Finding Forever Chemical Sources in the Proverbial Haystack

Pinpointing Potential Sources of PFAS in the Potomac River Watershed

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Outline

1. State of PFAS regulation

2. Case Study: MWCOG Potential PFAS Source Inventory
    1. Background
    2. Applicable state law
    3. Inventory method overview
    4. Sample results
    5. Potential applications

3. Key takeaways

4. Useful resources

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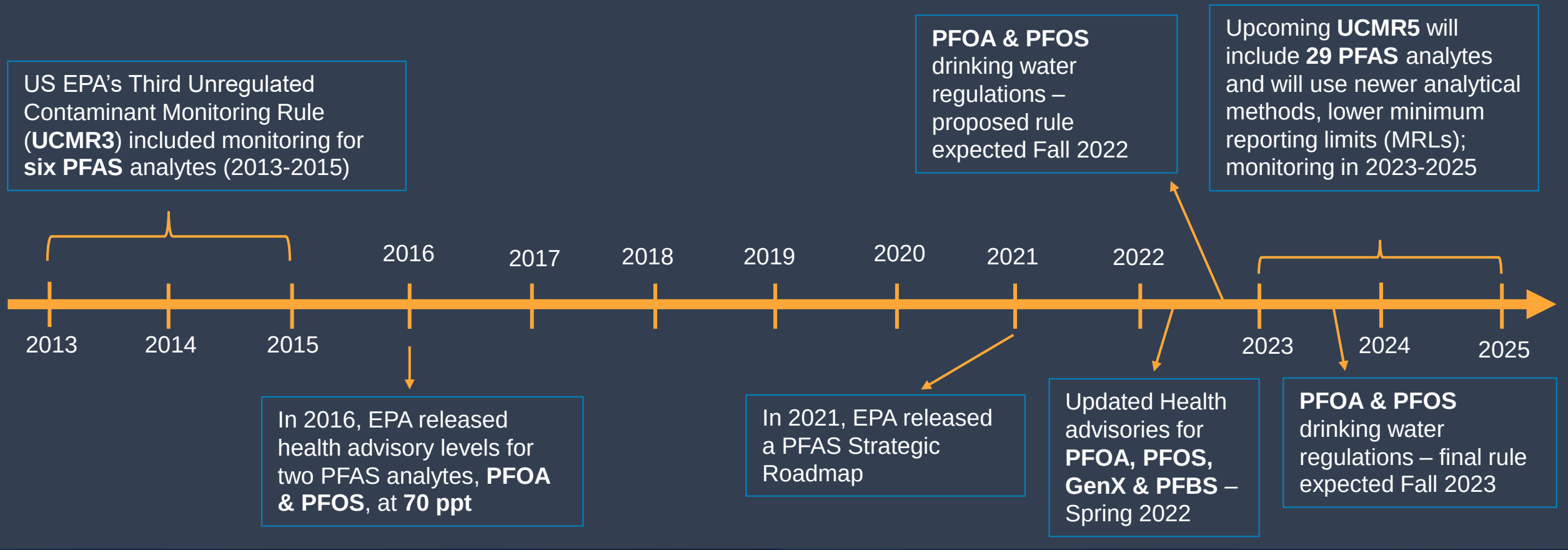
PFAS Background - Federal



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PFAS Drinking Water Regulations by State

State	Standards/Guidance
Alaska	Non-MCL standard for combined 70 ppt for PFOA, PFOS
California	Non-MCL standard for PFOA (10 ppt), PFOS (40 ppt)
Connecticut	Non-MCL standard for combined 70 ppt for PFOA, PFOS
Maine	Interim MCL of 20 ppt for PFOA, PFOS, PFHpA, PFHxS, PFNA, and PFDA combined until final MCL adopted
Massachusetts	MCL for 6 PFAS combined: PFOA, PFOS, PFHxS, PFNA, PFHpA, PFDA
Michigan	MCL for 7 PFAS: Gen X, PFBS, PFHxA, PFHxS, PFNA, PFOA, PFOS
Minnesota	Guidance for PFOS, PFHxS, PFBA, PFBS
New Hampshire	MCLs for PFNA, PFHxS, PFOA, PFOS
New Jersey	MCL for PFOA
New York	MCL for PFOS 10 ppt, PFOA 10 ppt
North Carolina	Health advisory for Gen X
Ohio	Non-MCL standards for Gen X, PFBS, PFHxS, PFNA Non-MCL standard of 70 ppt for combined PFOA and PFOS
Vermont	MCL for 5 PFAS combined: PFOA, PFOS, PFHpA, PFHxS, PFNA
Washington	Non-MCL standard pre-proposal for PFBS, PFHxS, PFOA, PFOS, PFNA

Metropolitan Washington Case Study

- Metropolitan Washington Council of Governments (COG) is an independent, nonprofit association that brings area water utilities together to address major regional issues in the District of Columbia, suburban Maryland, and Northern Virginia.
- Since 2015, utilities have worked together to develop a data system tool to house and update regional source water assessment data for the Potomac River in Maryland, Virginia, Pennsylvania and West Virginia.
- In 2020, COG and member utilities partnered with Corona to develop a preliminary inventory of potential PFAS sources.
- This was a first step in an ongoing effort to track, analyze, and assess the risk posed by potential sources of PFAS in the region.

State Action on PFAS: Maryland

Unregulated Contaminants Monitoring Rule (UCMR3)

- 42 water systems in MD and Washington, D.C. monitored for PFOA and PFOS between 2012 and 2015.

Maryland Dept. of Environment (MDE) Sampling

Phase 1 (September 2020 to February 2021)

- 137 water treatment plants sampled for 18+ PFAS
- 10% of systems sampled for 29 PFAS

Phase 2 (March - May 2021)

- 167 sites sampled for 18 PFAS
- PFOA+ PFOS detected in a little over 50% of aquifer samples

Phase 3 (August 2021 – Spring 2022)

- MDE monitoring additional CWS.
- Results expected to be published in late 2022/early 2023

State-Led Source Identification

- MDE has initiated a mapping effort to identify potential sources of PFAS in Maryland and prioritize water sources for PFAS sampling.

Regulatory Action

- MDE is currently using EPA health advisory level as its primary action level threshold until a Maximum Contaminant Level (MCL) is formally adopted by the EPA.
- MDE is considering proceeding ahead of the EPA in establishing an enforceable MCL for PFAS in drinking water.
- Plans to use PFAS-specific funding of Bipartisan Infrastructure Law to reduce exposure risk.

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State Action on PFAS: Virginia

General Assembly – Enacted in Jan 2020

House Bill 586

Convenes a State Workgroup

Workgroup must:

- Determine level of occurrence
- Identify possible sources
- Evaluate regulatory approaches
- Report its findings by Dec. 1st, 2021
- Workgroup may:
- Develop recommendations for maximum contaminant levels

House Bill 1257

Requires Board of Health to:

Adopt MCLs protective of public health for:

- PFOA, PFOS
- Other PFAS compounds
- Chromium-6
- 1,4 dioxane

Report MCL's established by VDH to Senate Com. by 10/1/21
Regulations to be effective 1/1/22

No funding provided by the State for these efforts; no comprehensive data on these contaminants

Method Overview

1. Define study area
2. Consider PFAS of interest
3. High-Risk Industry Sources
4. Data Discovery & Filtering
5. Manufacturing Facility Web Search

High-Risk Industry Sources

• Fire-fighting training facilities & other fire-fighting chemical use sites	• Biosolids production & application sites	• Carpet manufacturers
• Airports	• Chrome/metal plating facilities	• Non-stick coating manufacturers
• Military facilities, especially Dept. of Defense	• Polymer production and dyeing facilities	• Outdoor & high-performance fabric & clothing manufacturers
• Incinerators (areas downwind)	• Paper coating manufacturers	• Food contact paper production facilities
• Major wastewater discharges	• Landfills	• Dry cleaners

Key Data Resources

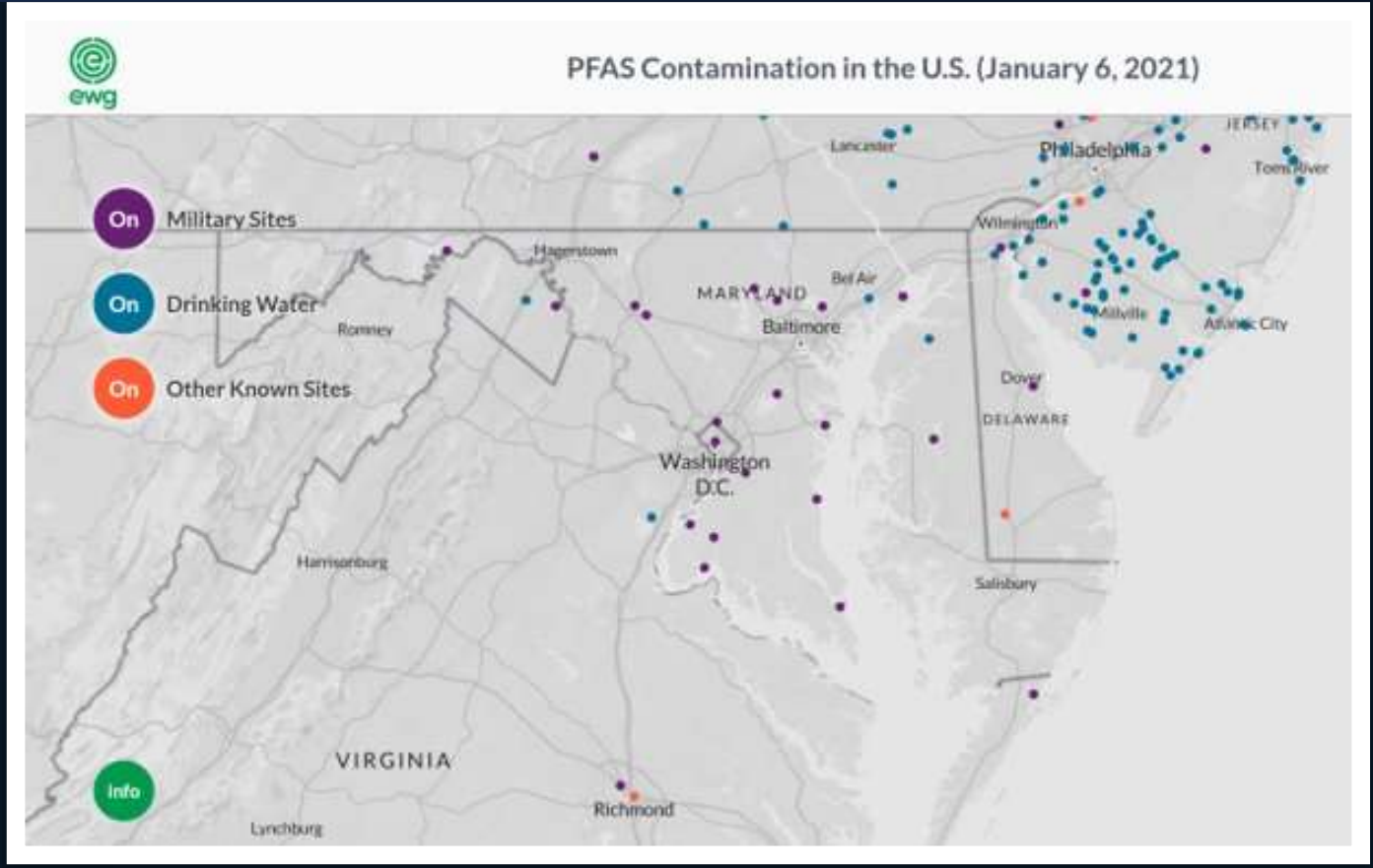
1. Federal Sources
    a. Enforcement and Compliance History Online (ECHO) database (US EPA)
    b. Fire stations and training sites (HIFLD)
    c. Airports (FAA)
    d. Military facilities (HIFLD)
    e. Emergency Planning and Community Right to Know Act (Tier II) data,
    f. Toxics Release Inventory data,
    g. Toxics Substances Control Act data,
    h. UCMR
2. State Data Sources
    a. E.g., wastewater and biosolids, landfills, manufacturers (various types), dry cleaners

Key Data Resources

3. Specialized Data Sources
   a. State PFAS assessments

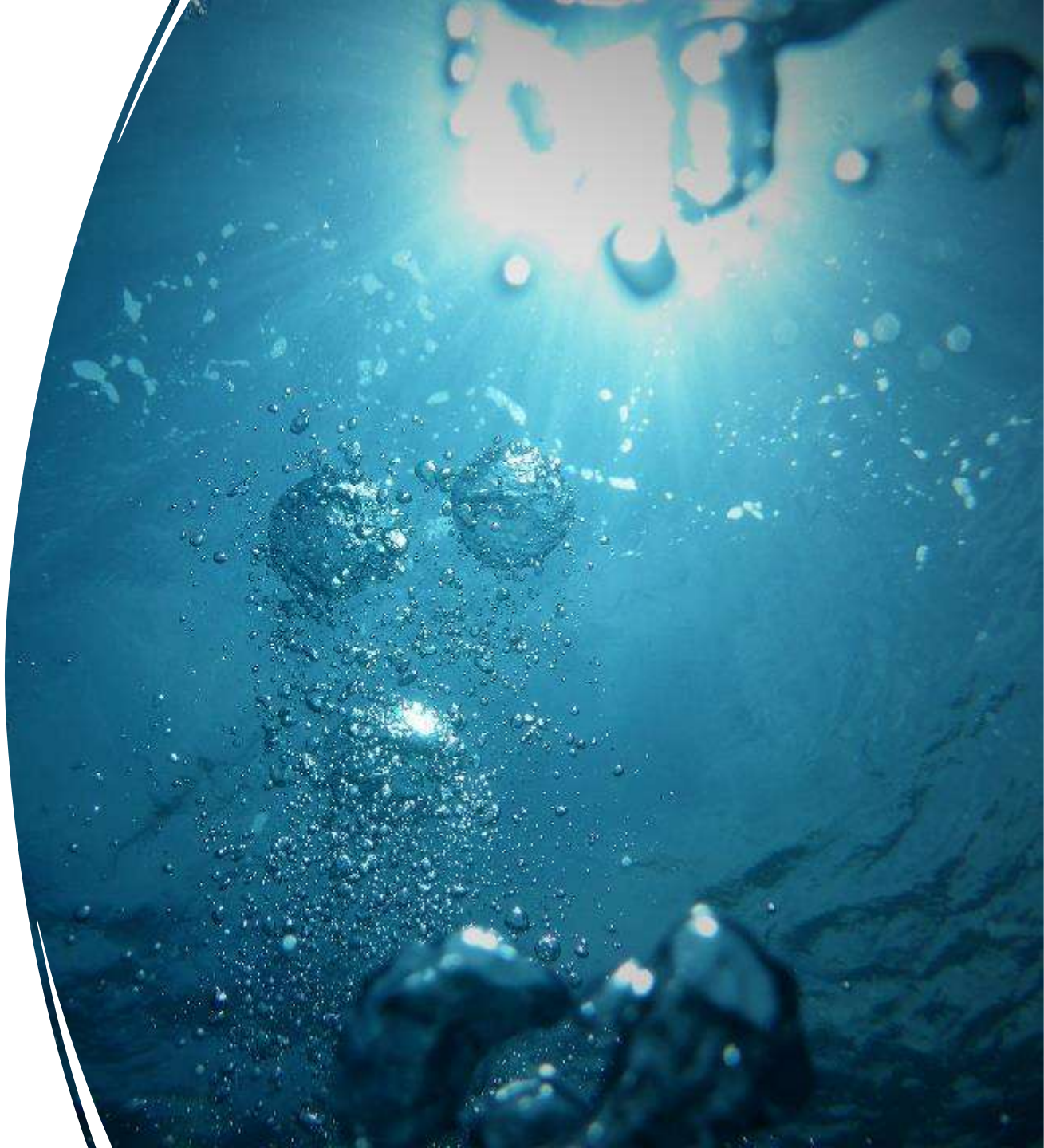
      or surveys

   a. Environmental Working Group PFAS Contamination Site Tracker



Data Filtering Methods

1. Using provided fields
    a. Examples: Facility Type, Onsite Contaminants, Discharge Volume
2. By NAICS/SIC codes
3. Manual
4. No filter (all data relevant)
5. No filter (insufficient information)



Indirect Sources of PFAS

Types:

1. Wastewater facilities
2. Waste handlers (e.g. landfills, incinerators)
3. Biosolids application sites
4. Contaminated sites
5. Contaminated groundwater
6. Drycleaners

- Identifying indirect sources will benefit source water protection planning
- Water community members that conduct PFAS source inventories may be reluctant to label local wastewater facilities as "sources."

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Direct Search for Known Manufacturers

Searched primarily for manufacturing locations belonging to the following companies:

Dupont	3M	Daikin	Ciba
Chemours	Asahi Kasei	Sabic	Clariant
Solvay and Solvay Solexis	St. Gobain	Arkema	Dyneon

Step 1: Google Search

1. **By company name and major brand names**
2. **By keyword:**
   - Coatings
   - Plating
   - Chemical
   - Foams

Direct Search for Known Manufacturers

Step 2: Review State Databases

- **Look for searchable state-owned databases that combine information from multiple programs (e.g., EPA FRS Database)**

Step 3: Check company websites for manufacturing locations

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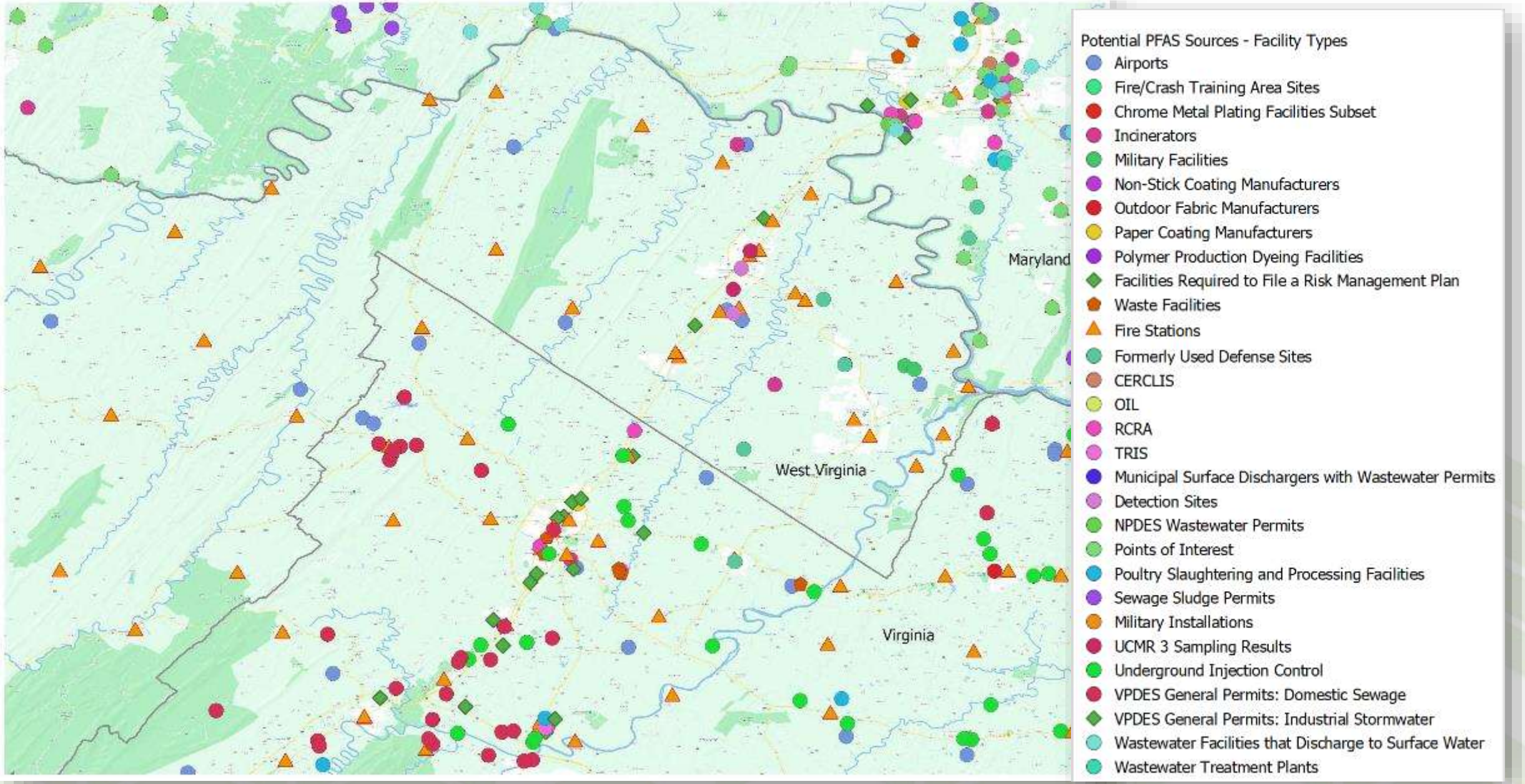
Sample Results: Potomac River Area



New Federal Data Resources from USEPA

Ambient Environmental Sampling for PFAS
Drinking Water Testing (UCMR) PFAS Dataset
Drinking Water Testing (State) PFAS Dataset (Voluntary state reporting of PFAS sampling data)
TSCA Chemical Data Reporting (CDR) PFAS Dataset
Superfund Sites with PFAS Detections Dataset
PFAS Discharge Monitoring dataset
Federal Sites with Known or Expected Detections of PFAS Dataset
ECHO PFAS Industry Sectors Dataset (aka Facilities that May be Handling PFAS)
PFAS Transfers dataset
PFAS Spills dataset (Subset of National Response Center Database)
Toxics Release Inventory (TRI) On-site Releases PFAS dataset
Toxics Release Inventory (TRI) Off-site Transfers PFAS dataset
Toxics Release Inventory (TRI) Total Waste Managed PFAS dataset

Source: https://echo.epa.gov/tools/data-downloads/national-pfas-datasets

Potential Applications

- Support data-driven approach to managing source water threats
- Focus discussions with facility managers and regulators
- Regional data sharing
- Identify potential sampling locations
- Evaluate treatment options
- Identify potential investments that might be needed at sources in the watershed
- Estimate potential impact on the utility’s budget and rates from possible sampling, treatment or mitigation approaches

Key Takeaways

- State & federal PFAS regulations are evolving rapidly
- Many states are doing sampling or encouraging water systems to sample
  - States requiring notifications when PFAS detected
  - Implications for public perception, communications
- Some states are also requiring wastewater systems to identify potential or known sources of PFAS.
- New data are becoming available rapidly (both sampling and source data)
- A comprehensive PFAS source inventory is a useful tool for regulatory, source water threat management, public relations, and cost-recovery purposes as well as designing monitoring programs to help isolate sources
- Identifying industry sources from raw data meant for other purposes is detailed and time-consuming, but possible

Resources

- AWWA Source Water Evaluation Guide for PFAS *(login required)*
- ASDWA State Contaminants of Emerging Concern (CEC) Rule Development and Management Strategies Toolkit
- EPA's PFAS Reporting Resources webpage
- Echo.epa.gov/tools/data-downloads/national-pfas-datasets
- AWWA Overview of Regulatory Activity (June 8, 2020)
- Corona Environmental Consulting Jan 2020 PFAS webinar

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