

City of Portsmouth

Department of Public Works



Portsmouth and Pease Drinking Water Systems PFAS Update July 19, 2019

State of New Hampshire Approves New Standards for Four PFAS Compounds

The state of New Hampshire's legislature's administrative rules committee approved drinking water standards for four Perfluorinated compounds (PFAS) compounds on July 18, 2019. These standards set maximum contaminant levels (MCLs) for public drinking water systems at the following levels:

- Perfluorooctanoic acid (PFOA): 12 ppt
- Perfluorooctane sulfonic acid (PFOS): 15 ppt
- Perfluorononanoic acid (PFNA): 11 ppt
- Perfluorohexane sulfonic acid (PFHxS): 18 ppt

ppt = Parts per Trillion

The new standards will take effect in October, when local water systems and others will have to begin sampling for PFAS on a quarterly basis. If the average PFAS level for first year of testing exceeds the new standards in any drinking water source they will have to explore options for treatment.

The City of Portsmouth has been proactive in sampling for PFAS compounds ever since the discovery of PFOS above the EPA's provisional health advisory was discovered in the Pease Tradeport Water System's Haven Well in May 2014. The well was contaminated by the use of fire-fighting foam at the former Pease Air Force Base. That well was shut down and a comprehensive investigation into the source and extent of the contamination was undertaken. A monthly monitoring program of the Pease supply wells was also implemented. This program included monitoring of the City of Portsmouth's Collins and Portsmouth wells. This sampling program continues. Validated sample results are updated and posted on the City's website. An activated carbon filter system was installed in September 2016 for the two other water supply wells at the Pease Tradeport – the Smith and Harrison wells. That system continues to filter out PFAS compounds for those two wells and updates of the system's performance are also posted on the City of Portsmouth's website.

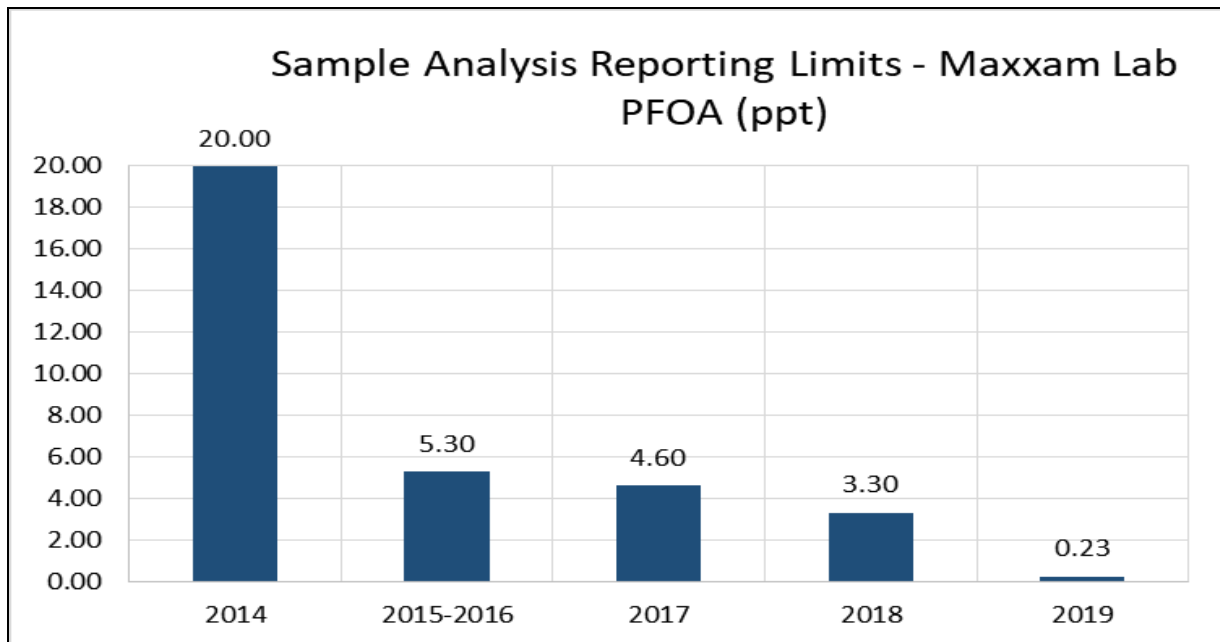
The City of Portsmouth's water supply staff have also been monitoring all of our public water supply sources for PFAS every six months since 2014. The water samples for the April 2019 round of sampling were analyzed using the detection limits proposed by the New Hampshire

Department of Environmental Services (NHDS) as part of the rulemaking process to set Maximum Contaminant Levels (MCLs) for four PFAS compounds.

The following table summarizes the most recent monitoring results, in Parts-per-Trillion (ppt) for the City of Portsmouth water sources utilizing this laboratory method and reporting limits. The table also includes the Maximum Contaminant Levels (MCLs) as set by New Hampshire on July 18, 2019. According to this data, all City of Portsmouth water supply sources are below these levels and are in compliance with the new rules.

PFAS	NH Drinking Water MCL	Madbury Treatment	Madbury Well 2	Madbury Well 3	Madbury Well 4	Portsmouth Well	Collins Well	Greenland Well
Date	07/18/2019	4/29/2019	4/29/2019	4/29/2019	4/29/2019	4/29/2019	4/29/2019	4/29/2019
PFOA	12 ppt	3	4	3	2	4	2	4
PFOS	15 ppt	<2	<2	<2	<2	4	3	3
PFHxS	18 ppt	<2	<2	<2	<2	6	2	2
PFNA	11 ppt	<2	<2	<2	<2	<2	<2	<2

These results show detections of compounds that, at times, were previously reported as Non-Detect (ND) in past updates. These detections do not necessarily mean an increase in any compound from when the last time they were sampled but simply that the laboratory methods for PFAS analysis continue to evolve and improve, allowing for lower and lower detection and reporting limits. The following chart shows a comparison of how those limits have gone down for one of the compounds, PFOA, from 20 ppt to 0.23 ppt, almost 100 times less than in 2014. Detection limits for all of the other PFAS compounds sampled also have lower levels.



Many other water systems throughout New Hampshire have experienced detections testing at these lower levels. According to data provided by the NHDES these systems include those on the Seacoast; Seabrook, Aquarion Water in Hampton, North Hampton and Rye, the Rye Water District, Dover and Rochester.

Per the requirements in the new drinking water standards the City will now sample these water sources quarterly to determine the annual average of these compounds to assure compliance with the new rules.

What are PFAS Compounds and Why Has New Hampshire Set These New Standards?

According to information provided by the New Hampshire Department of Environmental Services:

Perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), perfluorononanoic acid (PFNA), and perfluorohexanesulfonic acid (PFHxS) are individual compounds in a large class of chemicals known as perfluorinated compounds (PFCs) and more broadly as per- and polyfluoroalkyl substances (PFAS). They have been widely used since the 1940s in commercial, industrial, and household products and applications, including production of water, grease, and stain-resistant materials, fire suppression foams, non-stick cookware, wax removers, etc. (ATSDR 2018b).

All four compounds have been detected in New Hampshire's groundwater and surface water. Their widespread use, persistence and mobility in the environment and bioaccumulative properties has resulted in the detection of PFAS in blood serum in humans and animals worldwide. This has led to considerable research into their toxicity and health effects. The health effects associated with PFAS exposure are currently being researched extensively by toxicologists and epidemiologists worldwide, resulting in numerous publications being released on a continuous basis.

These health-based values are intended as health-protective limits against the chronic health effects for a through-life exposure. The primary associated health outcomes are hepatotoxicity and changes in lipid metabolism (PFOA and PFNA), suppressed immune response to vaccines (PFOS) and impaired female fertility (PFHxS). Secondary associated health effects that are expected to be less sensitive are changes in thyroid and sex hormone levels, early-life growth delays, changes in cholesterol levels and biomarkers of liver function, neurobehavioral effects, and a possible risk for certain cancers (i.e., testicular and kidney cancer).

Additional information can be accessed at:

www.cityofportsmouth.com/publicworks/water/portsmouth-water-system-pfas-update

or by calling Al Pratt, Water Resources Manager, at: 603-520-0622 or Brian Goetz, Deputy Director of Public Works at: 603-766-1420.