

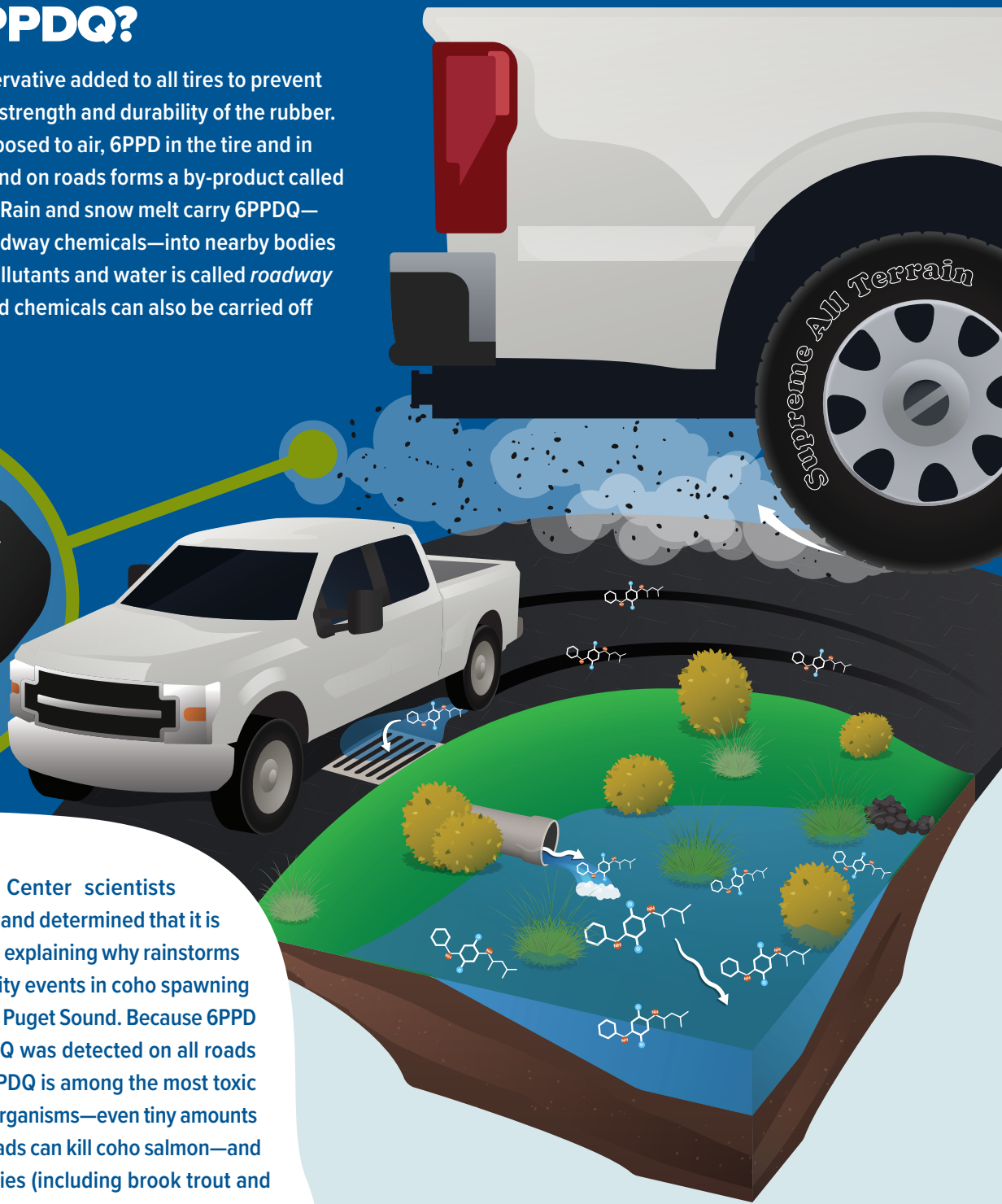
# What is 6PPDQ?

“6PPD” is a chemical preservative added to all tires to prevent cracking, and increase the strength and durability of the rubber. As the tires age and are exposed to air, 6PPD in the tire and in tire wear particles left behind on roads forms a by-product called *6PPD-quinone* (“6PPDQ”). Rain and snow melt carry 6PPDQ—and thousands of other roadway chemicals—into nearby bodies of water. This mixture of pollutants and water is called *roadway runoff*. Rubber particles and chemicals can also be carried off roadways as tire dust.

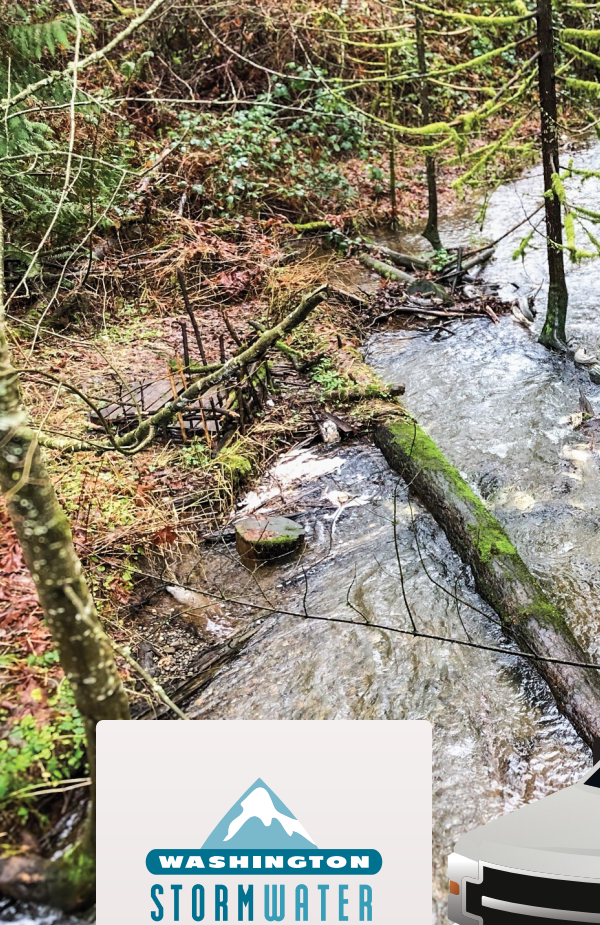


Washington Stormwater Center scientists discovered 6PPDQ in 2020 and determined that it is highly toxic to coho salmon, explaining why rainstorms were linked to mass mortality events in coho spawning in many streams around the Puget Sound. Because 6PPD is present in all tires, 6PPDQ was detected on all roads and nearby waterways. 6PPDQ is among the most toxic chemicals to many aquatic organisms—even tiny amounts washed from high-traffic roads can kill coho salmon—and impacts to more trout species (including brook trout and rainbow trout) have been observed.

Not all fish species are sensitive to 6PPDQ, and not all storms move enough 6PPDQ to cause harmful effects, so scientists everywhere are now testing the effects of 6PPDQ on new aquatic species and ecosystems. They are also looking at where and when roadway runoff is most toxic, and finding ways to reduce the risks of 6PPDQ and other pollutants found in roadway runoff. And the tire industry is working to find alternatives to 6PPD, though that may take time. Right now, we need to manage roadway runoff better to reduce the harm that 6PPDQ causes to our environment.



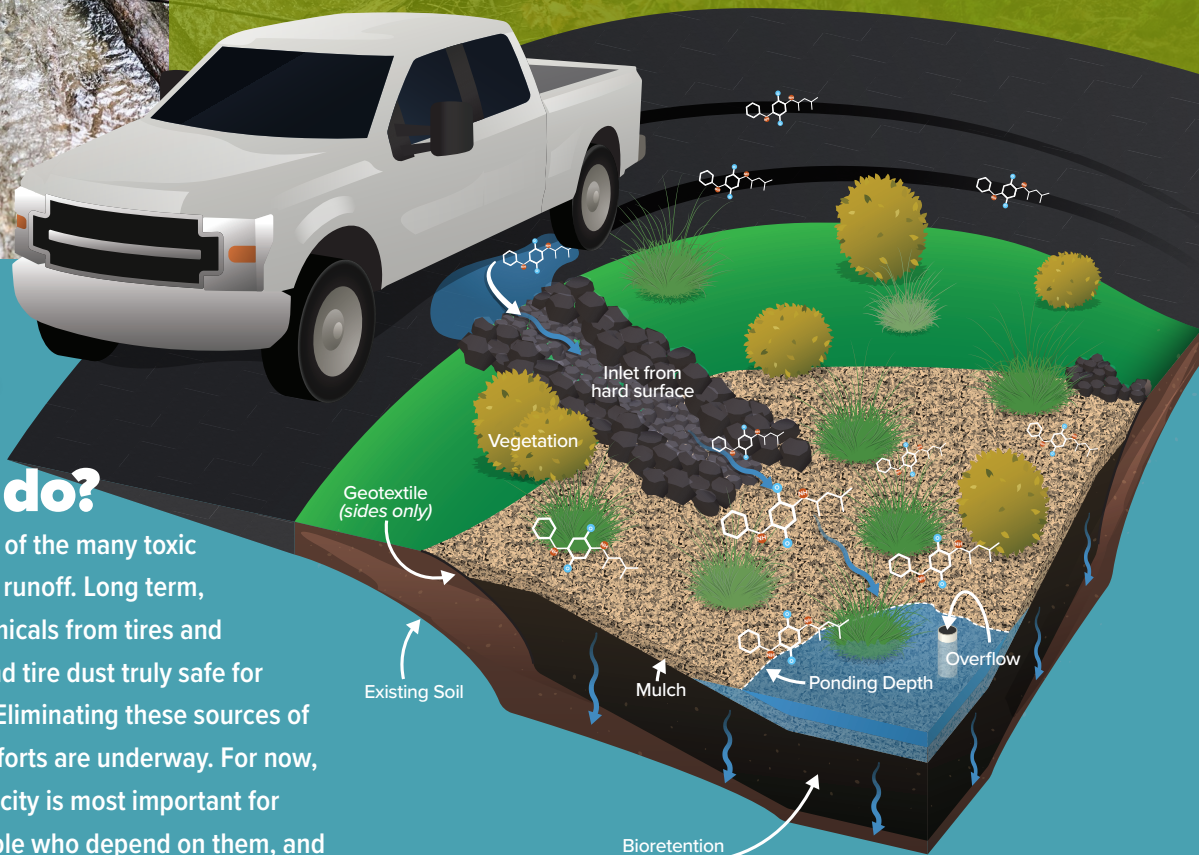
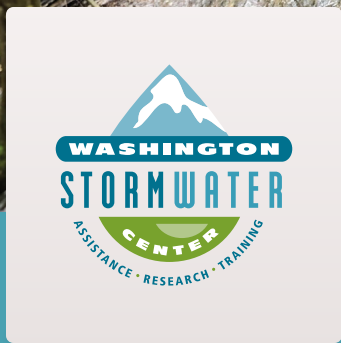




## What places are at risk?

Busy roads with heavy traffic next to smaller streams, wetlands, ponds, and coastal waters are most sensitive to harm from 6PPDQ and roadway runoff. Exceptional management may be needed in places near waters which support sensitive spawning or rearing habitats for fish and other critical aquatic organisms, or that provide food sources to nearby communities.

The actual amounts of 6PPDQ in runoff and the environment will depend on traffic levels, how close a roadway is to the water, the amount of precipitation and time since the last rainfall, and whether stormwater is treated. Areas with terrain or structures that concentrate roadway runoff without treatment (curbs, stormdrains or piping systems) near bodies of water are of greatest concern.



## So, what to do?

6PPD and 6PPDQ are just two of the many toxic pollutants present in roadway runoff. Long term, we must remove all toxic chemicals from tires and vehicles to make the runoff and tire dust truly safe for people and the environment. Eliminating these sources of pollution will take time, but efforts are underway. For now, managing roadway runoff toxicity is most important for places critical to fish, the people who depend on them, and spaces where food is gathered.

Treatment works, but most roadway runoff is not treated—and treatment systems cost money to build and maintain. When roadway runoff containing 6PPDQ is passed through plants and soils—known as *bioretention*—this simple natural filtration removes enough 6PPDQ to make the stormwater safe for fish! We expect that removing or reducing direct pipe discharges and using treatment such as wetlands, bioretention basins, or street sweeping will protect waterways.



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