



# What is TDEC doing about PFAS?

TDEC's Approach to Understanding PFAS in Tennessee

Jeremy Hooper and Matt Taylor | June 20, 2019

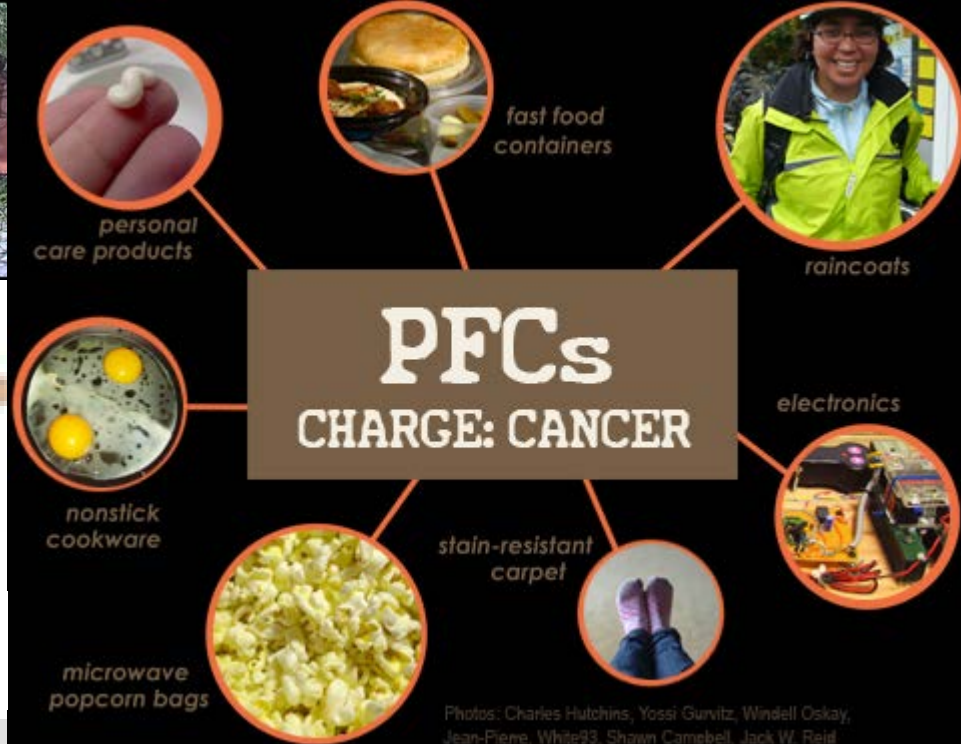
# Presentation Overview

- PFAS Introduction
- Where is PFAS?
- UCMR3
- Understanding PFAS Prevalence in TN
- TDEC Action
- TDEC Authority
- EPA Action Plan
- Knowns and Unknowns

# Where is PFAS?



Fire testing in AFFF in a confined space.



Photos: Charles Hutchins, Yossi Gurvitz, Windell Oskay, Jean-Pierre, White93, Shawn Campbell, Jack W. Reid

# Environmental Contamination Pathways

Air



Water



Land



Manufacturing – Use - Disposal



# Unregulated Contaminant Monitoring Rule 3

## UCMR 3 2013-2015

Monitoring included 6 of the 3000 PFAS Compounds

PFAS	Minimum Reporting level ng/L (ppt)
Perfluoroheptanoic acid (PFHpA, C7)	10
Perfluorooctanoic acid (PFOA, C8)	20
Perfluorononanoic acid (PFNA, C9)	20
Perfluorobutanesulfonic acid (PFBS)	90
Perfluorohexanesulfonic acid (PFHxS)	30
Perfluorooctanesulfonic acid (PFOS)	40

# Unregulated Contaminant Monitoring Rule 3

## UCMR3 2013-2015 in Tennessee

- 144 TN public water systems (total 470 ~ 30.6%) monitored for PFAs during this period
- 110 Surface Water Systems collected samples quarterly from each entry point for 1 year
- 23 Ground Water systems collected samples biannually from each entry point for 1 year
- 11 Groundwater Under Direct Influence (GWUDI) systems collected samples quarterly from each entry point for 1 year
- A total of 652 samples were collected and analyzed for the 6 PFAS contaminants

# PFAS Sample Results

# Confirmed PFAS Observations in TN



PFAS has been identified at some point in time at five locations in the state.

- Locations where PFAS observed in finished drinking water were well below the Health Advisory Level. Follow up sampling confirmed that PFAS levels fell below detection levels.
- Department of Defense has initiated investigation efforts.

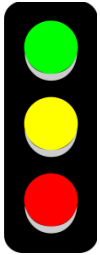


# Understanding PFAS Prevalence in TN

- Identification of industries likely to encounter PFAS in operations by region
  - Assistance from field office staff
  - Potentially using or manufacturing PFAS chemicals
  - Discussion with site PMs
  - Research of company and its products
- **Green-** Low likelihood/probability of finding PFAS related chemicals in a specific industry
  - Example: Dry cleaning facilities
- **Yellow-** Medium likelihood/probability of finding PFAS related chemicals in a specific industry
  - Example: Some landfills
- **Red-** High likelihood/probability of finding PFAS related chemicals in a specific industry
  - Example: Air National Guard facilities

# Screening Results

- 268 total sites were identified and evaluated



**114 Low probability sites**

**101 Medium probability sites**

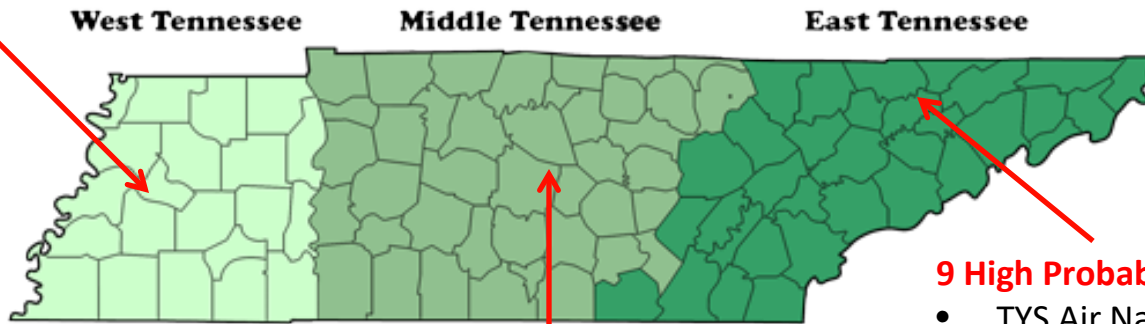
**53 High probability sites**

- Top high probability sites included:
  - Landfills
  - Fire fighting schools
  - Military bases
  - Airports
  - Chromium electroplating industries

# Screening Results (cont'd)

## 22 High Probability Sites

- Naval Support Activity Mid-South Millington
- Ammunition producing facilities
- Pyrotechnics manufacturers
- Fire department training centers



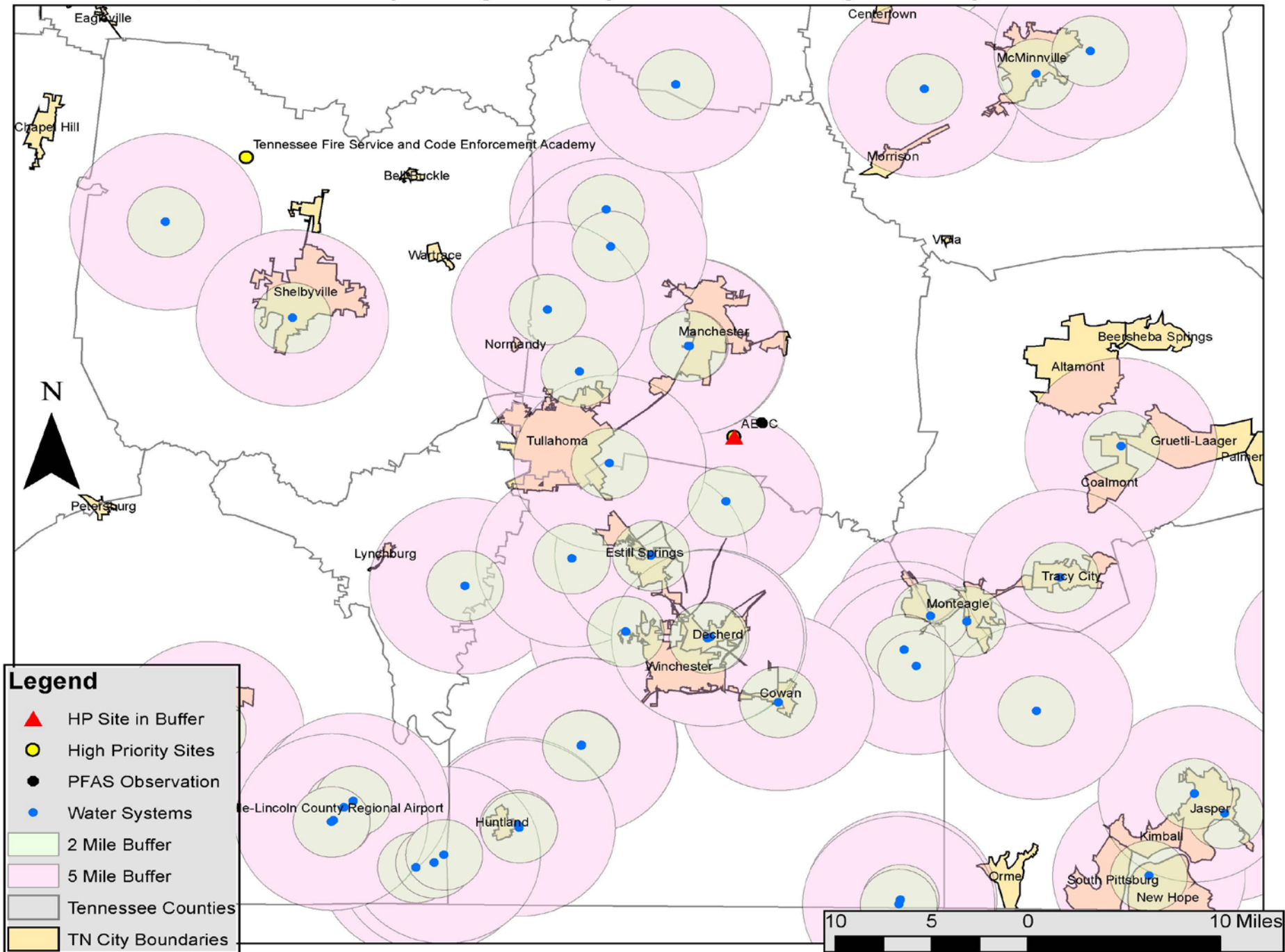
## 9 High Probability Sites

- TYS Air National Guard
- Military and fire rescue operations manufacturer
- Plane crash site

## 20 High Probability Sites

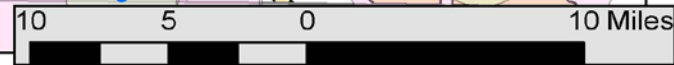
- Fire service academy
- Arnold Air Force Base/Engineering Development Complex
- Berry Field/Air National Guard
- Landfill

# Spatial Proximity of High Priority Sites to Drinking Water Systems



**Legend**

- ▲ HP Site in Buffer
- High Priority Sites
- PFAS Observation
- Water Systems
- 2 Mile Buffer
- 5 Mile Buffer
- Tennessee Counties
- TN City Boundaries



# What is TN doing?

**TDEC has established an agency-wide, multidisciplinary work group and offers the following recommendations for next steps.**

- Screening of sites with high probability to encounter PFAS
- Research sampling protocols appropriate for each media
  - NPDES discharges
  - Leachate
  - Groundwater
  - Drinking water intakes and wells
- Remain apprised of latest PFAS-related research, Health Advisory Levels & Risk Assessment Levels
- Maintain PFAS webpages to help get information to the public
- Participate in ITRC PFASs document review
- Continue monitoring EPA, ITRC, and state actions outside of TN
- Explore potential actions for areas that pose a threat to human health and environment
- Potential future external advisory group



# TN Regulatory Authorities Relating to PFAS

TDEC charged with protecting quality of water, soil, and air of Tennessee. Relevant statutes and rules:

- ✓ TN Safe Drinking Water Act relating to drinking water and associated rules
- ✓ TN Water Quality Control Act relating to surface and groundwater and associated rules
- ✓ Tennessee Solid Waste Disposal Act relating to disposal facilities and associated rules (e.g., Special Waste Rule)
- ✓ TN Air Quality Act relating to air pollution and associated rules

# What is EPA doing?

February 2019, EPA released the PFAS Action Plan which outlines steps the agency is taking to address PFAS and to protect public health.

According to EPA, the agency's Action Plan:

- Demonstrates the agency's critical national leadership by providing both short-term solutions and long-term strategies to address this important issue.
- Provides a multi-media, multi-program, national research, and risk communication plan to address this emerging environmental challenge.
- Responds to the extensive public input the agency has received over the past year during the PFAS National Leadership Summit, multiple community engagements, and through the public docket.

The Action Plan describes the broad actions the EPA has underway to address challenges with PFAS in the environment and identifies more short-term and long-term actions that are currently being implemented to understand and address PFAS. Short-term actions are generally taking place or expected to be completed within two years // long-term are greater than 2 years.

# What specific activities does Action Plan describe?

EPA included a number of activities under the Action Plan, including:

- Initiating steps to evaluate the need for a maximum contaminant level (MCL) for PFOA and PFOS.
- Toxicity and risk assessment related work.
- Interim cleanup recommendations to address groundwater contaminated with PFOA and/or PFOS to support stakeholders in their remediation efforts. (Comment period ended early June)
- The EPA has initiated the regulatory development process for listing PFOA/PFOS as CERCLA hazardous substances.
- Adding PFAS chemicals to the TRI list – Currently, no PFAS chemicals are included on the list of chemicals required to report to TRI; however, the EPA is considering whether to add PFAS chemicals. In considering listing, the EPA must determine whether data and information are available to fulfill the listing criteria and the extent and utility of the data that would be gathered. In addition, in considering if TRI will provide useful information to stakeholders, the EPA also will consider if those PFAS are still active in commerce. The process for listing includes notice and comment rulemaking to list PFAS chemicals for reporting prior to adding these chemicals to the TRI for annual reporting.

# TDEC PFAS Website

# Knowns and Unknowns

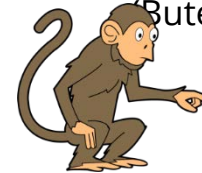
- Standard/Guidance?

- MCL, HA, SL, CL
- Potential DW Ranges  
(11 ppt - 667 ppt)

## What Study?



(Lau et al. 2006)



(Butenhoff et al. 2002)

- Uncertainty?

- LOAEL to NOAEL
- Sub-chronic to Chronic, Animal to Human

## Exposure Parameters?

Receptor, Ingestion rate, Body Weight  
Relative Source Contribution

- EPA Health Advisory Level for PFOA and PFOS (70 ppt)
- EPA interim proposed guidance for addressing groundwater contaminated with PFOA and PFOS above the 70 ppt level
- EPA PFAS action plan
- State action to establish thresholds for PFAS action: CA, CO, CT, MA, MI, MN, NH, NJ, NC, VT, and WA



# Questions?

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<https://www.tn.gov/environment/program-areas/opsp-policy-and-sustainable-practices/policy/pfas.html>