

Contaminants of Emerging Concern and the Protection of Public Health

MassDEP's PFAS6 Drinking Water Standard

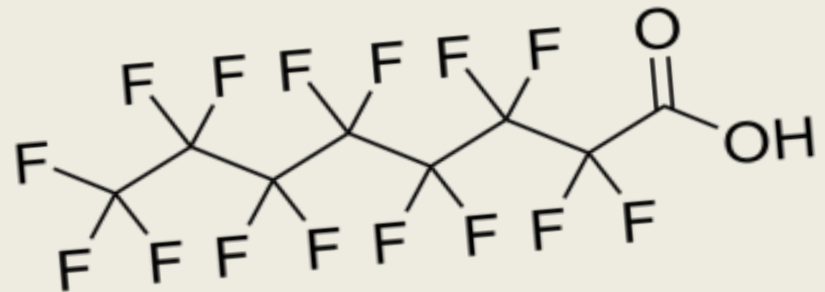
Presented to:
The 495/MetroWest Partnership

Kathleen Baskin, MassDEP Assistant Commissioner, Bureau of Water Resources
Damon Guterman, MassDEP Senior Analyst, Drinking Water Program
October 21, 2020



PFAS: A Unique Challenge

- Per- and polyfluoroalkyl Substances
- Family of thousands of compounds
- **Extremely stable** – heat & stain resistant, water repellent
- **“Forever chemicals”** - persistent, do not biodegrade
- **Water Soluble**



Common Uses of PFAS

- Aqueous film-forming foam (AFFF)
- Textile treatments
 - stain resistance/water repellency
- Paper coatings - grease resistant
- “Waxes” - floor, car, ski
- “Waterproof” down
- Manufacturing



Exposure to PFAS through consumer products is common, but when drinking water is contaminated, it is the primary source of exposure.

What are PFAS Exposure Concerns?

Some are very toxic

- Slowly excreted from body; half-life of 1-8 years
- Developmental risks to fetus/infants
 - neurotoxicity; bone; mammary gland; birth weight
- Endocrine disruption - thyroid hormone effects
- Immune system
- Cancers - kidney; testes; pancreas; liver

Sensitive groups

- Pregnant women, nursing mothers and infants



PFAS in Public Water Systems

- 211 Public Water Systems (PWS) signed up for DEP's free lab analyses
- 132 of these have been sampled or are in the process, including 17 of 25 largest PWS
- Earlier "targeted" monitoring focused on areas of likely contamination (i.e. use of AFFF)
- To date: 30 PWS detected PFAS6 > 20 ppt
 - Those currently above 20 ppt include:
 - 5 Community PWS
 - 3 NTNCs
 - 3 TNCs (not subject to the MCL)
 - Others able to take immediate or interim action

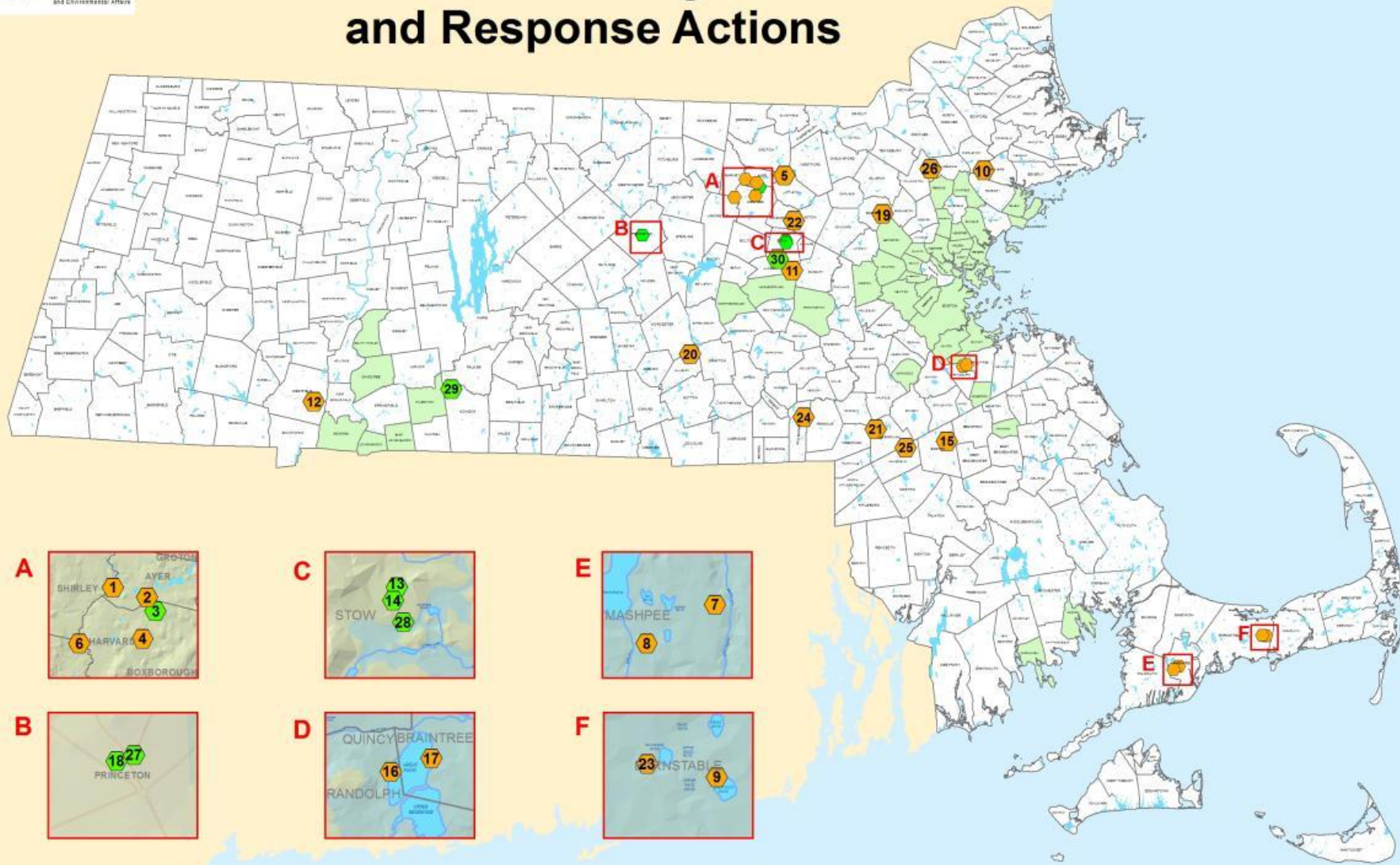




Charles D. Baker
Governor
Karyn E. Polito
Lieutenant Governor
Kathleen A. Theoharides
Secretary of Energy
and Environmental Affairs



PFAS in Drinking Water and Response Actions



Public Water Suppliers (PWS) who detected PFAS6 over the Maximum Contaminant Level (MCL) in their finished water and their response actions

The Massachusetts Maximum Contaminant Level (MCL) for PFAS6 = 20 parts-per-trillion (20 nanograms per liter)

- Municipal PWS detected above 20 ppt
- Non-Municipal PWS detected above 20 ppt
- Towns That Purchase Water No PFAS Detected

The number within the PFAS symbol represents the number key field within the PFAS table.



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.

PFAS6 Drinking Water Standard

- Regulations establish a new Maximum Contaminant Level (MCL): highest level of a contaminant allowed in drinking water. MCLs are enforceable standards
- Published on October 2, 2020
- Program Review: MassDEP required to review regulations every three years to ensure we are incorporating, reflecting, responsive to the latest science.
- “PFAS6” MCL is **20 ppt** for the sum of six PFAS
 - PFOS: perfluorooctane sulfonic acid
 - PFOA: perfluorooctanoic acid
 - PFHxS: perfluorohexane sulfonic acid
 - PFNA:perfluorononanoic acid
 - PFHpA: perfluoroheptanoic acid
 - PFDA: perfluorodecanoic acid
- No federal standard, PFOS and PFOA health advisory only



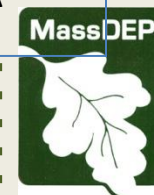
PFAS6 Drinking Water Standard

- Selection of PFAS6
 - Started with the 5 long-chain (C6-C9) PFAS in UCMR3
 - Focused on most researched: PFOS, PFOA (EPA Health Advisory)
 - Plus PFHxS, PFHpA, PFNA: closely related chemicals, similar structures, half-lives, effects; but have less extensive data
 - Added PFDA, also similar structure, toxicity, long half-life
- Reviewed and endorsed by MassDEP Health Effects Advisory Committee
- Based on MassDEP's Office of Research and Standards assessment of toxicology information:
<https://www.mass.gov/files/documents/2019/12/27/PFAS%20TSD%202019-12-26%20FINAL.pdf>



Drinking Water Values for PFAS (ppt)

	PFOS	PFOA	PFNA	PFHxS	PFHpA	PFDA
U.S. EPA	70		NA	NA	NA	NA
Health Advisory	Sum of two					
MA MCL, GW standard	70 (2018 ORSG) → 20 (MCL; MCP GW standard) Sum of five → Sum of six (add PFDA) MCL October 2020: Sum of six PFAS = 20					
VT MCL	20	Sum of five				NA
CT Action Levels	70	Sum of five				NA
WI Recommended GW standard	20					
ATSDR Based on draft ATSDR toxicity values and EPA exposure parameters	7	11	10	70	NA	NA
NY MCL	10	10	NA	NA	NA	NA
NJ MCL	13	14	13	NA	NA	NA
CA Notification levels (Response Levels)	6.5 (40)	5.1 (10)	NA	NA	NA	NA
MI MCL	16	8	6	51	NA	PFNA value recommended
MN guidelines	15	35	NA	47	NA	NA
NH MCL	15	12	11	18	NA	NA
Most other states (EPA value by default)	70		NA	NA	NA	NA



Applicability to Public Water Systems

MCL Applies to:

- Community Water Systems (year-round residential customers)
- Non-transient, Non-Community Water Systems (NTNCs)
 - Schools/Daycares, Larger Businesses (25+ employees)

MCL does not apply to:

- Transient, Non-Community Water Systems (TNCs)
 - Recreational Areas, Campgrounds, Hotel/Motels, Small Businesses
 - Must collect one sample
- Consecutive Systems (those that purchase all their water)



Roll-Out of Rule

- COM (526 PWS) and NTNC (252 PWS) subject to full rule
- Monitoring Implementation by Population Served (excludes Consecutive PWSs)

>50,000	20 PWS (pop = 4.3M)	1/1/2021
>10,000 & <=50,000	106 PWS (pop = 2.6M)	4/1/2021
<=10,000	569 PWS (pop = 708K)	10/1/2021
- TNC (856 PWS) are not subject to MCL but must collect one sample at each entry point



PFAS Monitoring

- Initial Year of Quarterly Monitoring
 - Existing results can substitute on a 1:1 basis
 - Option to waive third and fourth quarter if first and second quarters are clean
- Routine Monitoring (one year of every three)
- Monitoring Waivers available along with other options to reduce the monitoring burden
- PWSs Already Monitoring or with Existing Results: will be evaluated to identify the appropriate monitoring frequency



Increased Monitoring

- Confirmation Sampling of PFAS Detections
 - Initial PFAS Detection
 - Subsequent PFAS6 Detections >10 ppt
- Monthly Sampling
 - Ex: Following confirmed PFAS6 >10 ppt
 - During development of a corrective action sampling in the second and third month can be waived
- Quarterly Sampling
 - Ex: When PFAS treatment is Installed
- Annual Sampling
 - Ex: Following confirmed PFAS6 ≤ 10 ppt



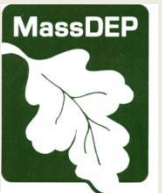
Analysis and Electronic Reporting

- Labs must use Methods 537 or 537.1
- Method 533 was released after draft regulations were issued for public comment so MassDEP will include in a future update to regulations
- Minimum Reporting Level (MRL) of 2 ppt for the six PFAS in the MCL
- Analysis/Reporting must include all PFAS in Scope of Method
- Monitoring Results must be Reported via eDEP (once eDEP allows for it)



MCL Violations

- MCL is violated when three months of sampling results exceed the 20 ppt level
 - Or if PFAS6 levels from one or two months are high enough to identify a violation regardless of subsequent monthly results
- Tier 2 Public Notice for MCL Violations
- *Note: Final regulations do not include ½ MRL results in PFAS6 sum*



Communication and Transparency

- Early “Public Education” triggered by a confirmed result greater than the MCL
 - PWS not yet in violation but sensitive consumers need to avoid consumption
- Tier 2 Public Notice within 30 days triggered by an MCL violation
 - Based on monthly monitoring over a quarter
- PFAS monitoring results to be available EEA Data Portal (<http://eeaonline.eea.state.ma.us/portal#!/home>)
- All Community PWS must publish their PFAS sampling results in their annual Consumer Confidence Report



MassDEP's Next Steps to Support MCL Implementation

- Ongoing free lab analyses for PWS through June 30, 2021
- Sample schedules will be updated
- PWS training in December 2020
- Templates will be provided for Public Education and Public Notice



Financial Resources to Address PFAS6 in Drinking Water

- Supplemental Budget (Chapter 142 of the Acts of 2019)
- \$8.4M for public & private supply testing, design grants
 - Grants: \$2M to 10 PWS Round #1; Round #2 upcoming
 - Free lab analyses for all PWS, some private wells
- \$10.65M to Clean Water Trust for remediation of PFAS contamination in local water systems via State Revolving Fund
- \$9.05M to Clean Water Trust for improvements to local water systems via State Revolving Fund



Additional MassDEP PFAS Initiatives



Additional Activities: Waste, Wastewater & Residuals

Waste Site Cleanup Standards (Dec 2019)

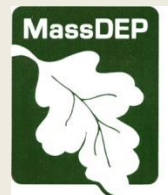
- Established Reportable Concentrations for soil & water cleanup under MA Contingency Plan (*310 CMR 40.1600*)

Wastewater

- **Characterization:** PFAS monitoring requirements in EPA's NPDES permits & MassDEP's surface water discharge permits – municipal and industrial
- **Technical Assistance:** Coordination with EEA Office of Technical Assistance to help industrial dischargers upstream of PWS identify and reduce PFAS use

Residuals

- **Characterization:** PFAS data collection requirements for residuals that are land applied
- **Stakeholder Process:** gather information



Additional Activities

Characterization of Receiving Waters

- With USGS, ambient PFAS sampling in rivers, including upstream/downstream of wastewater discharges

Lab Certification Regulations

- Certifying labs for drinking water analysis - effective 6/12/20

AFFF Take-Back Program

- 200,000 pounds collected for disposal

Bottled Water

- Voluntary monitoring by bottlers & bulk suppliers (published on MassDEP's website); sanitary surveys of water bottling/ice making sources – in coordination with DPH



Thank you!

MassDEP PFAS Webpage:

<https://www.mass.gov/lists/development-of-a-pfas-drinking-water-standard-mcl#final-pfas-mcl-regulations->

Kathleen Baskin

Assistant Commissioner

kathleen.baskin@mass.gov

Damon Guterman

Senior Analyst

damon.guterman@mass.gov

