Webster Public Water Supply and PFAS Forum

Webster Water Sewer Commission
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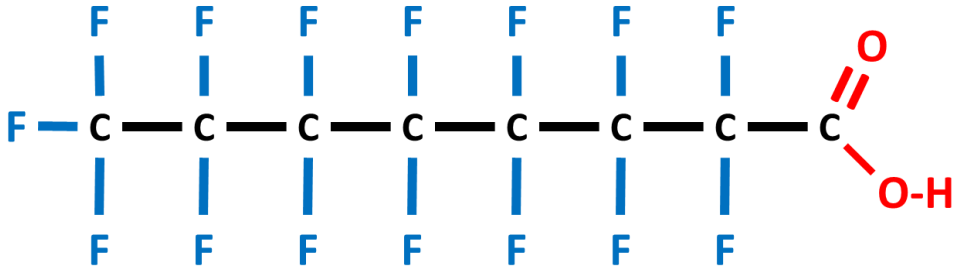
Mary Jude Pigsley, Regional Director, MassDEP Central Regional Office

C. Mark Smith, Ph.D, Director, MassDEP Office of Research & Standards

What Are PFAS?



Poly- and per**f**luoro**a**lkyl **S**ubstances

A family of thousand of compounds with varying structure
(e.g, carbon chain length)

- **Extremely stable** – Heat & Stain Resistant, Water repellent
- **"Forever chemicals"** - Very persistent, do not biodegrade
- **Water Soluble**
- **Some are very toxic**
  - Slowly excreted from the body – half lives of years (1-8+ for longer-chain)
  - Developmental risks to fetus/infants
  - Endocrine disruption, effects on immune system
  - Possibly cancers (kidney, teste, pancreas, liver)

Common Uses of PFAS Since the 1950s

- Textile treatments: stain resistance/ water repellency
- Paper coatings: grease resistant
- “Waxes”: some floor, car, ski
- Hairsprays
- “Waterproof” down
- Manufacturing
- Aqueous Film-Forming Foam (AFFF)

Most Americans are exposed to some levels of PFAS through use of consumer products

What Are Exposures of Concern for PFAS?

Sensitive groups: *pregnant women, nursing mothers, infants, and immune compromised* drinking (and cooking with) contaminated water in a residential setting

(sensitivity – concentration – frequency)

Water uses that pose (relatively) *less* concern include:

- Water use by someone *not* considered in "sensitive group"
- Non-residential water use – *restaurants, workplace*
- Water use for other purposes – *bathing, washing vegetables*

Ways people may reduce potential exposure:

- Drink and cook with bottled water
- Use a home water treatment system (NSF certification not yet available)

Why Are Long-Chain PFAS (PFAS6) a Concern?

- **Infants and children at risk**
  - Crosses placenta
  - Expressed in breast milk
- **Toxicity at low exposure levels**
- **Persistent**
  - Do not appreciably breakdown in the environment
  - Stay for many years in the body
- **Water soluble**

Health Effects Associated with High Exposures to Long-Chain PFAS

- Effects on the immune system
  - Decreased response to vaccines
- Developmental effects
  - Decreased birth weight, delayed development
- Endocrine disruption
  - Thyroid hormone effects, increased risk of high blood pressure or pre-eclampsia in pregnant women
- Liver effects
  - Increased cholesterol and markers of stress
- Increased cancer risks
  - Kidney and testes
  - Liver and pancreas (animal data)

Additional information on health effects:

https://www.atsdr.cdc.gov/pfas/health-effects/index.html

Massachusetts Regulation of PFAS

U.S. EPA Unregulated Contaminant Monitoring Rule:
sampling by Public Water Systems with > 10,000 customers

Massachusetts
Maximum Contaminant Level
(MCL) for Drinking Water of
20 parts per trillion (ppt)

Clean-up standard
for groundwater used as
drinking water of
20 parts per trillion (ppt)

Maximum Contaminant Level PFAS6

310 CMR 22.07G

- MCL effective October 2, 2020
- **20 parts per trillion** for the total concentration of **six PFAS compounds combined**
- The MCL is health-based, protective of the most sensitive population and accounts for exposure to PFAS from sources in addition to drinking water

Maximum Contaminant Level PFAS6 (cont.)

- First year requires quarterly sampling for compliance, phased in based on size of public water systems (January 2021, April 2021, October 2021)

- Every 3 years MassDEP will perform a review of relevant developments in the science, assessment and regulation of PFAS in drinking water

Sampling Requirements

- Compliance based on quarterly sampling at each entry point to the water distribution system

- If any PFAS is detected in an initial sample, a confirmation sample is required. Results of two samples for PFAS6 are averaged for compliance purposes

- If the average of the two samples is > 10 ppt, the system must sample monthly

If the average of the three samples in a quarter is > 20 ppt for PFAS6, the system is in violation and must distribute **Public Notice** materials.

WEBSTER PFAS6 SAMPLING RESULTS 2021

Source Name	Source Code (Raw/Finished)	Sample 4/6/2021	Sample 5/3/2021	Sample 7/30/2021	Sample 8/25/2021	Sample 9/29/2021	Comment
Station 3: Well 3 Bigelow Rd	03G (Finished)	15.2 ppt	15.6 ppt	20.4 ppt	**24.2 ppt**	---	**Q3 Average = 22 ppt** (Removed from service 9/15)
Station 3: Well 3 Bigelow Rd	RW-03G (Raw)	14.6 ppt	15.1 ppt	---	---	15.5 ppt (run to waste)	
Memorial Beach WTP (blend)	MULT 2 (Finished)	5.61 ppt	ND (0)	6.3 ppt	10.4 ppt	6.8 ppt	Average = 5.8 ppt
Station 2: Memorial Beach	RW-01G (Raw)	1.86 ppt	2 ppt	---	---	---	Average = 2 ppt
Station 1: Well 1	RW-04G	4.38 ppt	4.24 ppt	---	---	---	Average = 4.3 ppt
Station 1: Well 2	RW-05G	11.1 ppt	10.3 ppt	---	---	---	Average = 11 ppt
Station 1: Well 3	RW-06G	10.4 ppt	9.54 ppt	---	---	---	Average = 10 ppt
Station 1: Well 4	RW-07G	8.03 ppt	7.36 ppt	---	---	---	Average = 7.7 ppt
Station 1: Well 5	RW-08G	14.2 ppt	14.7 ppt	---	17 ppt	---	Average = 15 ppt

Public Notice Requirement

- MassDEP form mailed to all customers on October 11th to inform them of the results > 20 ppt
- Presents the sampling results and explains the PFAS6 MCL
- Explains that the exceedance is a violation of the MCL because the standard is based on a quarterly average
- Describes health effects in general and to certain sensitive groups (pregnant and nursing women, infants, and immuno-compromised individuals)
- Provides information about steps consumers can take to reduce exposure to PFAS6 in the drinking water, including using bottled water
- Identifies the steps the Town is taking, a point of contact for questions, and links to websites for more information

WHAT IS MASSDEP DOING ABOUT PFAS6?

Developed Drinking Water and Cleanup Standards

Technical Assistance
Outreach
Coordination
Training

Firefighting Foam Take-Back Program

Working to Identify Sources & Releases to the Environment

Sampling & Analyses for Public Water Systems and Private Wells

Drinking Water Values for PFAS (ppt) by state

``	PFOS	PFOA	PFNA	PFHxS	PFHpA	PFDA
U.S. EPA Health Advisory	**70 Sum of two**		**NA**	**NA**	**NA**	**NA**
MA MCL & GW standard	**70 (2018 ORSG) → 20 (MCL; MCP GW standard) Sum of five → Sum of six (add PFDA)**					
VT MCL	**20 Sum of five**					**NA**
CT Action Levels	**70 Sum of five**					**NA**
ME interim drinking water standard	**20 Sum of six**					
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**	**NA**
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**

U.S. EPA PFAS Strategic Roadmap October 2021

EPA's integrated approach to PFAS focuses on three central directives:

- RESEARCH. Invest in research, development, and innovation to increase understanding of PFAS exposures and toxicities, human health and ecological effects, and effective interventions that incorporate the best available science.

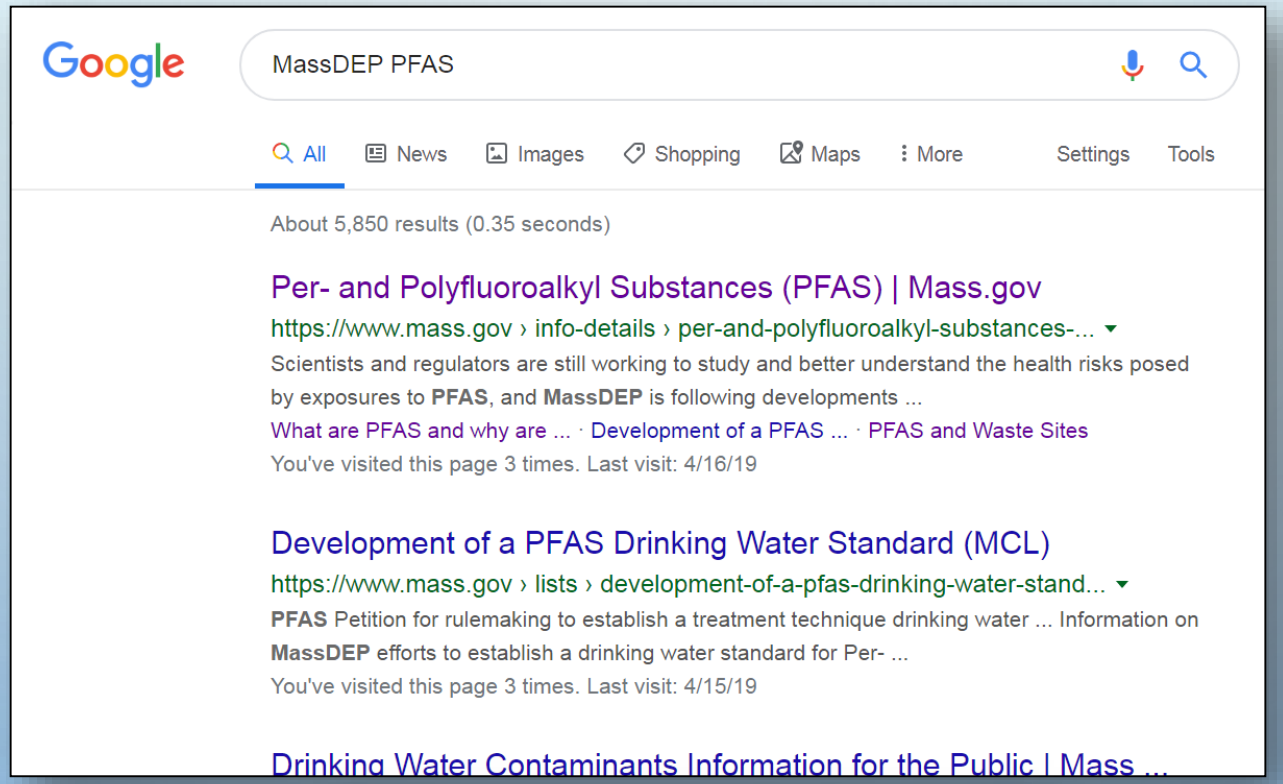
- RESTRICT. Pursue a comprehensive approach to proactively prevent PFAS from entering air, land, and water at levels that can adversely impact human health and the environment.

- REMEDIATE. Broaden and accelerate the cleanup of PFAS contamination to protect human health and ecological systems.

PFAS Strategic Roadmap: EPA's Commitments to Action 2021—2024

More Information…

Just Google… *MassDEP PFAS*



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