. *Compare* Letter from James J. Jones to Adam Keats (Feb. 14, 2012) (denying TSCA Section 21 petition to ban lead in fishing tackle as unnecessary “given the mix of regulatory and education actions state agencies and the Federal Government are already taking”); Toxic Substances Control Act (TSCA) Section 21 Petition for Rulemaking Under TSCA Section 6; Reasons for Agency Response, 87 Fed. Reg. 57,665, 57,570 (Sept. 21, 2022) (denying TSCA Section 21 Petition regarding greenhouse gas (“GHG”) emissions on the basis that it was “unnecessary” because “the federal government has numerous programs aimed at reducing GHG emissions, and

President Biden has committed to a whole of government approach to using federal tools to reduce GHG emissions”). While a number of salmonid populations facing unreasonable risk from 6PPD use in tires are protected under the ESA, that statute does not provide federal agency authority to ban the use of 6PPD in tires. And the ESA provides no protection for the many populations of salmonids and other aquatic species that face unreasonable risk from 6PPD in tires but are not listed as threatened or endangered species under that statute.

A ban at the source is also necessary because potential stormwater treatment is not capable of eliminating the risk from 6PPD: neither 6PPD nor 6PPD-q is currently regulated in stormwater, and current stormwater practices are generally insufficient to remove 6PPD-q,⁷¹ with most urban stormwater discharged to aquatic ecosystems without treatment.⁷² Further, data collected in the San Francisco Bay area indicate that coho salmon and other aquatic organisms can be exposed “to lethal concentrations of 6PPD-quinone outside dense urban regions . . . if traffic patterns result in release of [tire wear particles] to streams.”⁷³

Finally, EPA action is needed because the tire industry is unlikely to expediently act on its own to remove 6PPD from tires. Available information demonstrates that representatives of the tire industry have recognized that 6PPD in tires is causing harm to aquatic organisms,⁷⁴ and have reportedly acknowledged that “the question [is] not one of whether 6PPD should be replaced but rather how to get there.”⁷⁵ Nevertheless, the tire industry has not “currently prioritized finding an alternative to 6PPD,” and because there are currently no regulatory restrictions, “[t]he tire industry and chemical sector” lack “certainty and confidence in the industry-wide innovation need.”⁷⁶ It is thus necessary for EPA to act under its TSCA Section 6 authorities to adopt a ban of this harmful chemical, in order to set the regulatory timeline that will spur the technological innovation needed to develop alternatives to 6PPD.

In sum, Petitioners request, pursuant to TSCA Section 21, that EPA utilize its authority under TSCA Section 6(a)(2)(A)(i) and 6(a)(5) to adopt a rule that prohibits the manufacture, processing, use, and distribution of 6PPD in and for tires, to take effect “as soon as practicable.” Petitioners look forward to EPA’s response to this petition within 90 days. 15 U.S.C. § 2620(b)(3).

⁷¹ DTSC Profile at 44; Bettina Seiwert et al., *Abiotic Oxidative Transformation of 6-PPD and 6-PPD Quinone From Tires and Occurrence of Their Products in Snow from Urban Roads and in Municipal Wastewater*, 212 WATER RESCH. 118122, 118128 (2022).

⁷² DTSC Profile at 63.

⁷³ *Id.* at 5.

⁷⁴ *6PPD and Tire Manufacturing*, U.S. TIRE MFRS. ASS’N., <https://www.ustires.org/6ppd-and-tire-manufacturing> (acknowledging that “[i]n December 2020, a report published by researchers at the University of Washington and the Washington Stormwater Center (Tian et al.) identified a 6PPD transformation product that they called 6PPD-Quinone and concluded that it is toxic to coho salmon and may be causing urban runoff mortality syndrome in this fish species”).

⁷⁵ UNIV. OF MASS. LOWELL, COLLABORATIVE INNOVATION FORUM: FUNCTIONAL SUBSTITUTES TO 6PPD IN TIRES: MEETING REPORT v, 21 (2023).

⁷⁶ *Id.*

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