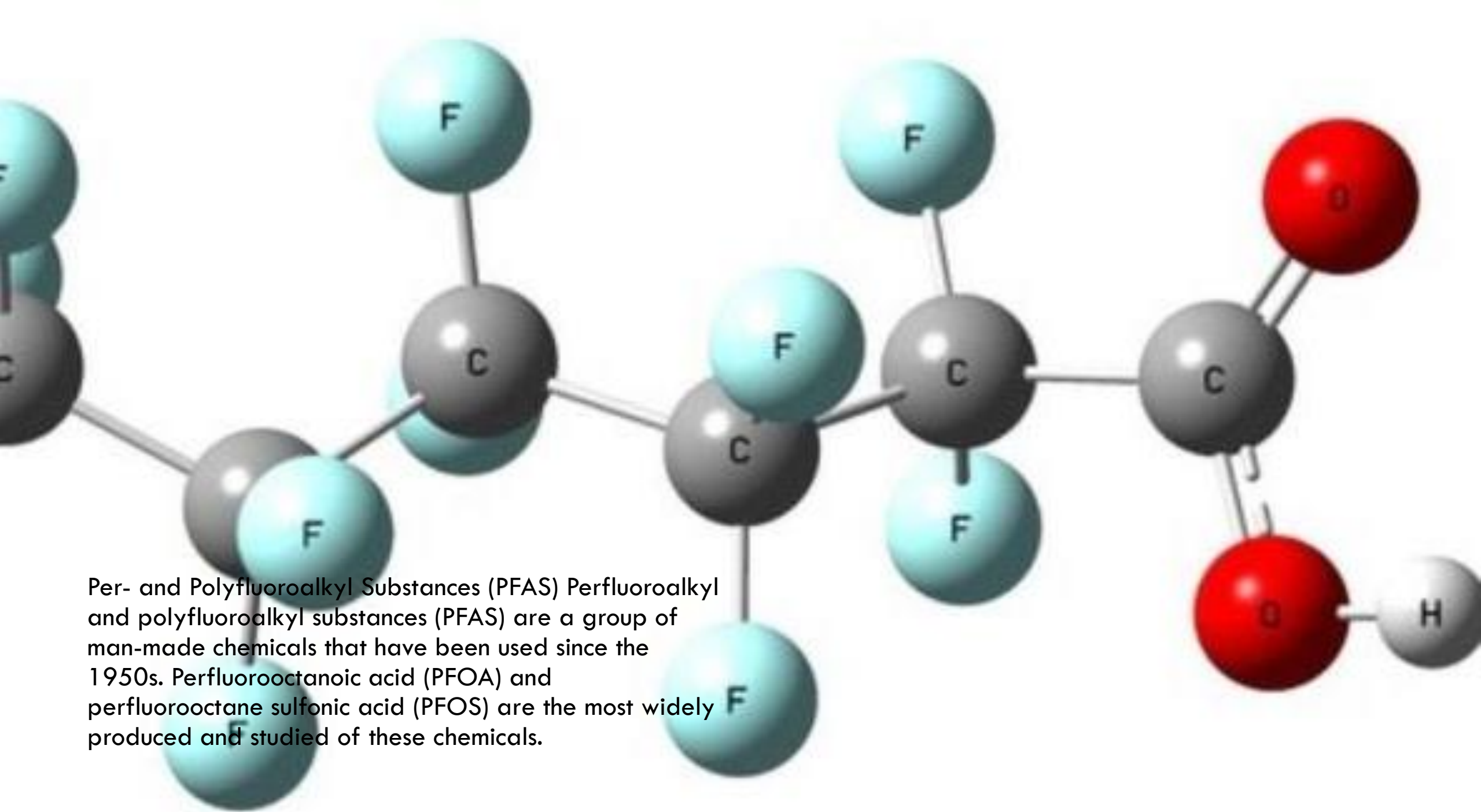


# INTRODUCTION TO PFAS

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Board of Water Commissioners

December 2, 2019



# HIGHLIGHTS

Our understanding of PFAS compounds and their potential health effects are still evolving and most of the studies to date have been based on laboratory rodents which react differently than humans.

MassDEP is currently working on a Massachusetts Maximum Contaminant Level (MCL) for PFAS.

Based on the information reviewed in MassDEP's proposed Groundwater Cleanup Standard (which will inform the MCL), the values that are being proposed by MassDEP (20 parts per trillion for 6 compounds) are very conservative and include additional levels of protection above and beyond the safety factors that EPA is basing their current Health Advisory (70 ppt for 2 compounds).

There is no regulatory requirement right now to test for PFAS, but when the MCL is promulgated in 2020, water suppliers will be required to test for the selected compounds.

The sensitive sub-populations that are of most concern are pregnant women, nursing mothers and infants (values are set to be protective of shorter-term exposures of weeks to months during pregnancy and breast-feeding). This group is advised not to drink water with elevated levels of PFAS.

# CONSIDERATIONS

## Concerns

### Widely Used

- Fire Fighting Foam
- Teflon
- Waxes
- Polishes
- Stain/Water Repellents
- Treatment Plant Residuals
- Food Packaging
- Personal Care Products

### Emerging Health Impacts

- Developmental Effects on Fetus and Infants
- Thyroid, Liver, Kidneys, Hormones, Immune System
- Potential Cancer Risk is still emerging

### Contentious

- Slow action by USEPA, Varied action by States
- Legal Challenges
- Post Flint

## Remedies

Bottled Water

GAC Filters

Ion Exchange Resins

Reverse Osmosis

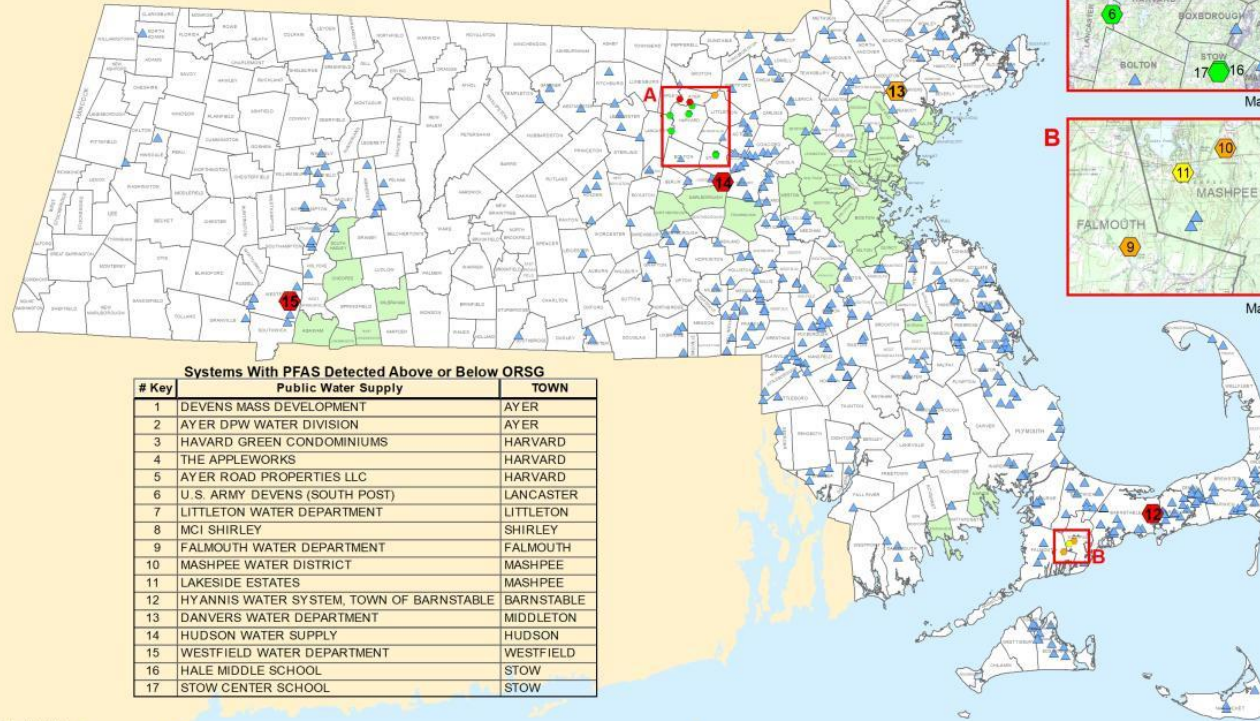
Blending

Plasma Reactor?



Charles D. Baker  
Governor  
Karyn E. Polito  
Lieutenant Governor  
Kathleen A. Theoharides  
Secretary of Energy  
and Environmental Affairs

# PFAS Testing of Drinking Water

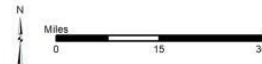


Systems With PFAS Detected Above or Below ORSG		
# Key	Public Water Supply	TOWN
1	DEVENS MASS DEVELOPMENT	AYER
2	AYER DPW WATER DIVISION	AYER
3	HAVARD GREEN CONDOMINIUMS	HARVARD
4	THE APPLEWORKS	HARVARD
5	AYER ROAD PROPERTIES LLC	HARVARD
6	U.S. ARMY DEVENS (SOUTH POST)	LANCASTER
7	LITTLETON WATER DEPARTMENT	LITTLETON
8	MCI SHIRLEY	SHIRLEY
9	FALMOUTH WATER DEPARTMENT	FALMOUTH
10	MASHPEE WATER DISTRICT	MASHPEE
11	LAKESIDE ESTATES	MASHPEE
12	HYANNIS WATER SYSTEM, TOWN OF BARNSTABLE	BARNSTABLE
13	DANVERS WATER DEPARTMENT	MIDDLETON
14	HUDSON WATER SUPPLY	HUDSON
15	WESTFIELD WATER DEPARTMENT	WESTFIELD
16	HALE MIDDLE SCHOOL	STOW
17	STOW CENTER SCHOOL	STOW

Map Updated on  
Date: 10/16/2019, 12:21:19 PM

- Municipal PWS detected above 70 ppt
- Municipal PWS detected between 20 and 70 ppt
- Non-Municipal PWS detected above 70 ppt
- Non-Municipal PWS detected between 20 and 70 ppt

- Public Water Supply Sources Tested (locations are approximate)
- Towns That Purchase Water No PFAS Detected



Guideline = MassDEP Office of Research and Standards  
Guideline 70 ppt (70 nanograms per liter)

Disclaimer on the map:  
This map is intended to provide a general overview of public water supply locations in the Commonwealth that have been tested for certain PFAS compounds, including a snapshot of any positive test results, where available. Test locations shown on the map are approximate. The Department makes no representations concerning the validity, the reliability or the accuracy of the information portrayed on this map.

# WHAT WE KNOW IN ACTON

All treated water sampled in 2013 to 2014 during USEPA UCMR3

Limited sampling under new testing protocols

- 15 page sample guide
- \$225 per sample (\$675 potential for 3 analysis/site/event)

Reviewed potential source areas

- Potential sources is an evolving understanding

Following neighboring communities

Acton Fire does not have records of having used Aqueous Film Forming Foams (AFFF)

Superfund Sampling

# SUPERFUND

Screening process has begun

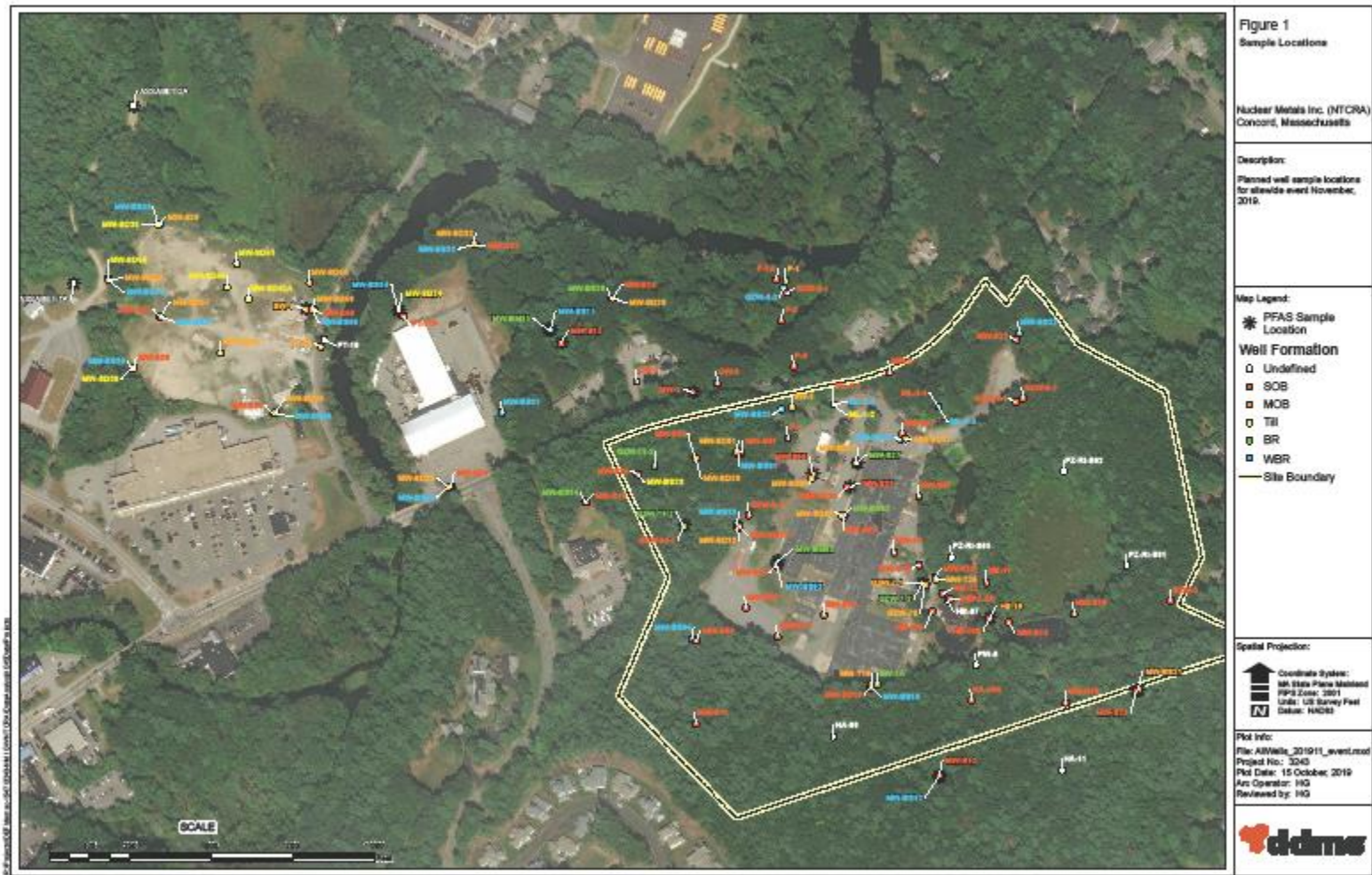
- Similar to 1,4-dioxane where Federal and State guidance differs

WR Grace looking at previously identified source areas

- Results will drive further actions

NMI doing comprehensive sampling event to determine if further action is needed in proposed remediation plan

- Collected water quality samples from Assabet production wells



**Figure 1**  
Sample Locations

Nuclear Metals Inc. (NTCRA)  
Concord, Massachusetts

**Description:**  
Planned well sample locations  
for site-wide event November,  
2019.

- Map Legend:**
- PFAS Sample Location
- Well Formation**
- Undefined
  - SCB
  - MOB
  - TBI
  - BR
  - WBR
  - Site Boundary

**Spatial Projection:**

- Coordinate System: NAD 83 State Plane Meters
- PPS Zone: 2001
- Units: US Survey Feet
- Datum: NAD83

**Plot Info:**  
File: AIRWells\_201911\_event.mxd  
Project No.: 3243  
Plot Date: 15 October, 2019  
Arc Operator: JHG  
Reviewed by: JHG





# NEXT STEPS

Awaiting results from Superfund

Anticipate MassDEP releasing Clean Up standards and revised Guideline on December 13, 2019

Potential for phased sampling program in advance of adoption of enforceable standard from MassDEP

Interconnection sample if providing water to neighbors

System wide sampling by second quarter 2020

# RESOURCES

- Massachusetts Department of Environmental Protection

<https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas>

- Wisconsin Department of Health Services

<https://www.dhs.wisconsin.gov/chemical/pfas.htm>

- American Water Works Association

<https://www.awwa.org/Resources-Tools/Resource-Topics/PFAS>