Department of
Environment &
Conservation

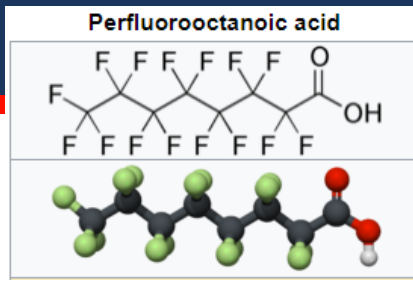
PFAS Updates and DWR Sampling Initiative

Jeremy Hooper | December 2, 2020

Presentation Overview

- **Quick Reminder:**
  - What is PFAS?
  - Where is PFAS?
  - PFAS and Human Health
- **What is EPA Doing?**
- **TDEC Activities to Date**
  - Agency-Wide PFAS Working Group
  - PFAS in Tennessee: What we know
- **TDEC Future Activities**
  - DWR Sampling Initiative
  - Landfill / WWTP PFAS Working Group

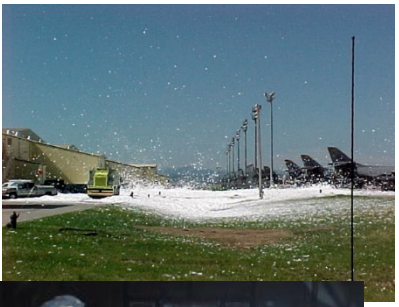
What are PFAS?



- Per- and Polyfluoroalkyl Substances (PFAS)

- Complex family of more than 4,000 manmade fluorinated organic chemicals (Wang et al. 2017) that have been produced since the early -20th century, although not all of these may be currently in use or production.

- PFOA and PFOS



Fire testing in AFFF in a confined space.

Environmental Contamination Pathways

Air

Water

Land

Manufacturing – Use - Disposal

Research on Potential Health Effects

- PFOA and PFOS primary focus
- Focus on oral (ingestion) exposure
- Suggests PFAS above “certain levels” may increase risk of adverse health effects
- Long-chain generally considered greater risk (Ritter 2010, Eschauzier et al. 2012)

****It is important to note that entities such as the EPA, ATSDR, and International Agency for Research on Cancer believe additional research is needed to further clarify the relationship between PFAS and human health risks****

****Most research on health impacts to date has been conducted via animal study****

What is EPA Doing?

- **2016**: Health Advisory Level (PFOA and PFOA = 70 ppt)
- **Feb. 2019**: Released PFAS Action Plan
- **Since then**:
  - Preliminary determination to regulate PFOA and PFOS in drinking water
  - Issued rule that adds 172 PFAS to list of chemicals covered by TRI
  - Recommendations for Addressing Groundwater Contaminated with PFOA and PFOS
  - Guidance on Destruction and Disposal of PFAS and Materials Containing PFAS to OMB
  - Issued a rule to ensure that new uses of certain PFAS chemicals in surface coatings cannot be manufactured or imported into the U.S. without notification under TSCA
  - Proposed inclusion of monitoring for additional PFAS in Unregulated Contaminant Monitoring Rule (UCMR) 5

What is TN doing?

TDEC has established a multi-agency, multidisciplinary work group

TDEC Divisions:

- Solid Waste Management
- Water
- Air
- Policy & Sustainable Practices
- Remediation
- OGC

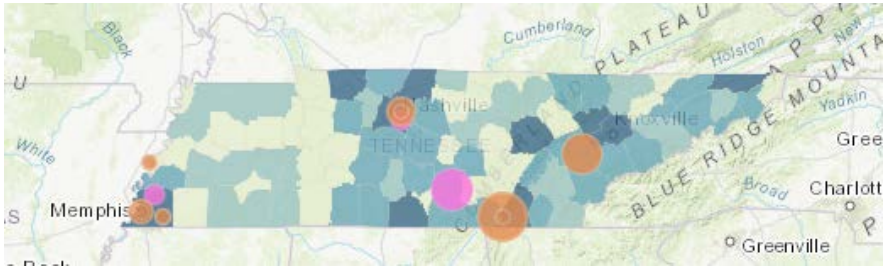
Other TN Agencies:

- Health

Also established External Working Group

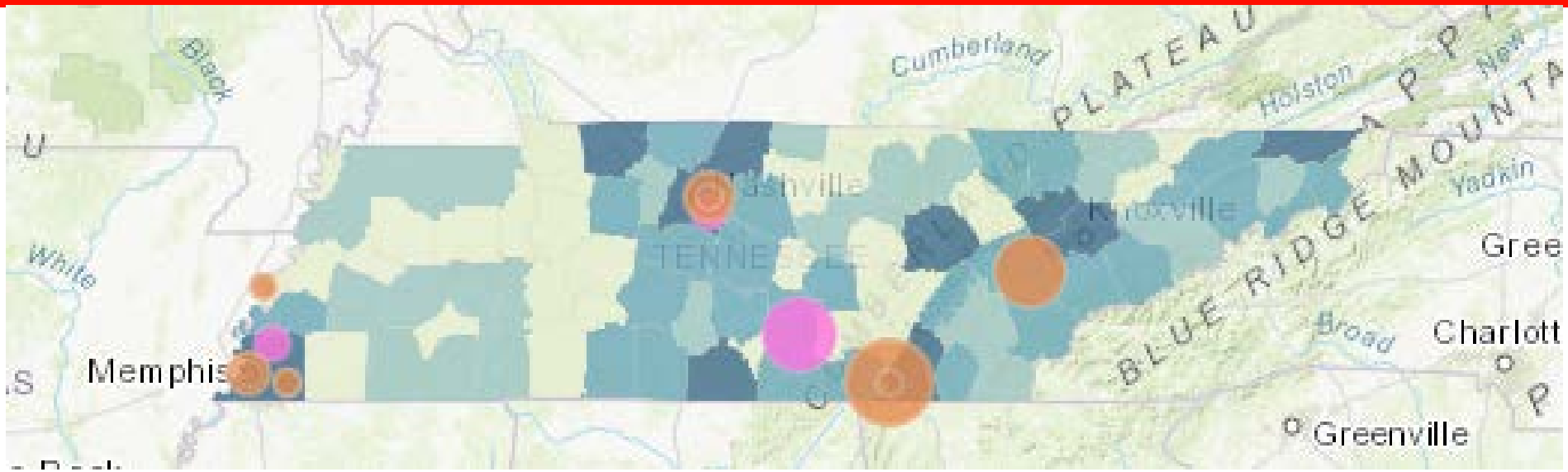
PFAS in TN

- **UCMR3 (2013-2015)**
  - 500 finished DW samples , 136 PWS
  - 2 PWS with detections, below EPA HA levels



- **Fish Tissue Sampling 2008-2009**
  - Detections of PFAS in fish tissue in the Tennessee
  - Cumberland, Wolf, Nolichucky, Duck, French Broad and Mississippi Rivers

- **DOD Groundwater Sampling**
  - Nashville Air National Guard (Nashville International Airport) -Nashville
  - Arnold Air Force Base -Tullahoma
  - Air National Guard – McGhee Tyson Airport - Knoxville
  - NSA Mid-South - Millington
  - PFAS detections at all locations



Legend

2008-2009 NRSA Fish Data Tennessee

Amount

> 70

Department of Defense Sites

Locations w/ Samples > EPA Health Advisory Level

> 8

UCMR3 Sampling Data by County

Sampling Events

> 100 To 220

TDEC PFAS Sampling Initiative

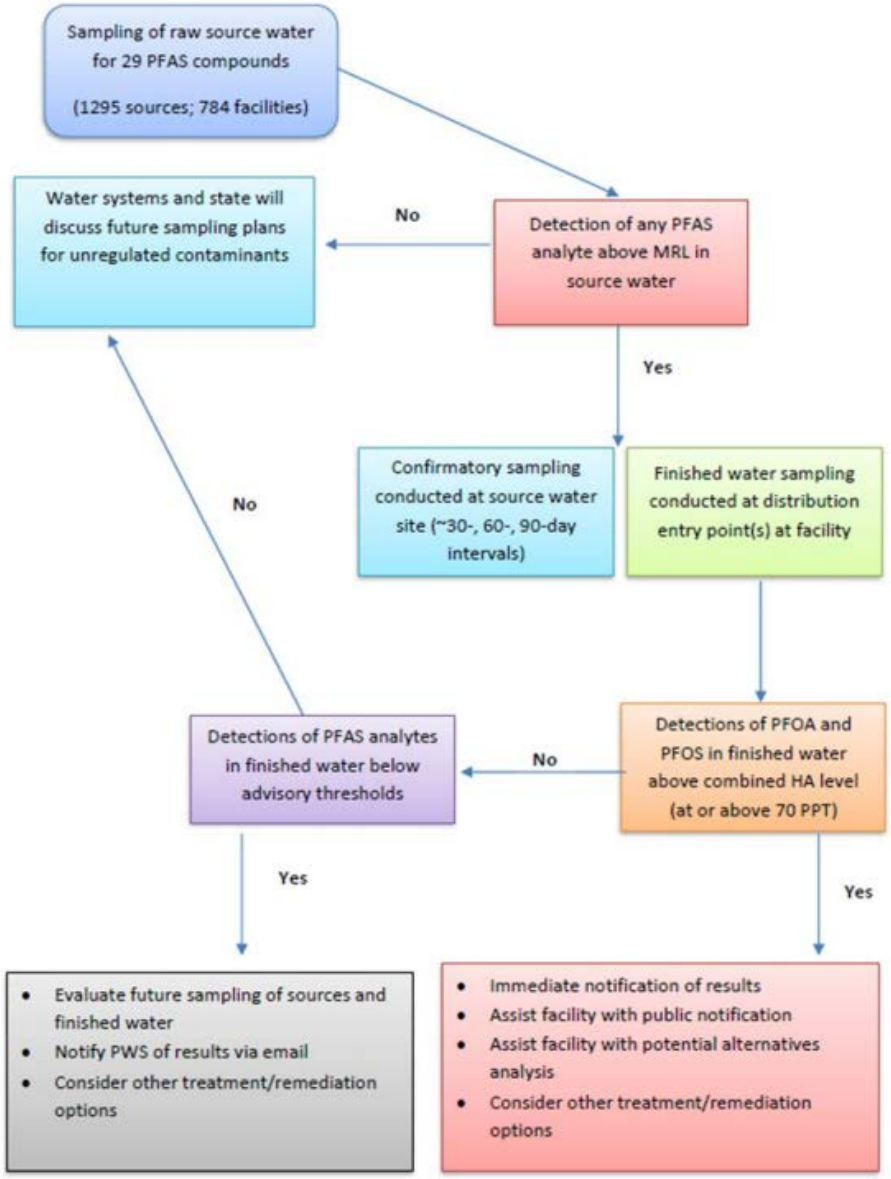
- *The Tennessee Department of Environment and Conservation (TDEC) will initiate a statewide effort to sample all public drinking water system sources for 29 PFAS*

- **Why do it?**
  - Human health concerns; EPA Health Advisory Level
  - Additional sampling presents more comprehensive picture of if and where PFAS contamination occurs
  - Results will help TDEC and regulated community understand how potential federal PFAS regulations may affect Tennessee

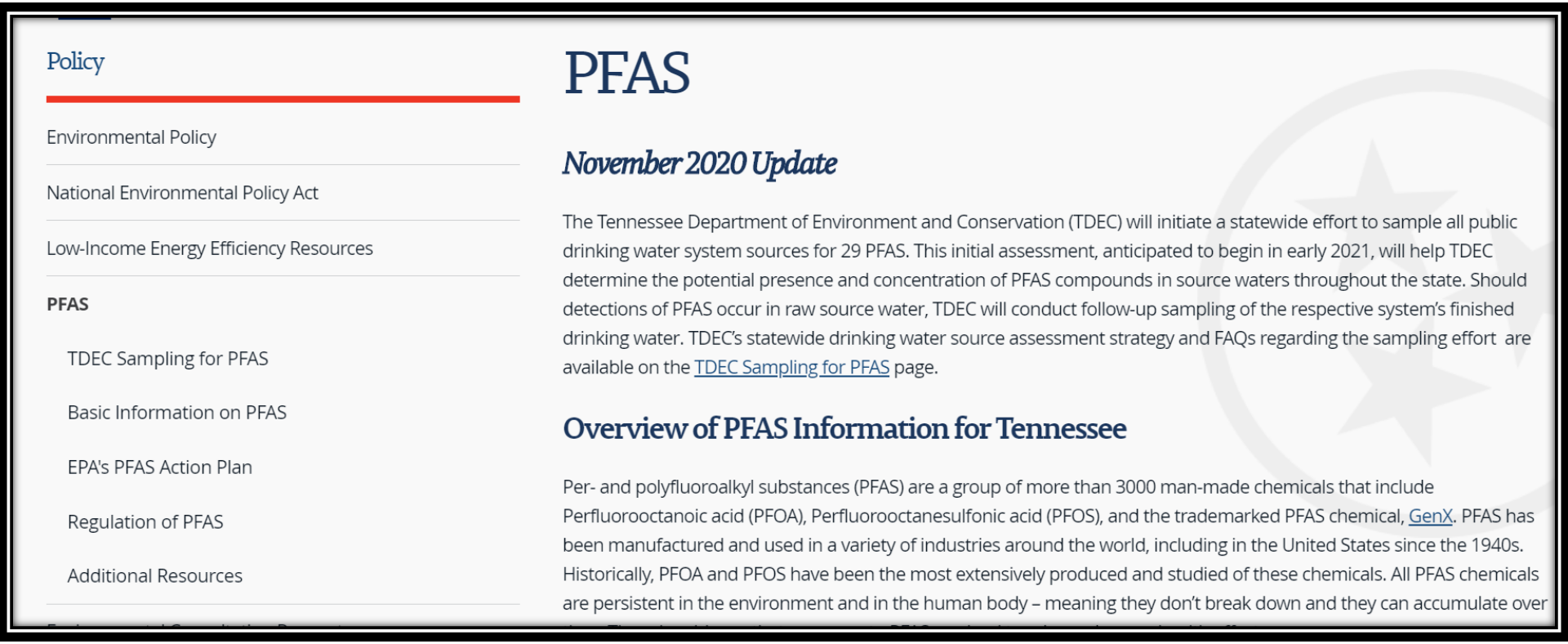
DWR Sampling in Tennessee

- **Scope:**
  - Statewide
  - Conducted by Division of Water Resources (DWR) with analytical support from University of Tennessee
  - Anticipated to occur through 2021
- **Support and Final Report Development**
  - Office of Policy and Planning (OSPS) and DSWM (i.e., Jeremy Hooper)
- **Funding**
  - Drinking Water State Revolving Fund Set-Asides
  - EPA grant

Source Water Sampling Decision Tree



Website



Policy

- Environmental Policy
- National Environmental Policy Act
- Low-Income Energy Efficiency Resources
- **PFAS**
  - TDEC Sampling for PFAS
  - Basic Information on PFAS
  - EPA's PFAS Action Plan
  - Regulation of PFAS
  - Additional Resources

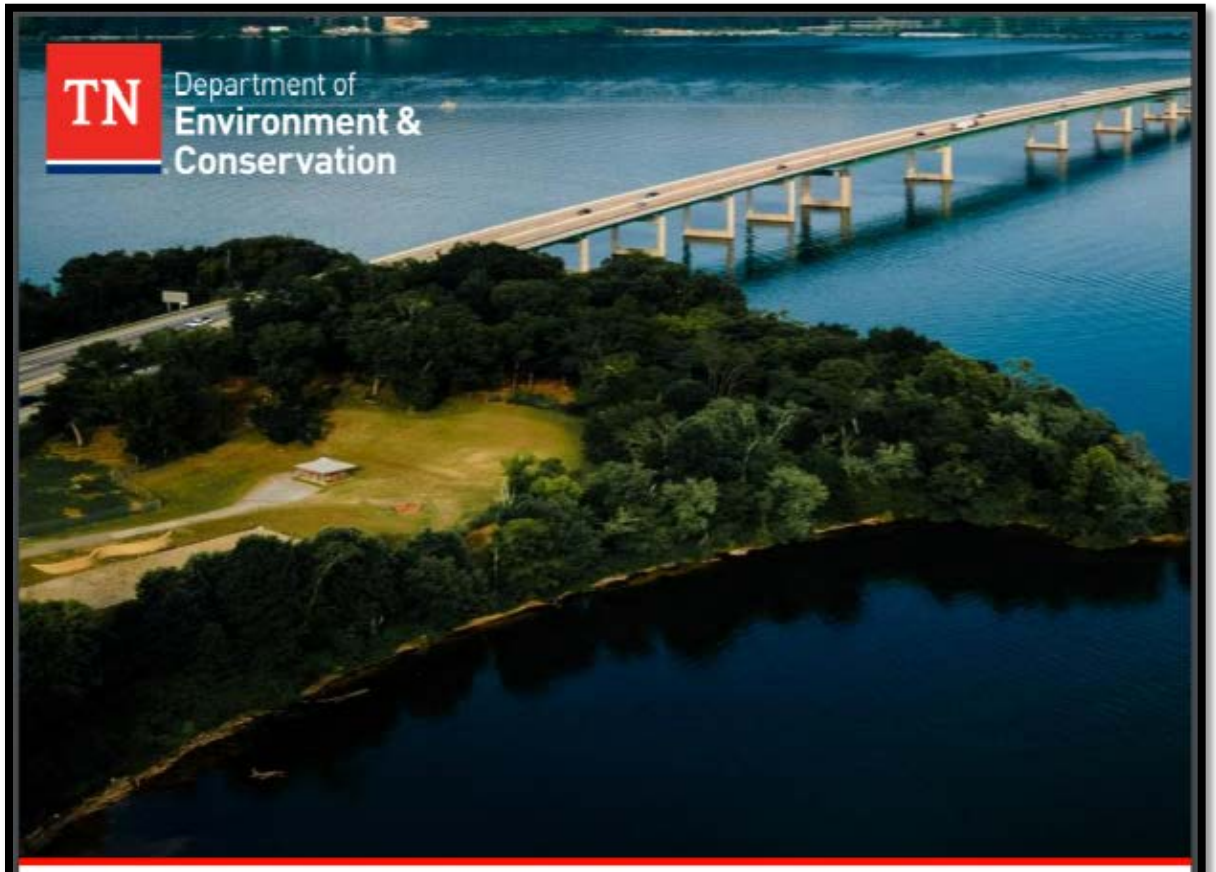
PFAS

November 2020 Update

The Tennessee Department of Environment and Conservation (TDEC) will initiate a statewide effort to sample all public drinking water system sources for 29 PFAS. This initial assessment, anticipated to begin in early 2021, will help TDEC determine the potential presence and concentration of PFAS compounds in source waters throughout the state. Should detections of PFAS occur in raw source water, TDEC will conduct follow-up sampling of the respective system's finished drinking water. TDEC's statewide drinking water source assessment strategy and FAQs regarding the sampling effort are available on the TDEC Sampling for PFAS page.

Overview of PFAS Information for Tennessee

Per- and polyfluoroalkyl substances (PFAS) are a group of more than 3000 man-made chemicals that include Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS), and the trademarked PFAS chemical, GenX. PFAS has been manufactured and used in a variety of industries around the world, including in the United States since the 1940s. Historically, PFOA and PFOS have been the most extensively produced and studied of these chemicals. All PFAS chemicals are persistent in the environment and in the human body – meaning they don't break down and they can accumulate over



TDEC's Strategy to Assess the Impact of Per- and Polyfluoroalkyl Compounds on Public Drinking Water Sources in Tennessee

Tennessee Department of Environment & Conservation | Fall 2020

Frequently Asked Questions

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What are PFAS?

Per- and polyfluoroalkyl (PFAS) chemicals are a family of manmade chemicals found in many products used by consumers and industry every day. PFAS have been used in a variety of goods such as food packaging, stain-resistant fabric, personal care products, nonstick cookware, and water-resistant clothing. PFAS chemicals have also been widely used in firefighting foams at military installations, fire training facilities, and some airfields.

What are PFOA and PFOS?

Perfluorooctanoic acid (PFOA) and Perfluorooctanesulfonic acid (PFOS) are the two PFAS that have been produced in the largest amounts in the U.S. and that have been the most studied from a human health perspective. Production of PFOS and PFOA in the U.S. began in the 1940s and was phased out in 2002 and 2006, respectively.

Where are PFAS found in the environment?

While PFAS do not occur naturally, they may be found throughout the environment due to their persistence and long history of use. PFAS can be found in the soil, water, or air. PFAS have also been found in wildlife and detected in the blood of people through public health studies.

Landfill / WWTP Working Group

- **First meeting**
  - December 2020
- **Members:**
  - TDEC – DSWM , DWR, Commissioners Office, OGC
  - Public and Private Landfills
  - Utility Services
  - University of Tennessee
- **Forum for Discussion:**
  - Technical
  - Environmental
  - Legal
  - Economic
  - Others

Sources

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Thank you!

Questions?