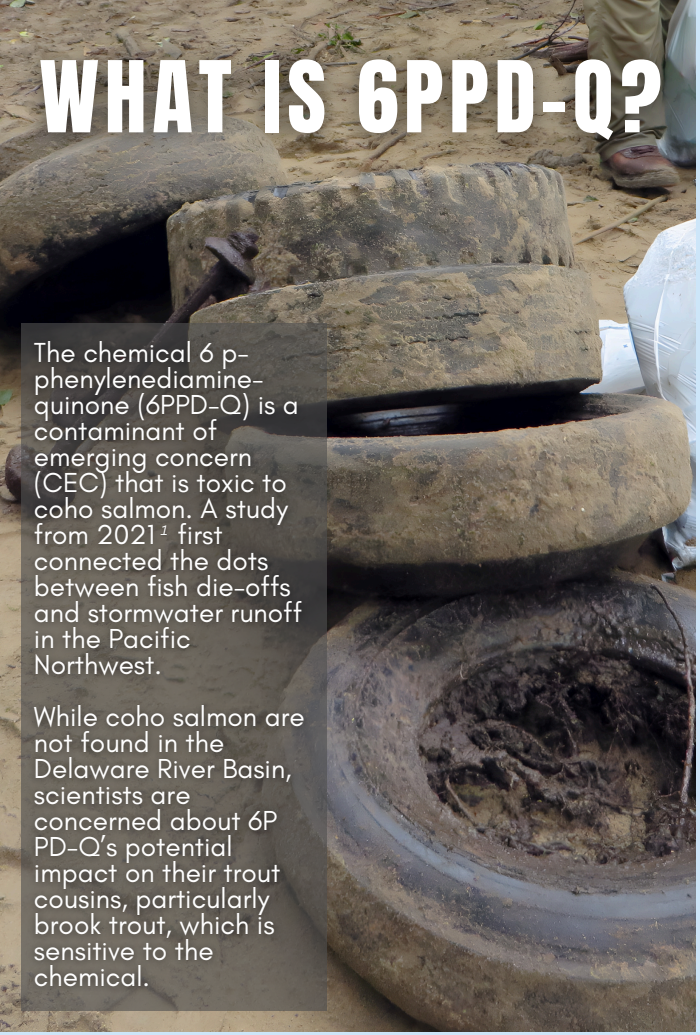
WHAT IS 6PPD-Q?



The chemical 6 p-phenylenediamine-quinone (6PPD-Q) is a contaminant of emerging concern (CEC) that is toxic to coho salmon. A study from 2021[1] first connected the dots between fish die-offs and stormwater runoff in the Pacific Northwest.

While coho salmon are not found in the Delaware River Basin, scientists are concerned about 6P PD-Q's potential impact on their trout cousins, particularly brook trout, which is sensitive to the chemical.

WHERE DOES 6PPD-Q COME FROM?

6PPD is a chemical added to tires to prevent cracking, which extends their life. When water interacts with tires or the tiny bits of tire rubber they shed onto surfaces when driving, 6PPD is converted to 6PPD-Q. This chemical then enters surface waters in runoff or slowly leaches from tires and tire particles submerged in water bodies.

With new information emerging on the impact of 6PPD-Q on aquatic species, scientists at the DRBC are studying the contaminant's presence in the waters of the Delaware River Basin.

Until recently, there was little information on the concentration of 6PPD-Q in surface water of the Delaware River Basin under normal and stormwater flows. This study was one of, if not the first, to get to the bottom of these questions by examining 6PPD-Q across the basin.

1 - Zhenyu Tian et al., A ubiquitous tire rubber–derived chemical induces acute mortality in coho salmon. *Science* ***371***, 185-189(2021). DOI: 10.1126/science.abd6951.

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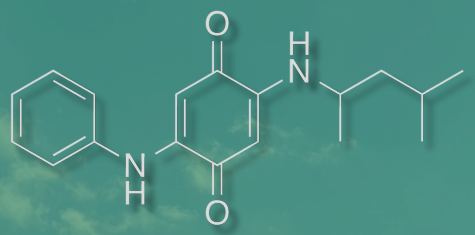
(Hagerty, Ryan/USFWS)



6PPD-Q AND THE DELAWARE RIVER:

Investigating a Contaminant of Emerging Concern

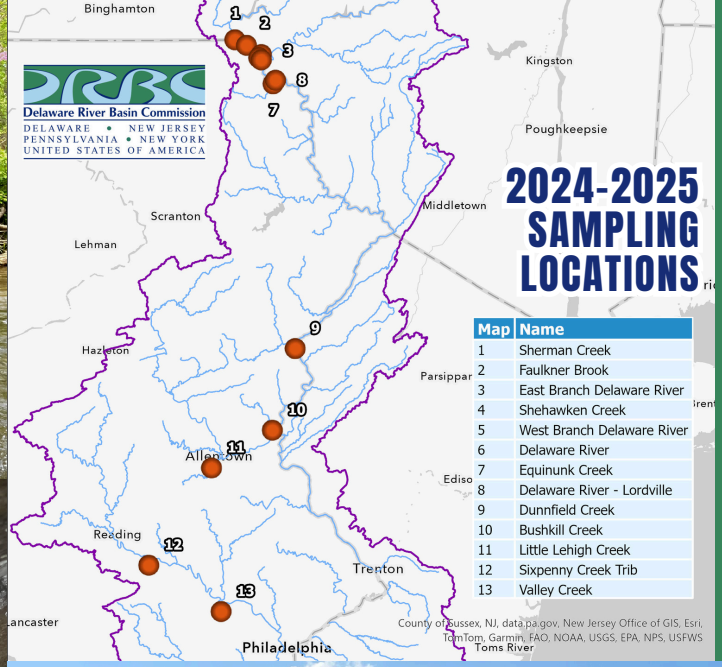
DRBC'S INVESTIGATION

The DRBC committed, in 2023, to perform this first-of-its-kind study in the Delaware River Basin to determine the presence of this contaminant in Basin waters.

In Spring 2024, researchers began collecting samples to develop baseline concentrations of 6PPD-Q in trout streams during normal flow and after significant rain events. This allowed scientists to look at how storms affect concentrations. Monitoring focused on the high-quality trout streams in the upper Delaware River region, as well as a few middle Basin trout streams.

This dataset will contribute to the development of comprehensive strategies to identify, characterize, and evaluate 6PPD-Q presence in the Delaware River Basin.

DRBC's data collection concluded in June 2025; additional information for the public is forthcoming.



Map	Name
1	Sherman Creek
2	Faulkner Brook
3	East Branch Delaware River
4	Shehawken Creek
5	West Branch Delaware River
6	Delaware River
7	Equinunk Creek
8	Delaware River - Lordville
9	Dunnfield Creek
10	Bushkill Creek
11	Little Lehigh Creek
12	Sixpenny Creek Trib
13	Valley Creek

WHERE IS 6PPD-Q IN OUR BASIN?

Data from DRBC's 2024 and early 2025 sampling found 6PPD-Q, at every sampling site.

In the Upper Delaware the contaminant was at levels indicating limited effects, if any, on salmonid species. Downbasin, elevated levels of 6PPD-Q were found at the Valley Creek Tributary site. Normal flow concentrations were at or near detection limits but spiked during a rain event.

This site receives runoff from the PA Turnpike and is may be subject to 6PPD-Q in direct runoff as well as a buildup of tire particles that could be slowly leaching the pollutant.

Glass bottles were used by the field team to collect samples of river water for analysis at Temple University's lab to identify the presence of 6PPD-Q.

TAKEAWAYS FROM THE STUDY

The presence and impacts of this contaminant are still an emerging area of study, and ongoing research will help scientists better understand its presence in the Delaware River Basin. Here is what we found:

- 6PPD-Q was detected in 56% of tributary samples, but most concentrations are at or just above detection limits. **The highest concentrations are associated with runoff events.**
- With the exception of one sample in a stormwater drainage channel from the PA Turnpike, all **samples were below known toxicity thresholds for species in the basin.**

Dry condition sampling was conducted over 12 months; samples were also collected around **runoff events** (wet weather) when conditions allowed.

Certain water samples collected by DRBC staff assessed secondary parameters such as **dissolved oxygen**, **conductivity**, and **pH**.

6PPD-Q sampling analysis was performed at **Temple University's Water and Environmental Technology Center**.

LOOKING AHEAD TO NEXT STEPS

The first round of 6PPD-Q sampling (sites identified on the map to the left) has been completed as of April 2025; the data is being examined, and a report is forthcoming. This work, coupled with valuable new efforts by federal researchers at the USGS and USEPA, as well as in the peer-reviewed literature, will enable future studies that focus sampling on potential hotspots and streams that do or should support the Delaware Basin's native brook trout population. Future work is contingent on funding availability and other factors.