



Statement of

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**before the
Committee on Natural Resources
Subcommittee on Oversight and Investigations
United States House of Representatives**

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I. Introduction

Chair Porter, Ranking Member Gosar, and distinguished Members of the Subcommittee, thank you for the opportunity to appear before you today.

I am Sarah Amick, Vice President of Environment, Health and Safety and Sustainability and Senior Counsel for the U.S. Tire Manufacturers Association¹ (USTMA). USTMA is the national trade association for tire manufacturers that produce tires in the U.S. Our 13 member companies operate 57 tire-related manufacturing facilities in 17 states. The U.S. tire manufacturing industry directly supports more than a quarter million U.S. jobs – totaling almost \$20 billion in wages – and generates \$11.3 billion annually in federal tax revenue. Our members produce 80% of the tires sold in the U.S., safely transporting millions of Americans and goods each day throughout the country.²

Today I will provide background information on 6PPD and 6PPD-quinone, and review USTMA's response to the Tian et al. 2020 study, which includes three main actions. First, I want to emphasize that we care about the impact our products have on the environment, and I will report on the proactive engagement we have initiated with researchers, regulators, and stakeholders on this issue. Second, the Tian et al. study presents new science linking 6PPD-quinone and impacts on coho salmon; additional research is needed to understand this newly discovered transformation product, and I will review relevant data gaps and actions to fill gaps. Third, I will expand on our support for the review of 6PPD in tires under the California Safer Consumer Products Regulations. Last, I will refer to recent research completed by Dr. McIntyre that demonstrates that the use of bioretention technologies is one way to reduce the impact of 6PPD-quinone on coho salmon mortality.

¹USTMA members include: Bridgestone Americas, Inc., Continental Tire the Americas, LLC; Cooper Tire & Rubber Company; Giti Tire (USA) Ltd.; The Goodyear Tire & Rubber Company; Hankook Tire America Corp.; Kuhmo Tire Co., Inc.; Michelin North America, Inc.; Nokian Tyres, Pirelli Tire North America; Sumitomo Rubber Industries, Ltd.; Toyo Tire Holdings of Americas Inc. and Yokohama Tire Corporation

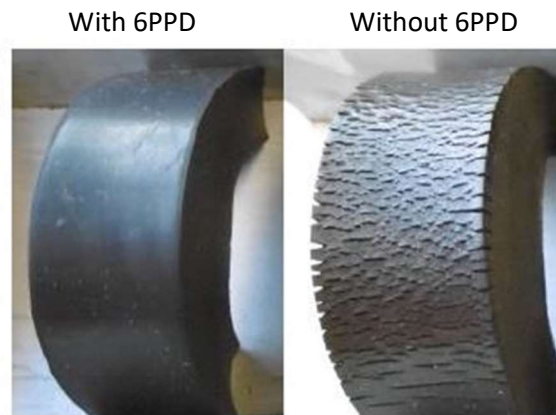
²<https://www.ustires.org/powering-us-economy>

II. Background information – 6PPD and 6PPD-quinone, two distinct materials

A. What is 6PPD, also known as N-(1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine?

All tires contain antioxidants and antiozonants, often referred to as protection materials. Antioxidants and antiozonants prevent degradation and cracking of the rubber compounds caused by exposure to oxygen, ozone, and temperature fluctuation. Because rubber has the ability to return to its original shape after being stretched or deformed, there are two types of antioxidants and antiozonants used in tires: dynamic and static. Dynamic antioxidants and antiozonants protect the tire while it is flexed, and static antioxidants and antiozonants protect the tire when it is in its original shape.

6PPD is both a dynamic and a static antioxidant and antiozonant and is utilized by USTMA members because it is the most effective protection material commercially available today that enables tires to meet critically important Federal Motor Vehicle Safety Standards (FMVSS) as established by the Department of Transportation's National Highway Traffic Safety Administration (NHTSA). 6PPD reacts with oxygen and ozone in the air to minimize the opportunity for these agents to attack the tire surface and degrade the rubber compound.



Protection materials are essential to ensure tire safety. Tire manufacturers are required by law to certify to NHTSA that every tire they manufacture meets safety, durability, and other performance standards prior to their sale to the consumer.

Without the use of high-performing protection materials like 6PPD, tire rubber compounds can crack and degrade rapidly, creating possibly catastrophic safety concerns.

B. What is 6PPD-quinone?

In contrast to 6PPD, 6PPD-quinone is not used in tire manufacturing. The reactions of 6PPD with oxygen and ozone create reaction transformation products, some of which are thought to form a layer on the surface of the rubber to provide additional protection against atmospheric attack. Recently, Tian et al. (2020) identified a 6PPD transformation product that they called 6PPD-quinone as a substance that is toxic to coho salmon and may be causing urban runoff mortality syndrome (URMS) in this fish species. Earlier studies of the 6PPD transformation products had not identified this substance (Lattimer et al., 1983).

6PPD in tire manufacturing has been well-studied, but given 6PPD-quinone was only recently discovered, not enough is yet known about this transformation substance, including, for example, how 6PPD-quinone forms and how long it lasts in the environment.

III. USTMA's response to the Tian et al. 2020 paper

A. USTMA is engaged with stakeholders and the scientific community to advance the understanding of 6PPD-quinone.

In 2019, USTMA learned that researchers at the University of Washington and Washington Stormwater Center had identified several chemical substances that could be the cause of coho salmon mortality. Several of these substances were identified as materials used in manufacturing tires. Upon learning of this research, USTMA proactively reached out the Washington State Department of Ecology to provide information to support further research on tire materials. USTMA shared information with Washington researchers and regulators regarding methodologies for identifying and analyzing tire and road wear particles (TRWP), and background information about tire materials and tire manufacturing.

Additionally, USTMA worked with Washington state researchers and regulators on methodologies to produce representative tire wear material to further support Washington state research on coho salmon impacts. The Tian et al. 2020 research utilized test material made from both new and used tires but unfortunately the method used to produce the material is not representative of tire wear particles formed under real-world conditions (i.e., ensuring that only the wearable tread was abraded and not other parts of the tire). Also, the inclusion of test materials from used tires fails to control for chemicals that arise from other road sources but that become embedded in the tire tread during use. To assist with this challenge, USTMA agreed to produce representative test material for Washington researchers and we plan to have the material generated and available to support further research in the next few months. Since the publication of the Tian et al. 2020 paper, USTMA has continued to engage with Washington state researchers and regulators.

USTMA is also actively participating in the Washington State Stormwater Workgroup's 6PPD-Subgroup to support identification of hotspots and mechanisms to address 6PPD-quinone in the environment. We have held meetings with several environmental groups, including the Salmon and Steelhead Coalition, to share information about our response to the Tian et al. 2020 paper. USTMA welcomes the opportunity for continued engagement with researchers, regulators and tribal communities like the Nisqually Indian Tribe in Washington and other key stakeholders to fill important knowledge gaps related to 6PPD-quinone.

USTMA and its members recognize also that salmon play an integral part in tribal religion, culture, and physical sustenance. We know that salmon are part of the spiritual and cultural identity for tribes like the Nisqually Indian Tribe. We appreciate that tribal community members may be concerned and deserve as much available data available regarding industrial products and their effects on air and water, as well as other social and economic impacts on tribes. We also believe tribal communities must have meaningful involvement in solutions and they should expect accountability and thoughtful next steps from the government and industry.

B. As with any new scientific findings, additional research is needed to ensure next steps are science-driven.

i. What is known about 6PPD-quinone?

The Tian et al. 2020 paper identifies 6PPD-quinone as a transformation product of 6PPD that causes toxicity to coho salmon but was not found to be toxic to chum salmon at very low concentrations in surface water. The recent scientific literature not only includes the recent Tian et al. 2020 paper, but also cites other reputable papers that list potential links between increased coho salmon mortality and dams, warmer waters, lower oxygen levels, changes in zooplankton quality, predation by seals, and disease in Puget Sound. Each of these potential causes may have contributed at least in part to the decreases in Chinook and coho salmon since 1970. This makes solving the issue of salmon mortality complex and underscores the need for additional research to identify the possible cumulative impacts these factors may have on salmon mortality.

Additionally, there is some evidence to support an inference that 6PPD-quinone is not persistent or bioaccumulative. The Tian et al. paper found that receiving water samples collected after a storm event did not contain quantifiable 6PPD-quinone. This may indicate that the compound is unstable and that it further reacted or bound itself to suspended sediment, which could reduce the potential for uptake by aquatic species.

ii. What is not known about 6PPD-quinone?

To identify knowledge gaps raised by the Tian et al. 2020 paper, and to develop a plan to fill those gaps, the global tire industry formed a joint task force representing USTMA, the European Tyre and Rubber Manufacturers' Association (ETRMA) and the World Business Council for Sustainable Development's Tire Industry Project (TIP). The joint task force outlined several relevant data gaps including:

- Where does 6PPD-quinone go in the environment? Does it persist and for how long?
- How does 6PPD-quinone cause the toxicity that was observed in coho salmon?
- Is 6PPD-quinone toxic to other aquatic species? If so, at what concentrations?
- Is 6PPD-quinone released from recycled rubber products?
- Is 6PPD-quinone harmful to humans? If so, at what concentrations and how are humans exposed?
- Which existing stormwater treatment technologies are effective in removing 6PPD-quinone from road runoff?

iii. USTMA actions to identify and fill relevant data gaps

USTMA and our global partners continue to engage with Washington state researchers, chemical manufacturers, Washington regulators and researchers, the California Department of Toxic Substances Control (DTSC), and other research institutions to identify planned and future research related to 6PPD-quinone, ensure research utilizes the most robust methodologies, and to determine next steps.

The tire industry, through [the World Business Council for Sustainable Development's Tire Industry Project \(TIP\)](#), is supporting additional research to fill key data gaps related to 6PPD-quinone. For over 15

years, TIP has performed research to evaluate the potential health and environmental impacts of chemicals commonly used in tire making and has developed a better understanding of the fate and possible effects of particles generated during normal tire use and wear. Most of this research is readily available through links on USTMA's website, and also directly on TIP's website.

TIP is currently sponsoring research into 6PPD-quinone as part of its ongoing work to improve scientific understanding of the aging and ecotoxicology of tire and road wear particles (TRWP). TIP expects to publish peer-reviewed studies that detail the findings of this research during 2022 and will make relevant provisional findings available as the studies progress.

IV. USTMA requested that the California Department of Toxic Substances Control (DTSC) review 6PPD in tires to determine if a safer alternative exists that will enable tires to continue to meet FMVSS.

In December 2020, just three weeks after the Tian et al. 2020 paper was published, USTMA sent a letter to Meredith Williams, the Director of the California Department of Toxic Substances Control to ask that the Department review 6PPD in tires under the California Safer Consumer Products Regulations (SCPR), one of the most stringent chemical regulatory programs in the country. The SCPR identify specific products that contain potentially harmful chemicals and ask manufacturers to answer two questions: 1) Is this chemical necessary? and 2) Is there a safer alternative?³ A review of 6PPD in tires under the Safer Consumer Products Regulations provides a rigorous, transparent, scientific, regulatory framework to analyze whether alternatives exist that will enable tire manufacturers to meet Federal Motor Vehicle Safety Standards (FMVSS) as established by the National Highway Traffic Safety Administration (NHTSA).

USTMA chose to reach out to DTSC to review 6PPD in tires because the SCPR process requires the most robust alternatives analysis to be performed, and in December 2020, DTSC was in the process of identifying chemical product combinations to include in its 2021-2023 Priority Product Workplan. The Priority Product Workplan is essentially a menu of chemical product combinations DTSC can review during the next three years. DTSC accepted USTMA's request and finalized the 2021-2023 workplan which includes 6PPD in tires. USTMA is currently working with DTSC to support the alternatives analysis regulatory process under the SCPR.

V. What can be done to address 6PPD-quinone in the environment?

As 6PPD-quinone is a new transformation product that is getting deserved attention and research, we don't yet know all the ways to address the compound in the environment. We are aware that use of bioretention technologies, such as raingardens and bioswales, has been proven to eliminate the impact on coho salmon. Bioretention systems are constructed landscape beds (e.g., rain gardens) or natural depressions in the surface of the land where stormwater is directed to slow the stormwater flow and filter pollutants from the runoff before it discharges to surface water or migrates to groundwater. In fact, McIntyre et al. (2014, 2015, 2016) demonstrated that filtering roadway runoff in a rain garden reduces the potential for toxicity to coho salmon and other aquatic organisms (i.e., zebrafish). As such, 6PPD-quinone in the stormwater would be removed. Based on the McIntyre et al. research, the Washington Department of Ecology along with collaborators in the Stormwater Strategic Initiative has recommended in the final Toxics in Fish Implementation Strategy to incentivize redevelopment in high

³ <https://dtsc.ca.gov/scp/>

pollutant loading areas to reduce toxics loading from the stormwater pathway using green infrastructure such as rain gardens or other bioretention facilities (Washington Department of Ecology, 2021). Bioretention technologies can be installed today in hot spots to reduce coho salmon mortality.

VI. Closing

I hope that the information regarding the use of 6PPD in tires and the knowledge and data gaps surrounding 6PPD-quinone has provided the subcommittee with foundational scientific knowledge that is helpful to the Committee as it considers any future potential policies or actions. I and the USTMA appreciate the opportunity to appear before this subcommittee and I am happy to answer any questions that you may have. Thank you.