DRBC's Toxics Research & Planning

Toxics Advisory Committee
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DRBC Toxics Information

DRBC makes all our research readily available to the public. You can find our research and monitoring reports, presentations, and other background information on our website at the link on the right of this slide. You can either use the QR code or the actual link. This takes you to the main Water Quality and Monitoring Program page, which you can then use to access specific topics of interest. I've highlighted the Contaminants of Emerging Concern link. Once on that page, click there to visit the page where we present our PFAS work

Finished Projects

- PACZM Yr 1 – PFAS in water, sediment and fish of tidal Delaware mainstem and tributaries. Sampled in 2021.
- NFWF Yr 1 – PFAS in surface water and sediment of tributaries & non-tidal mainstem. Sampled in 2021.

Reports

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At the last TAC meeting, I mentioned that we were wrapping up 2 projects and would soon release reports. These are those 2 projects. This work was primarily planned, carried out, and written by my predecessor, Ron MacGillivray. I was responsible for editing and polishing the report before its release.

Now to a few ongoing projects, where fieldwork is largely done and we are waiting on data from the lab so that we can then write up their reports.

Ongoing Projects

- PACZM Yr 2 – Mirrors Yr 1
  - PFAS water & sediment sampling complete w/some data already back
  - Will finish fish sampling in Spring 2024
- PDE BIL Toxics
  - Sampled water in 12 tidal tributaries for PFAS, PCBs, Dioxin/Furans, OC Pest, Neonicotinoids and PAHs
  - All sampling complete
  - Some data recently received

The second year of the PACZM grant largely mirrors Year 1. Water, sediment, and fish are collected in ”PA coastal waters”, meaning the tidal Delaware River and adjacent tributaries.
Sampling for PFAS water and sediment is complete with some data already back from the lab. We ran out of time to collect fish in the fall so we have to finish this Spring.

For the PDE BIL grant all sampling was finished in late summer and fall 2023. This study looked at tributaries in the tidal zone of the river in an effort to identify watersheds that contribute pollutants to the main stem of the Delaware River. Some of this data has been returned but we are still waiting on the majority of it from the lab. I will share some of these results with you in summer 2024.

I anticipate the reports for these projects to be done late 2024 or early 2025.

Ongoing Projects

- NFWF Yr 2 – PFAS in water, sediment and fish of mainstem Delaware from NY to DE
  - Project and report are complete, but not yet submitted to NFWF
- NFWF Yr 3 – Mirrors Yr 2
  - All sampling complete
  - Some data recently received
  - Report submission in Winter 2024/25

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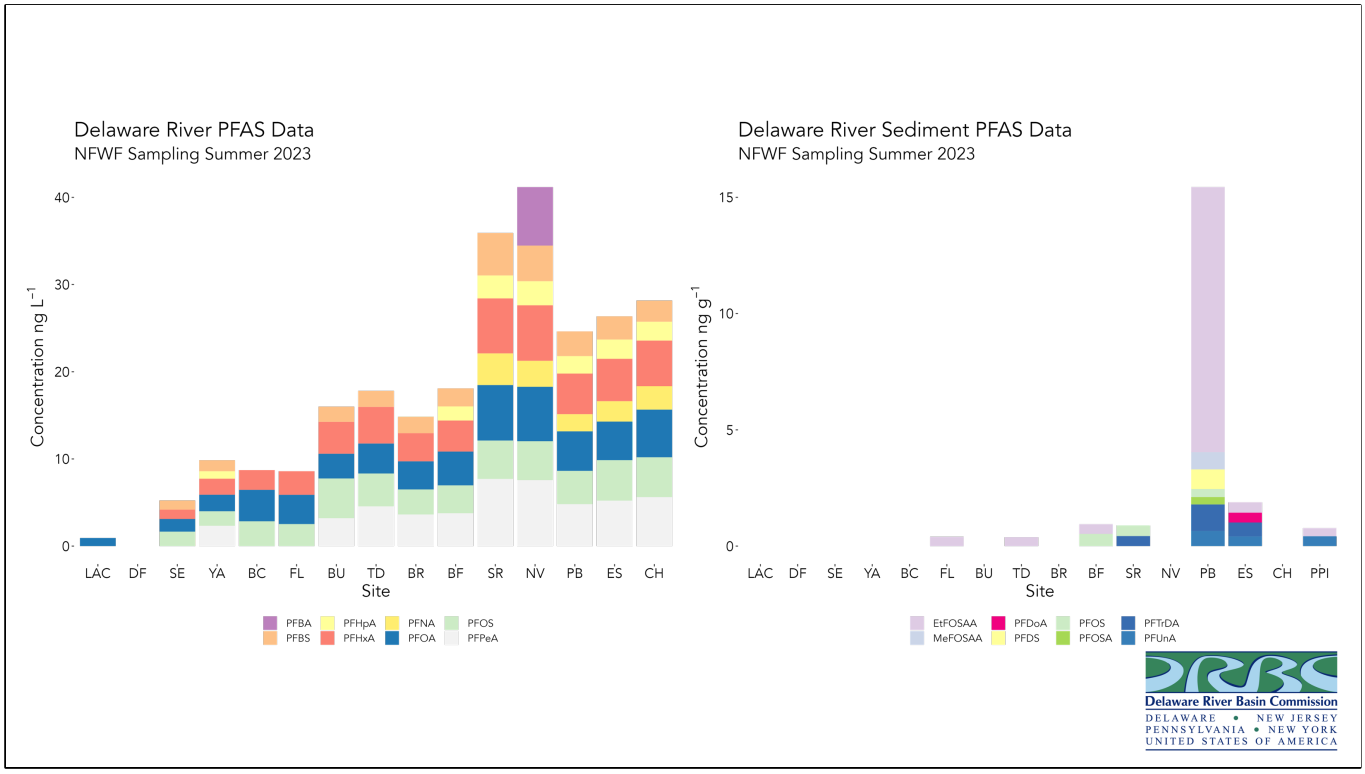
The second year of our NFWF funded PFAS research is complete. The report is written and should be released soon.

We mirrored the work from Year 2 of NFWF, mainstem water and sediment sampling from Lackawaxen, PA to Pea Patch Island, DE. W/Exception of Schuylkill River sampling. 4 Fish species, 2 tidal at 6 sites and 2 non-tidal at 3 sites. I'm just starting to look at this data, so we don't expect to have a final report until Winter 2024/25. But I will probably share some of this data during our summer 2024 TAC meeting. However, the next slide has a preview of the water and sediment data…



Left graph contains water concentrations of PFAS, while the right graph has PFAS in sediment. Sites are the same for each graph, but we haven't gotten our water data for the Pea Patch Island (PPI) site yet. Moving from left to right on the x-axis follows water flows from upstream to downstream. LAC is the furthest upstream, while PPI is the closest to Delaware Bay.

For water, notice the general consistency with colors/compounds moving from upstream to downstream, as well as the steady increase in concentrations. The Schuylkill River and Navy Yard sites are almost identical (except for PFBA), and they should be since the Navy Yard site is essentially the same water as the Schuylkill River.

In comparison, the sediment samples show less compounds detected, although the concentrations are higher (the units hide the relative difference in concentrations). One thing to note is the Paulsboro site, which is taken directly at the outfall to the Philadelphia Airport stormwater drainage from their firefighter training facility.

Additionally, the color pallet used for both graphs assigns a color to each of the 40 PFAS compounds that were analyzed. Notice the color differences and, subsequently, compounds identified between sediment and water. Only 1 compound was detected in both, PFOS. This lack of overlap demonstrates the need to measure all media if you want to know what compounds are present. I also expect that when we see the fish

data we will also find compounds that are unique to fish and not found in either sediment or water. So all media need to be examined to fully grasp what is in the Delaware.

The last bit of our year 3 NFWF funding is the passive sampler data. Because of how these samplers work, I expect that we will find additional compounds in the river that didn't show up in any of our previous samples due to limits of detection with those methods. And the last thing to note is that for all of the PFAS work we did in summer 2023, we collected parallel samples that the EPA in Rhode Island is analyzing for their research. So we are excited to see how their data, particularly their passive sampler work and non-targeted analysis compliment our data.

New in 2024

- Delaware & Raritan Canal PFAS Passive Samplers
  - Collaboration with NJ Water Supply Authority
  - Deploy in March/April for 1 month
  - Attempt to locate sources of PFAS entering the canal
- 106 Grant: PCBs
  - Provide updated data on dissolved PCBs in tidal Delaware mainstem and tributary sediments
  - Compliments water sampling for PCBs in summer 2023 at tributary sites
  - PCB passive samplers previously analyzed at same sites in 2020

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This spring and summer we have a couple new projects.

In early Spring we will be deploying passive samplers in the D&R Canal to help the NJWSA determine sources of PFAS in the canal.

New in 2024: 6-PPDq

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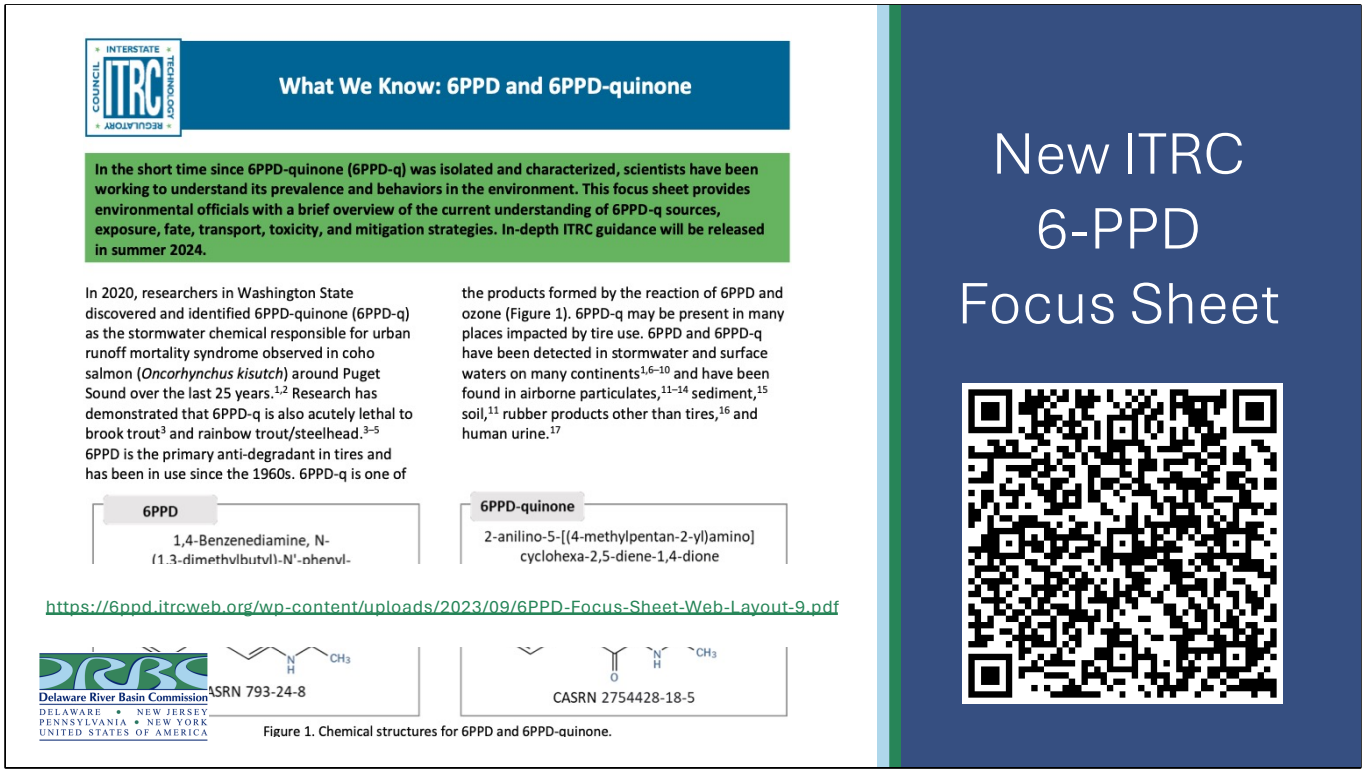
All tires have a chemical called 6-PPD that keeps them from cracking and extends the life of tires.

Through driving, each of us releases 7-12 lbs of tire wear particles (TWPs) into the environment annually

10% of that gets into surface waters due to wind and rain, where 6-PPD reacts with water to form 6-PPDq.



For more information on 6-PPD and 6-PPDq, check out the recently released “Focus Sheet” by the Interstate Technology Regulatory Council. This is a short-form document at ~10 pages, but they have a much more thorough “Guidance Document” that is currently undergoing review and should be released sometime in the next 6 to 9 months. They already have these for many other pollutants, including PFAS, at their website “itrcweb.org.”

DRBC PFAS Roadmap

PFAS Monitoring

Data Synthesis

Source Identification

Source Reduction

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With ~20 years of work on PFAS at DRBC we have a large dataset to pull from and plans to take that work from basic monitoring to synthesizing our data to identify hot spots in the basin with a goal of identifying sources and reducing discharges.

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Questions?

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