Three Rivers, Fifteen PFAS:

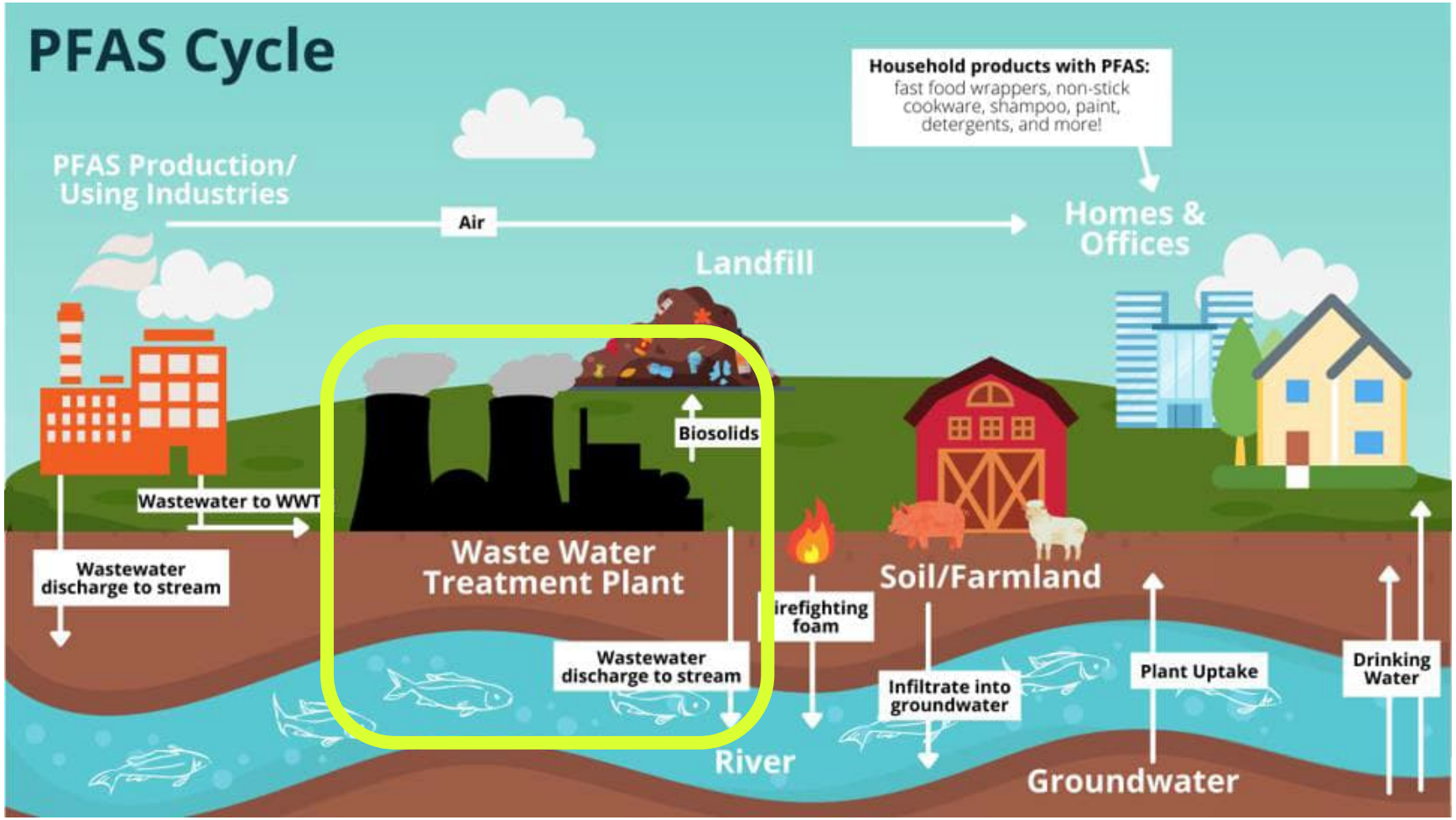
Assessing the Influence of Wastewater Effluent on Surface Water Contamination with Per- and Polyfluoroalkyl Substances (PFAS) in Pittsburgh's Three Rivers

WOMEN *for a Healthy* ENVIRONMENT

Per- and Polyfluoroalkyl Substances (PFAS)

- Class of thousands of human-made chemicals marked by their unique persistent bonds that don't occur or fully break down naturally
- Numerous applications due to their stain, water, grease, and dirt repellant characteristics
- Persist in the environment = "forever chemicals'
- Bioaccumulate in living organisms

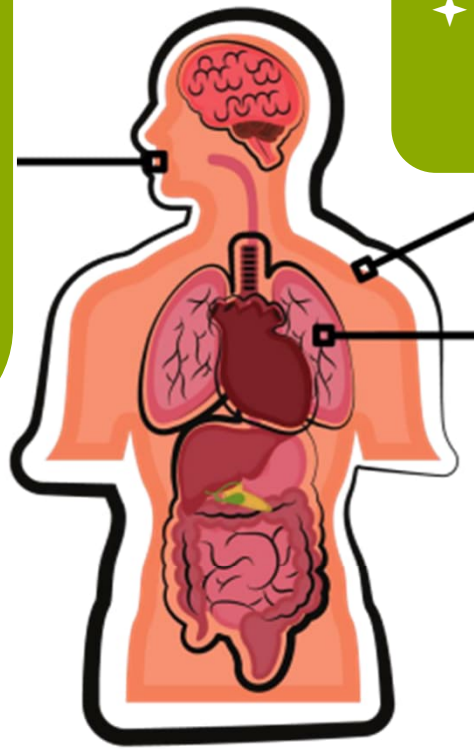
How PFAS Enter our Environment and Homes



PFAS Exposure Routes

Current evidence shows that ingestion is the primary route of concern.

Ingestion*
- Drinking water
- Food (from packing, soil contamination, processing, etc.)
- Accidentally eating contaminated soil (hand-to-mouth behaviors)
- Wild-caught fish and game
- Breast milk



Skin absorption:
- Appears to pose a lower risk than other routes of exposure

Inhalation
- Household dust
- Aerosolized PFAS (from proximity to manufacturing emissions, or using a PFAS-containing spray)

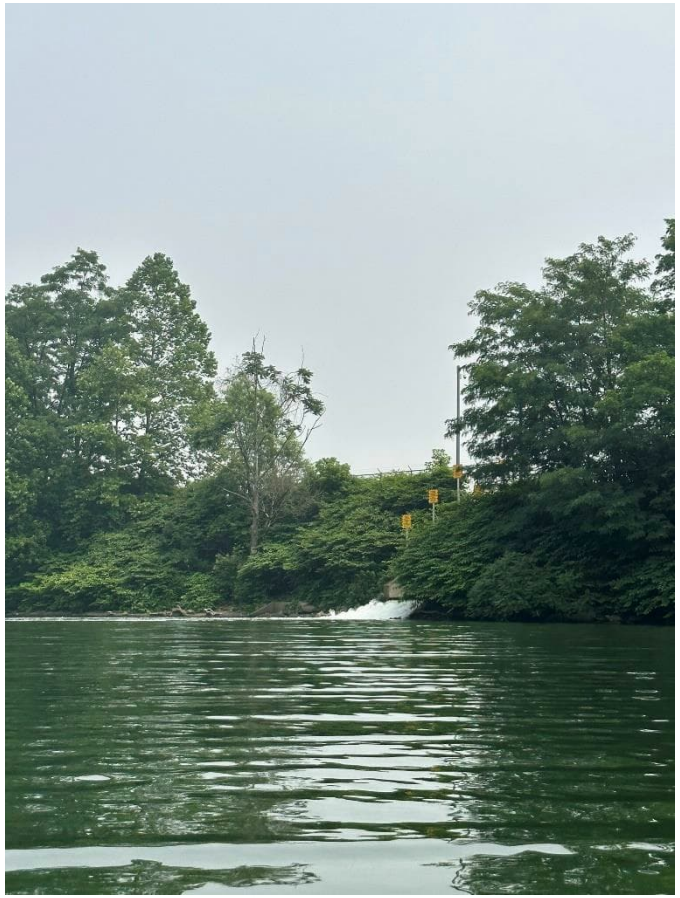
Health Effects of PFAS

- ✦Reduced immune system function
- ✦Cancer
- ✦Reproductive health effects
- ✦Developmental effects
- ✦Liver damage
- ✦Thyroid disease and dysfunction
- ✦Increased cholesterol levels
- ✦Inflammatory bowel disease, or Ulcerative colitis

WHE's Involvement in PFAS Work

- July 16, 2021: A fire breaks out in the Lower 10th Ward of McKeesport, and AFFF back flowed into the drinking water supply.
- WHE distributed ZeroWater filters to the affected community
  - NSF certified to remove PFOA and PFOS
- WHE collaborates with Dr. Carla Ng and her team at the Pitt Swanson School of Engineering to assess the contamination of the Lower 10th Ward

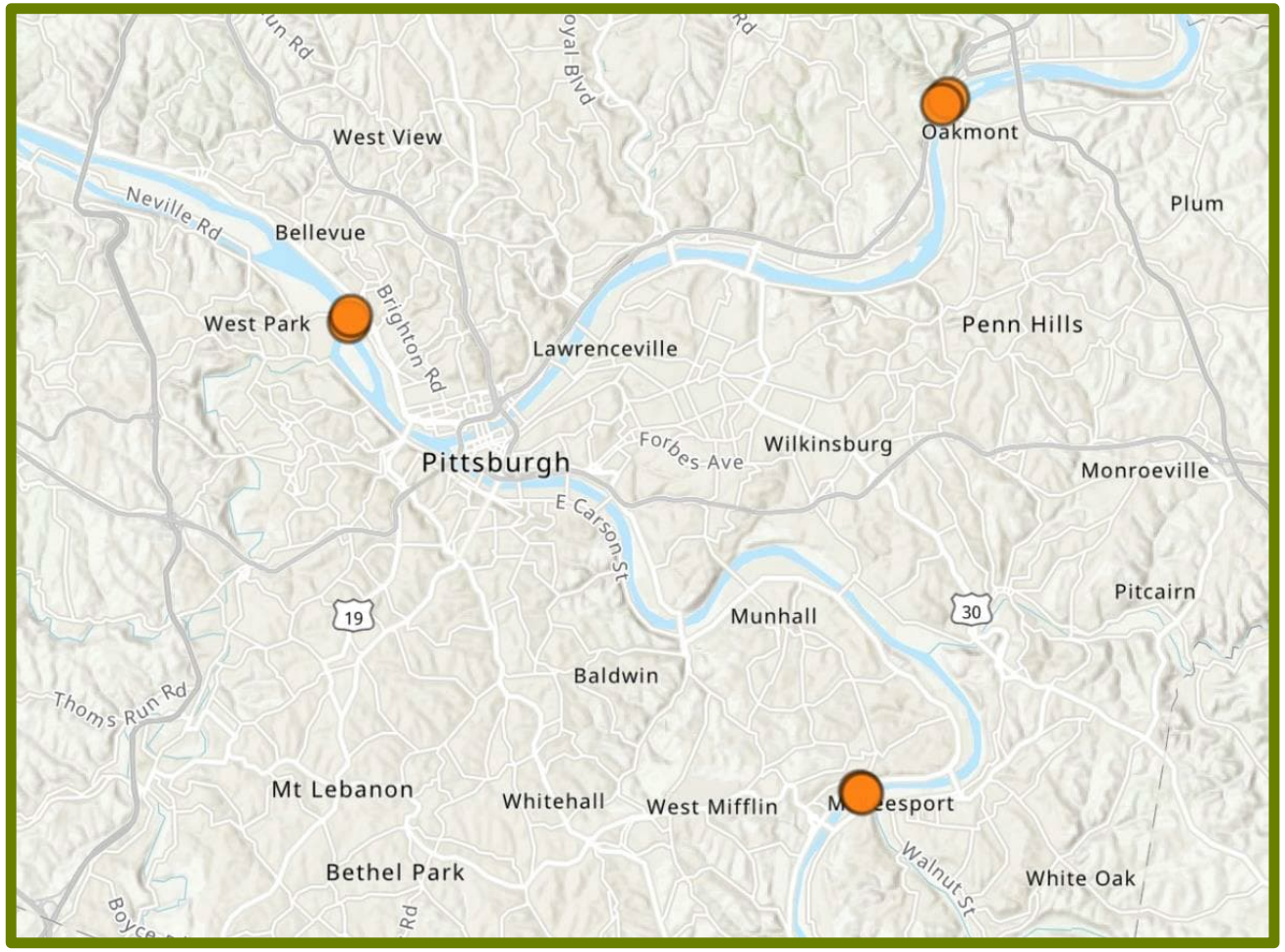
PFAS Research Project



- Testing for PFAS Contamination from Wastewater Effluent in Pittsburgh’s Three Rivers

Sample Sites

River	Wastewater Treatment Plant
Allegheny River	Allegheny Valley Joint Sewage Authority (AVJSA)
Monongahela River	McKeesport Wastewater Treatment Plant (McKeesport)
Ohio River	Allegheny County Sanitary Authority (ALCOSAN)



Methods

For each site:

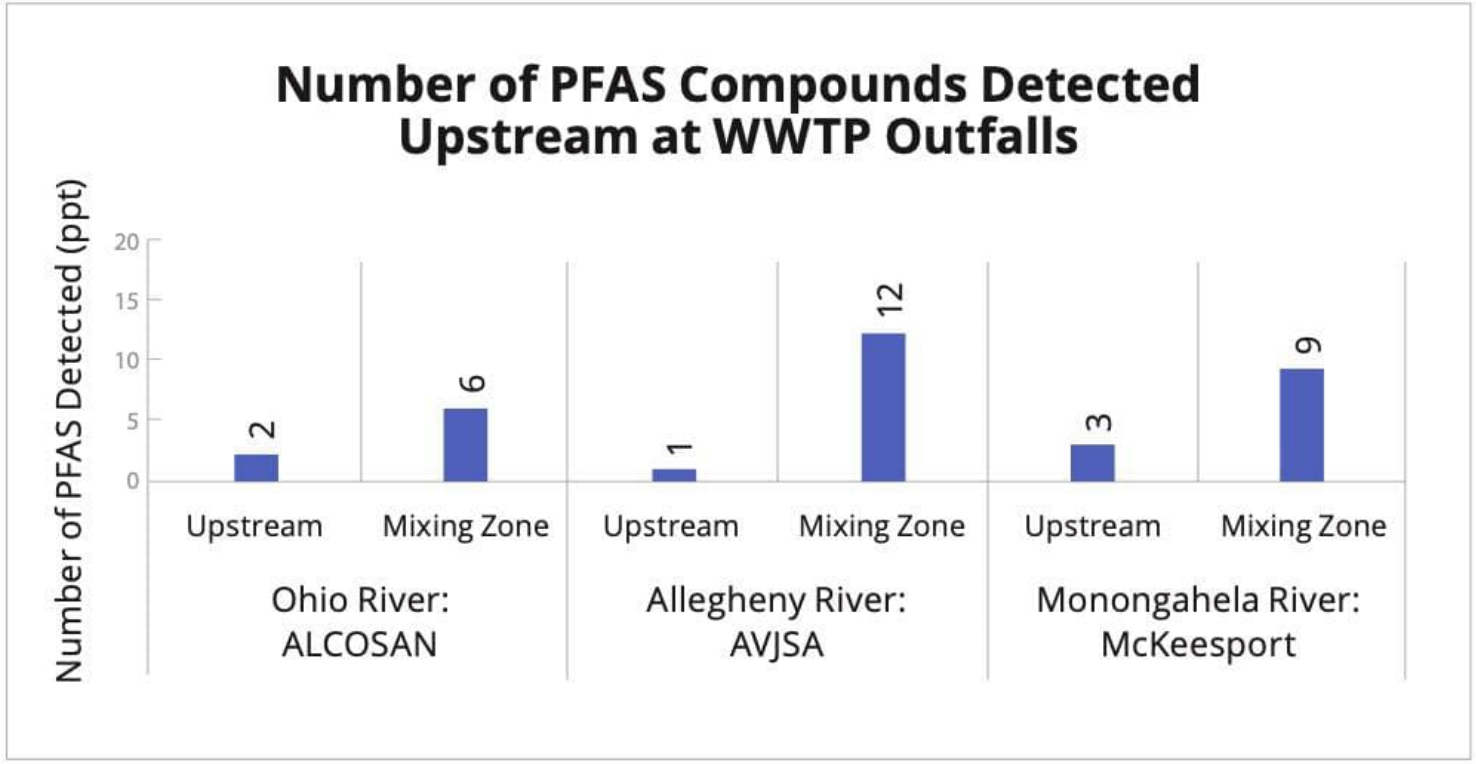
1. Upstream sample (approx. 15m upstream)
2. Mixing zone sample (where outfall combines with the river)

Procedure:

1. Many steps to mitigate risk of outside contamination
2. Collect sample with HDPE bottle below surface interface
3. Pour into Cyclopure test kit after returning to shore and wait for the sample to filter through DEXSORB pad for PFAS extraction
4. QA/QC: Field Blank and duplicate used to validate results

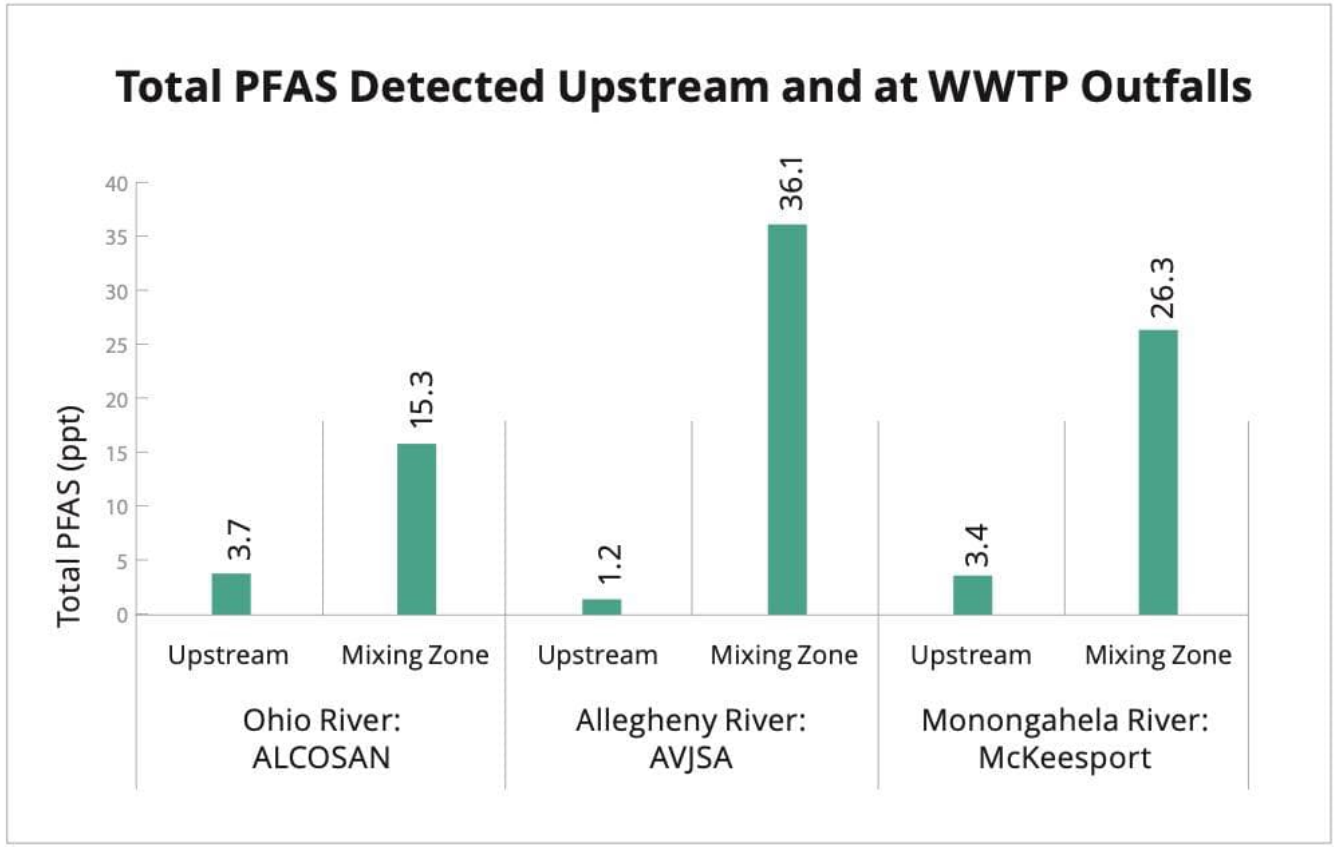
Overall Findings

Results: Stark increases in the number of PFAS detected from the upstream sample to the mixing zone collection.



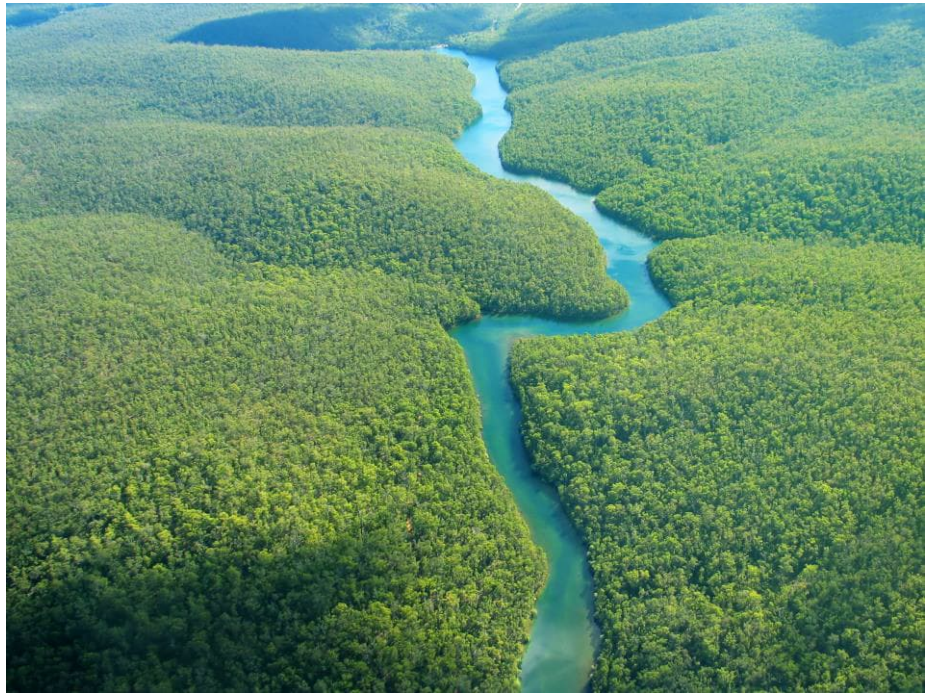
Overall Findings

Results: Stark increases in Total PFAS (in parts per trillion) from the upstream sample to the mixing zone collection.



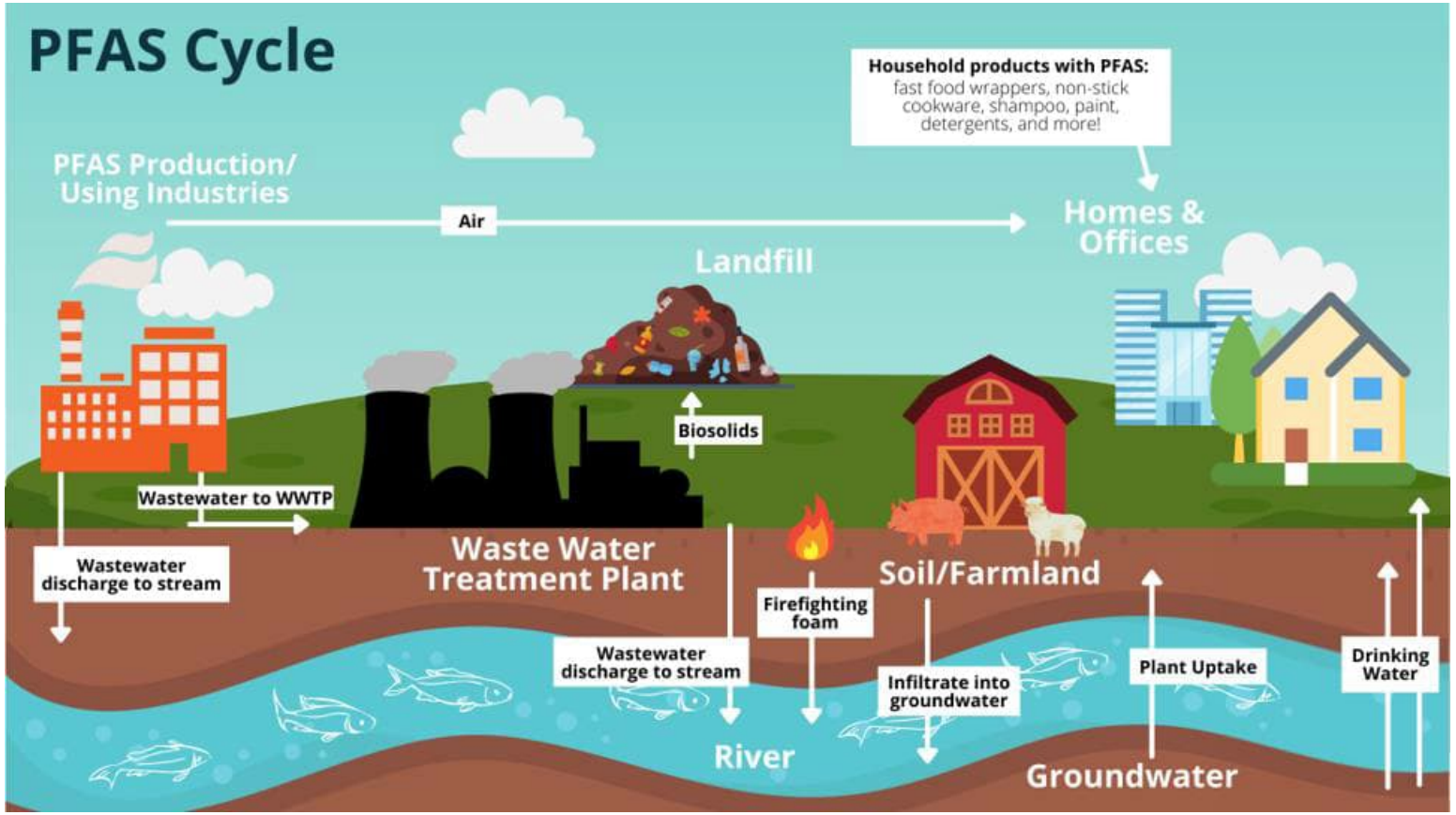
Summary

- Stark increases in the number and total PFAS detected in mixing zone compared to upstream
- Two exceedances of the drinking water MCL
- 15 PFAS compounds detected total
- **What it means:**
  - Confirms that WWTPs are a major source of PFAS contamination locally
  - PA must take the initiative and act quickly to remove PFAS from our supply chain and environment



Putting our Findings into Perspective

- These are the results for only 3 out of 24 WWTPs identified in Allegheny County
- This is only one waste stream and does not account for the cumulative impact of waste from other waste streams, including industrial discharges, landfills, and land application of biosolids of PFAS.
- Many complex pathways for PFAS to get into the environment = pressing need for data



Policy Recommendations

Federal Policy

- Regulate PFAS as a class to avoid harmful substitutions
- Require WWTP monitoring to determine the sources of environmental PFAS contamination and to target response
- Invest in sustainable chemistry research to find safe alternatives to PFAS

State Policy

- Prohibit the sale and distribution of PFAS in consumer products in the state (food packaging, cosmetics and hygiene, building materials, and more)
- Require and publicly disclose the testing of WWTP influent and effluent to assess PFAS contamination

Consumer Recommendations

PFAS chemicals permeate our products and food, but there are some products that pose particularly higher hazards than others, and limiting these exposures can lower your hazard

Household products

- Avoid stain-resistant carpets, furniture, and fabrics.
- Avoid purchasing clothing that is stain-resistant or waterproof including anything identified as containing Scotchguard or Gore-Tex.

Cookware

- If a product is marketed as free of PFAS compounds – PFTE, PFOA, and PFOS-free – but it is nonstick there is a chance that it contains other PFAS chemicals.
- Use glass, stainless steel, or cast-iron cookware.

Food and Food Packaging

- Avoid eating wild-caught fish from areas known to be contaminated with PFAS.
- Avoid fast food packaging that is not confirmed PFAS-free.
- Limit consumption of pre-cooked and packaged foods as many commercially available food packaging could potentially contain PFAS. Instead, opt for fresh, unprocessed foods.
- Avoid microwave popcorn bags as these bags are typically coated in PFAS.

Drinking water

- Some drinking water filters may lower the levels of PFAS in your drinking water. Use reverse osmosis or carbon filtration systems that are NSF certified. For example, ZeroWater filters are NSF certified carbon filtration systems for point of use.

Personal care products

- Avoid any products labeled as containing PTFE or “fluoro” ingredients.
- Use databases like Environmental Working Group’s Skin-Deep to check for the safety of cosmetics and other products (Environmental Working Group, 2023).

Thank you!

To read the full report, please visit
https://womenforahealthyenvironment.org/policy/reports/

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