TESTING *for* PEASE

Community Led PFAS Water Sample Projects

City of Portsmouth SWAG | April 6, 2021

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Who is Testing for Pease?

Testing for Pease is a community action group, whose mission is to be a reliable resource for education and communication while advocating for a long-term health plan on behalf of those impacted by the PFAS water contamination at the former Pease Air Force Base in Portsmouth, NH

From left to right: Alayna, Andrea & Michelle

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Pease Non Target Analysis Project

Community Concerns:

- PFAS is a class of > 9000 chemicals.
- Drinking water at Pease only tested for ~ 23 PFAS.
- GAC filters not effective for **all** PFAS (ie some PFAS breakthrough GAC).

Community Questions:

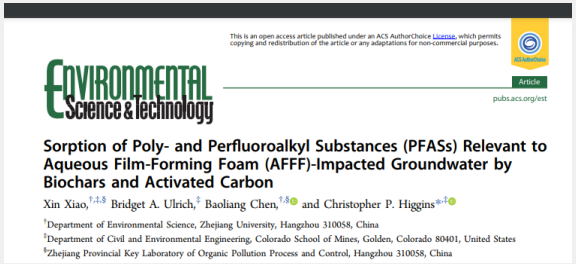
- What other PFAS are in the Pease drinking water that are not being tested for?
- How effective are the current GAC filters for all PFAS that can be detected?

Community Action:

- Obtained a local grant through the Seacoast Women's Giving Circle and performed a Non Target Analysis Project on the Pease drinking water samples

Understanding Targeted vs. Non-Targeted Analysis

- **Targeted Analysis:** These analyses include methods that are applicable to a specific defined set of known analytes. Analytical standards exist for quantitation and methods only measure for analytes on the targeted list; once the analysis is complete, you can't look for other analytes.
- **Non-Targeted Analysis:** These analyses include methods that use high resolution mass spectrometry (HRMS) capable of identifying all known and unknown analytes in a sample. In order to identify unknown compounds, liquid chromatography/tandem mass spectrometry (LC/MS/MS) analyses are applied and followed by quantification if an adequate standard exists. Otherwise, semi-quantitation may be possible based on known, structurally similar analytes. These methods can screen for lists of known suspects and can discover new or unknown analytes. HRMS data can be stored and analyzed later for newly identified analytes.



SEACOAST WOMEN'S GIVING CIRCLE

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Pease Non Target Analysis Project

Community Action (continued):

- Assembled a team of scientists to establish a plan.
- Coordinated with city DPW staff and scientific team to gather and analyze samples.
- Gathered 21 drinking water samples pre and post GAC filtration at Pease between October 2018 – July 2019.

Results:

- Pease drinking water non target analysis results:
  - 2 target PFAS that were not previously monitored
  - 5 ‘non-target’ PFAS observed in untreated water.
- One ‘non-target’ PFAS was observed in one “25%” lead GAC vessel sample.
- No PFAS detected in the finished drinking water.

Portsmouth PFAS Tap Sampling Program

Community Concerns:

- Known low levels of PFAS in the municipal drinking water sources in the city of Portsmouth
- Some Portsmouth residents already highly exposed at Pease

Community Questions:

- How much PFAS are in the tap water in various areas in the City of Portsmouth?
- Are the low levels of PFAS violating the NH state MCLs for PFAS?

Community Action:

- Obtained private donation and grant through the National PFAS Contamination Coalition.
- Met with City of Portsmouth DPW staff to review project, select 4 tap locations to sample, and coordinate sampling dates & collection.

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PORTSMOUTH WATER SYSTEM

WATER TESTING PERFORMED IN 2018

PWSID 1951010

Per- and Polyfluoroalkyl Substances (PFAS)

Per- and polyfluoroalkyl substances (PFAS) are currently unregulated by the Safe Drinking Water A concentration and the NH Ambient Groundwater Quality Standard is 70 parts per trillion (ppt) for perfluorooctanoic acid (PFOA). In response to the discovery of PFOS in the Haven Well in May 20 Health Advisory (200 ppt at that time), the Haven Well was removed from service. This well has re water system since this finding. The source of the PFAS at the Tradeport was aqueous film-formir and in training exercises at the former Air Force Base.

Over the past four years, the Harrison Well and Smith Well on the Pease Tradeport water system, a the Portsmouth water system, have been routinely monitored for per- and polyfluoroalkyl substa Portsmouth samples all of the other Portsmouth water supply sources at least twice per year. Sar PFAS table below. All monitoring data is available online: cityofportsmouth.com/publicworks/wa For more information about PFAS health effects, go to www.atsdr.cdc.gov/sites/pease/index.htm

PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

PER- AND POLYFLUOROALKYL SUBSTANCE (concentrations* reported in ng/L or ppt)		PORTSMOUTH WELL #1	COLLINS WELL	GREENLAND WELL	MADBURY WELL #2	MADBURY WELL #3	MADBURY WELL #4	BELLAMY RESERVOIR	WATER TREATMENT PLANT
# of samples in 2018		12	12	3	3	2	2	3	3
% of water supplied in 2018		8.8%	4.7%	10.8%	4.9%	4.6%	4.6%	61.6%	
Perfluorobutane-sulfonic acid (PFBS)	Average	BD	19	ND	ND	ND	ND	ND	ND
	Range	ND - 8	11 - 25	ND	ND	ND	ND	ND	ND
Perfluorobutanoic acid (PFBA)	Average	BD	BD	ND	ND	ND	ND	ND	ND
	Range	ND - 7	ND - 9	ND	ND	ND	ND	ND	ND
Perfluorohexane-sulfonic acid (PFHxS)	Average	BD	ND	ND	ND	ND	ND	ND	ND
	Range	ND - 9	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanoic acid (PFHxA)	Average	4	BD	5	ND	ND	ND	ND	ND
	Range	ND - 8	ND - 6	ND - 9	ND	ND	ND	ND	ND
**Perfluorooctane-sulfonic acid (PFOS)	Average	BD	BD	BD	ND	ND	ND	ND	ND
	Range	ND - 10	ND - 10	ND - 9	ND	ND	ND	ND	ND
**Perfluorooctanoic acid (PFOA)[1]	Average	5	4	4	4	ND	ND	4	ND
	Range	ND - 9	ND - 9	ND - 9	ND - 9	ND	ND	ND - 9	ND
Perfluoropentanoic acid (PFPeA)	Average	BD	ND	ND	ND	ND	ND	ND	ND
	Range	ND - 9	ND	ND	ND	ND	ND	ND	ND
** PFOS + PFOA	Average	<9	<9	<9	<9	ND	ND	ND	ND
	Range	ND - 18	ND - 18	ND - 18	ND	ND	ND	ND	ND

Note 1 - PFOA was measured in Madbury Well 2, Bellamy Reservoir, and Greenland Well samples during the October 2018 sample round. This is the only event that PFOA has been detected at these locations and no PFOA was detected in follow up samples, so these unusual results may not be accurate.

TABLE ABBREVIATIONS AND NOTES:

*Due to laboratory analytical method limitations, low concentrations reported for these chemicals are considered estimates unless the amount measured is above 20 ng/L (ppt).

EPA Health Advisory Level and NHDES AGQS for PFOS and PFOA concentration separately or combined is **70 ng/L (ppt).

Averages are calculated using half of the method detection limit for samples that were less than detection, per EPA risk assessment protocols.

ND (none detected): indicates that the substance was not found by laboratory analysis.

BD (below detected level): Average calculated using half of detection limits for non-detect values resulted in average below the detection limit.

PFAS analyzed but not detected in the samples: 6:2 Fluorotelomer sulfonate (6:2 FTS), 8:2 Fluorotelomer sulfonate (8:2 FTS), N-Ethyl perfluorooctane sulfonamide (EtFOSA), N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE), N-Methyl Perfluorooctane Sulfonamide (MEFOSA), N-Methyl Perfluorooctane Sulfonamidoethanol (MEFOSE), Perfluorodecane sulfonate (PFDS), Perfluorodecanoic acid (PFDA), Perfluorododecanoic acid (PFDoA),Perfluoroheptane sulfonate (PFHpS), Perfluoroheptanoic acid (PFHpA), Perfluorononanoic acid (PFNA), Perfluorooctane sulfonamide (PFOSA), Perfluorotetradecanoic acid (PFTeDA), Perfluorotridecanoic acid (PFTrDA), and Perfluoroundecanoic acid (PFUnA).

Portsmouth PFAS Tap Sampling Program

Community Action (continued):

- Plan for 4 taps to be sampled 4 different times (total of 16 samples) from 2019-2020.
- Tap samples collected Oct 2019, Jan 2020, & July 2020
- Sampling planned for April 2020 was cancelled due to Covid-19 pandemic
- Planning for last round of tap sample collection April 2021 to complete the project

Sampling Locations:

- Portsmouth Public Library
- Dondero Elementary School
- Private residence on Banfield Road
- Spinnaker Point Recreation Center

Portsmouth PFAS Tap Sampling Program

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SUMMARY OF TAP WATER PFAS RESULTS

Per- and Poly-Fluorinated Compounds
concentrations in part per trillion (ppt)

PFAS	NHDES MCL Maximum Contaminant Level	BANFIELD			DONDERO			LIBRARY			SPINNAKER			RDL	MDL
	Date:	10/25/2019	1/23/2020	7/20/2020	10/25/2019	1/23/2020	7/20/2020	10/25/2019	1/23/2020	7/20/2020	10/25/2019	1/23/2020	7/20/2020		
Perfluorobutanoic acid (PFBA)	no MCL		3.3	1.4 J	0.85 J	4.9	1.6 J		5.1	0.67 J		2.2		2.0	0.45
Perfluoropentanoic Acid (PFPeA)	no MCL	1.9 J	0.88 J	1.7 J	1.7 J	0.65 J	1.3 J	1.2 J		0.82 J	1.2 J		0.93 J	2.0	0.48
Perfluorohexanoic Acid (PFHxA)	no MCL	1.9 J	1.1 J	1.6 J	1.6 J	0.92 J	1.4 J	1.3 J	0.43 J	1.0 J	1.2 J	0.32 J	0.92 J	2.0	0.26
Perfluoroheptanoic Acid (PFHpA)	no MCL	1.3 J	0.72 J	0.95 J	1.2 J	0.63 J	0.92 J	1.0 J	0.37 J	0.59 J	1.0 J		0.67 J	2.0	0.37
Perfluorooctanoic Acid (PFOA)	**12**	2.5	2.1	2.5	2.6	1.9 J	2.4	2.1	1.3 J	1.6 J	2.0 J	1.2 J	1.6 J	2.0	0.23
Perfluorononanoic Acid (PFNA)	**11**													2.0	0.48
Perfluorodecanoic Acid (PFDA)	no MCL													2.0	0.18
Perfluoroundecanoic Acid (PFUnA)	no MCL													2.0	0.38
Perfluorododecanoic Acid (PFDoA)	no MCL													2.0	0.25
Perfluorotridecanoic Acid	no MCL													2.0	0.3
Perfluorotetradecanoic Acid	no MCL													2.0	0.16
Perfluorobutanesulfonic acid (PFBS)	no MCL	4.0	2.2	3.0	3.7	1.6 J	2.5	1.2 J	0.43 J	0.78 J	1.1 J		0.76 J	2.0	0.37
Perfluoropentanesulfonic acid	no MCL													2.0	0.28
Perfluorohexanesulfonic acid (PFHxS)	**18**	1.7 J	0.97 J	1.5 J	1.4 J	0.78 J	0.86 J				0.40 J			2.0	0.33
Perfluoroheptanesulfonic acid	no MCL													2.0	0.63
Perfluorooctanesulfonic acid (PFOS)	**15**	1.9 J	1.1 J	1.8 J	1.7 J	0.76 J	1.5 J	0.67 J		0.78 J	0.69 J			2.0	0.43
Perfluorononanesulfonic acid	no MCL													2.0	0.55
Perfluorodecanesulfonic acid (PFDS)	no MCL													2.0	0.36
Perfluorooctane Sulfonamide (PFOSA)	no MCL													4.0	0.31
EtFOSAA	no MCL				0.69 J									4.0	1.4
MeFOSAA	no MCL													4.0	1.2
4:2 Fluorotelomer sulfonic acid	no MCL													4.0	0.69
6:2 Fluorotelomer sulfonic acid	no MCL													4.0	0.59
8:2 Fluorotelomer sulfonic acid	no MCL													4.0	0.75
Hexafluoropropyleneoxide dimer acid	no MCL													4.0	0.85
4,8-Dioxa-3H-perfluorononanoic acid	no MCL													4.0	0.31
9Cl-PF3ONS (F-53B Major)	no MCL													4.0	0.56
11Cl-PF3OUdS (F-53B Minor)	no MCL													4.0	0.52

Notes:

all values are parts per trillion (ppt)
RDL = Reportable Detection Limit
MDL = Method Detection Limit
Blank cell = compound was not detected above the method detection limit (MDL)
Result above the RDL
J = Estimated concentration between the MDL and RDL

Portsmouth PFAS Tap Sampling Program

Banfield Combined PFAS Totals:

Oct 2019 = ~15.2 ppt

Jan 2020 = ~12.37 ppt

Jul 2020 = ~14.45 ppt

Library Combined PFAS Totals:

Oct 2019 = ~7.47 ppt

Jan 2020 = ~8.06 ppt

Jul 2020 = ~6.24 ppt

Dondero Combined PFAS Totals:

Oct 2019 = ~15.44 ppt

Jan 2020 = ~12.14 ppt

Jul 2020 = ~12.48 ppt

Spinnaker Combined PFAS Totals:

Oct 2019 = ~7.59 ppt

Jan 2020 = ~3.72 ppt

Jul 2020 = ~4.88 ppt

- 9 PFAS detected in the city tap samples (not all 9 present in every sample).
- Levels are low and do not exceed State of NH PFAS MCLs.
- Banfield Rd & Dondero school had higher combined totals than the Library & Spinnaker.
- Per city DPW staff, the PFAS tap levels are expected when considering the PFAS levels detected in the city water sources.

Thank you!!!

“Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it’s the only thing that ever has.”

~ Margaret Mead

For more information, please visit:

www.testingforpease.com

facebook.com/TestingforPease

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