PFAS Panel Discussion with NHDES

Brandon Kernen, Water Division 603.271.0660 | <u>Brandon.Kernen@des.nh.gov</u>

September 17, 2020





- I. PFAS Occurrence in NH
- II. Public Water Systems
- III. Residential Wells
- IV. Bottled Water
- V. Waste Site Sources
 - I. AFFF
 - II. Industrial
 - III. Commercial
 - IV. Landfills

VI. Source Water Protection



PFAS Impacts are Present Throughout New Hampshire

Updated: April 30, 2020

PFAS SAMPLES

Data in NHDES' Environmental Monitoring Database (EMD) ~ 9602 samples

- > NH MCL
 - PFOA/PFOS > 70 ppt
 - < NH MCL
- PFAS SITES

Data in NHDES' Onestop Database ~ 415 sites

- * Site with PFAS Detections > One or More Health Based Levels
- Site with PFAS Detections < All Health Based Levels
- Site with PFAS Screening π No Detections



Political Boundary

Major Waterbody

Conservation Land



Is



Public Water Systems

- Approx. 1600 source of drinking water had to begin sampling from October-December 2019.
- Litigation over the MCL halted the sampling in December 2019
- Sampling is resuming in October-December 2020



Public Water Systems

| SOURCES | SOURCES | SOURCES | | |
|---------|------------|-----------|--|--|
| SAMPLED | WITH PFAS | EXCEEDING | | |
| | DETECTIONS | NH MCL | | |
| 982 | 314 | 69 | | |
| | 32% | 7% | | |

Impacts approx. 192,000 people or 26% of NH residents that obtain drinking water from a public water system. Compare this to the current estimate of approx. 116,000 people drinking water above the Arsenic MCL.





Challenge to Water Utilities

- Public confidence and perception
 - Waiting on the science/rapidly evolving science
 - Social Media
 - Risk management/communication
- Cost to treat
 - Carbon/resin
 - Blending
 - Well closures
 - Higher O&M costs
- Regulatory uncertainty
- Extending water service to areas where residential wells are contaminated - CIAC tax implications



Contribution In Aid of Construction Implications

- In 1996, Congress passed H.R. 3448 whereupon water and wastewater utilities were granted an exemption from the Tax Reform Act of 1986 provision requiring utilities to treat CIAC receipts as taxable income
- Tax Cuts and Jobs Act of 2017
 - Eliminated waiver from 26 CFR § 1.118-2 Contribution in aid of construction, causing a tax liability for water utilities
- Utilities accepting payment from Responsible Parties for infrastructure upgrades necessitated by contamination now incur tax liability



School/Daycare **Public Water Systems**

| SOURCES | SOURCES | SOURCES | | |
|---------|--------------------|-------------|--|--|
| SAMPLED | WITH PFAS EXCEEDIN | | | |
| | DETECTIONS | NH PFAS MCL | | |
| 163 | 43 | 13 | | |
| | 26% | 8% | | |

- Initial results in NH indicated higher rate of exceedances
- As sampled sized increased, rate of exceedance for schools and other public water systems became similar



SDAL

Possible Sources of PFAS in Schools

- Septic systems
 - Floor cleaners
 - Floor waxes & stone/tile/wood sealants
 - Carpet care liquids
- Imported soils
 - Athletic fields
 - Gardens/other landscapes
- Extracurricular activities
 - Firework shows
 - Bonfires
 - "Foam" days
- Off-site sources/Historic uses
- Potential sources that lack data
 - Solar panels
 - Artificial turf

Residential Wells

- 46% of NH on residential wells (approx. 250,000 wells)
- Approx. 3000 sampled from 2016 to present
- 1000 exceed a NH PFAS MCL
- Sampling locations are biased near 3 air emission sites
- Unexplained elevated levels in several communities
- 1000+ wells need to be sampled still near air emission sites



Background Study - Occurrence of PFAS in Residential Wells in NH (2019-20?^^)

- ~ 500 random wells
- ~ 100 co-located biomonitoring samples
- no wells > 70 ppt PFOA/PFOS
- 6 wells > MCLs, but 3 were within the SGPP CD.
- ~ 20 wells remaining to be sampled





Residential Wels in Southern Hooksett, NH – No Known Source of PFAS Contamination



Sampling Occurred in 2019

PFAS > HEALTH BASED LEVEL
 PFAS ≤ HEALTH BASED LEVEL

Residential Well Sampling – No known sources of PFAS contamination (2018)

- 77 homeowner wells sampled in the seacoast region of NH not near known contamination sites – homes on septic systems
- Detection limits 0.2 0.4 ppt
- Detection in 87% of wells
 - Blue dot non detect
 - Red dot PFAS detected





PFAS in Bottled Water Sold in NH (2019)

- NHDES tests the bottled water it provides consistently "non-detect"
- Bottled water was tested from stores in NH communities with PFAS contamination
 - Tested 20+ products & approx. 15 products self-tested
 - 6 products detected PFAS all "natural spring water"
 - 4 brands exceeded MCL(all from the same source)
 - All products labeled with treatment were "nondetect"





NH waste sites have screened for PFAS since 2016.

- Sites subject to Groundwater Release Detection Permits
- Landfills (lined, unlined, active, and/or closed) subject to groundwater monitoring requirements
- Active hazardous waste sites and sites undergoing ESAs where either:
 - Releases are associated with activities that use (or used) PFAScontaining products; and/or
 - Class B firefighting foam [e.g., AFFF] may have been used or released.
- Other
 - Review open sites with PFAS data <70 ppt to prioritize sites where drinking water is potentially at risk.





Approximate data through 03/30/2020

NH's groundwater data are variable, but suggest that more significant PFAS impacts may be associated with:

- Aqueous Film Forming Foam (AFFF)
- Industrial sources
 - Manufacturing products (e.g., coating)
 - Use in manufacturing (e.g., plating)
- Commercial Sources
- Management of Wastes
 - Landfills
 - Wastewater effluent and sludge





AGQS exceedances are present at each type of site, although the magnitude varies.



| Waste Sites/Sources | Sites Sampled | % Sites > AGQS (MCLs) | Max. PFOA (12 ppt) | Max. PFNA (11 ppt) | Max. PFHxS (18 ppt) | Max. PFOS (15 ppt) |
|--|------------------|-----------------------------|--------------------------|--------------------------|---------------------------|-----------------------|
| AFFF | 23 | 100% | 130,000 | 25,000 | 31,000 | 490,000 |
| Manufacturing - Coating (Paper, Textile, Tannery) | 10 | 90% | 69,500 | 2,960 | 2,400 | 2,560 |
| Manufacturing - Other | 20 | 65% | 2,510 | 110 | 150 | 850 |
| Commercial Products | 4 | 100% | 242 | 102 | 69 | 405 |
| Waste Disposal | 26 | 65% | 3,200 | 161 | 89 | 4,750 |
| Unlined Landfill | 161 | 77% | 3,700 | 828 | 663 | 1,700 |
| Metal Working/ Plating/Machining | 23 | 61% | 1,070 | 31 | 806 | 7,080 |
| Metal Recycling | 12 | 67% | 1,700 | 100 | 630 | 1,440 |
| Mixed | 24 | 79% | 1,230 | 78 | 769 | 2,410 |
| Drycleaning | 24 | 78% | 401 | 568 | 88 | 1,800 |
| Unknown | 64 | 50% | 1,090 | 960 | 229 | 240 |
| Lined Landfill | 13 | 62% | 350 | 30 | 88 | 79 |
| WW/Biosolids | 4 | 75% | 560 | 13 | 81 | 230 |
| Other | 15 | 67% | 129 | 9 | 24 | 470 |
| WW/Lined Lagoon | 12 | 8% | 18 | 0 | 14 | 7 |

Approximate data through 6/1/2020



Approximate data through 6/1/2020



Approximate data through 6/1/2020

PFAS screening for water supply wells at fire stations

8%

8%

26%

Private Wells Serve 171 (of 237) Stations

58%



> 65 Stations Have Screened for PFAS
 2016: Foam use survey
 2017: Recommendation to test
 2019: Screening effort
 2020: Legacy foam ban

>Former AGQS (70 ppt)

- AGQS/MCLs and Former AGQS (70 ppt)
- <New AGQS/MCLs</p>
- Non-Detect



Approximate data through 03/31/2020

Some investigations cover larger geographical areas than other historic areas of contamination.









Approximate data through 6/1/2020

Chrome plating facility



PFOA: 1,070 PFOS: 90 *Total PFAS (12): 3,461*

PFOA: 44 PFOS: 3,130 *Total PFAS (12): 3,437*

Results in ng/L (ppt)

Adapted from Ransom, August 2017 and Sanborn Head, October 2017





OLD FIRE STATION

PLATING

COMMERCIAL

LANDSCAPING

TRANSFER STATION COMMERCIAL

NEW FIRE STATION

- SCHOOLS



Approximate data through 6/1/2020



Approximate data through 6/1/2020

Permitted Wastewater Discharges to

Groundwater

- 66 sites sampled
- 36 sites (55%) have
 PFAS MCL exceedances
- Sites include:
- •Large septic systems
- Rapid infiltration
- •Spray irrigation
- •Overland flow
- •Unlined lagoons



Permitted Wastewater Discharges to Groundwater

- Exceedances are not violations unless a unmitigated impacts to drinking water wells occur
- No impacts to drinking water wells confirmed to date
- Source investigation/control must be implemented



Evaluating PFAS screening data can be challenging.

PFOA, PFNA, PFHxS, PFOS

- Site age, funding
- PFAS proprietary mixtures
- Phase-outs and replacements
- Precursor transformation
- Unique chemical properties
- Evolving analytical capabilities
- Target standards changing

Common Analytes (2 to >30)

Other PFAS (>4,700)

Source Water Protection Initiatives

- Legacy firefighting foam collection & disposal initiatives
- PFAS reduction initiatives for wastewater plants
 - Municipal & industrial WWTF being sampled in 2020
 - NHDES will coordinate with WWTFs to identify sources of PFAS & 1.4-dioxane & to work with industry
 - Septage/biosolids
- Statewide source identification initiatives
 - Air permits
 - Industry codes/classifications
- Industry awareness of new PFAS standards
- "Registered Groundwater Discharges"
 - Non-domestic wastewater discharges to septic systems
 - Thousands of discharge registrations being re-assessed

PFAS Background References

NHDES Website

https://www4.des.state.nh.us/ nh-pfas-investigation/



Welcome Posted on September 1, 2017 by Jana Ford

Welcome. This website will be used to update interested parties on NHDES' current investigation into the presence of Per- and Polyfluoroalky/ dustances (PFAS) in New Hampshire. You can access our previous webpage for archived information: https://www.des.ntps/ov/organication/commissioner/Polantm.

Posted in Uncategorized

NHDES Extends Bottled Water Delivery Area Posted on September 13, 2017 by Jim Martin

NHDES has extended bottled water delivery area to additional properties in Merrimack and Litchfield. The complete list of eligible properties can be found on the Bottled Water Delivery Area page.

https://www.des.state.nb-us/nb-pfas-investigation/_bhfield, Merrimack, St. Gobain



Water Line Extension Projects Investigation Documents Be Well Informed Guide Pease Tradeport Investigation Archive

EMAIL ALERTS

CONTACT INFORMATION Jim Martin (603) 271-3710 NHDES Public Information Office

RECENT POSTS

NHDES Extends Bottled Water

ITRC



• Fact Sheets

https://pfas-1.itrcweb.org/

- Technical Guidance Document (2020)
- Education and training

