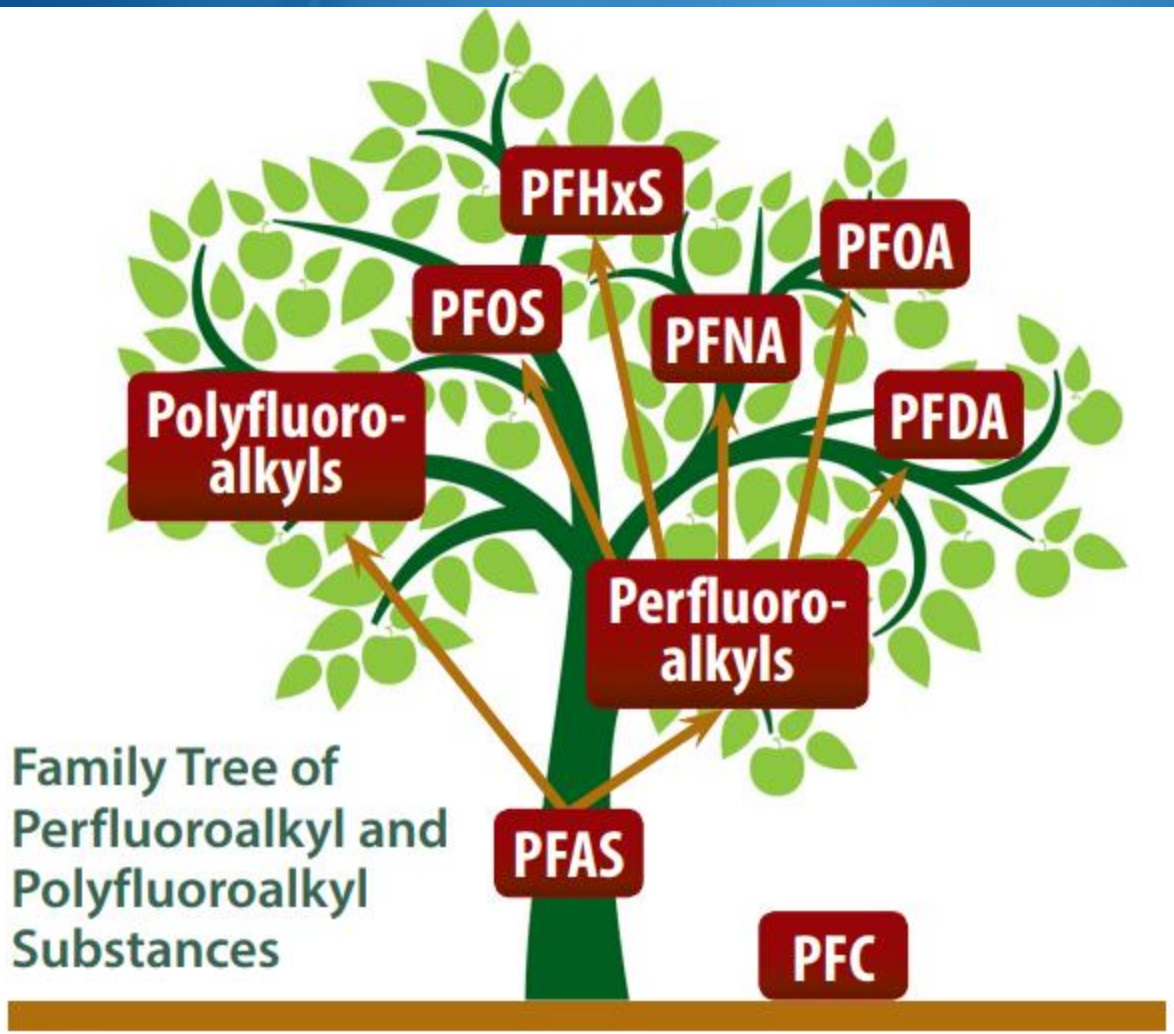
Per- and Polyfluoroalkyl Substances (PFAS) Updates

Merrimack Community Meeting
November 20, 2019

NH DIVISION OF
Public Health Services
Improving health, preventing disease, reducing costs *for all*
New Hampshire Department of Health & Human Services

Outline

- NH Department of Health & Human Services
- NH Department of Environmental Services
- Centers for Disease Control and Prevention's Agency for Toxic Substances & Disease Registry (CDC/ATSDR)
- Question & Answer



Family Tree of Perfluoroalkyl and Polyfluoroalkyl Substances

Figure 1

Agency for Toxic Substances and Disease Registry
Division of Community Health Investigations

ATSDR

https://www.atsdr.cdc.gov/docs/17_278160-A_PFAS-FamilyTree-508.pdf

PFAS Overview

- Man-made chemicals used in industry and consumer products worldwide since the 1950's
- Diverse group of more than 3000+ compounds
- Stain-, grease-, water-resistant properties
- Some are persistent in the environment and human bodies
- Specific PFAS that are commonly found:
  - PFOA: Perfluorooctanoic acid
  - PFOS: Perfluorooctane sulfonic acid
  - PFHxS: Perfluorohexane sulfonic acid
  - PFNA: Perfluorononanoic acid

Commercial and Industrial Products That May Use PFAS (*not all inclusive*)

Commercial Products	Industrial Uses
Cookware (Teflon®, Nonstick)	Photo Imaging
Fast Food Containers	Metal Plating
Candy Wrappers	Semiconductor Coatings
Microwave Popcorn Bags	Aviation Hydraulic Fluids
Personal Care Products (Shampoo, Dental Floss)	Medical Devices
Cosmetics (Nail Polish, Eye Makeup)	Firefighting Aqueous Film-Forming Foam
Paints and Varnishes	Insect Baits
Stain Resistant Carpet	Printer and Copy Machine Parts
Stain Resistant Chemicals (Scotchgard®)	Chemically Driven Oil Production
Water Resistant Apparel (Gore-Tex®)	Textiles, Upholstery, Apparel and Carpets
Cleaning Products	Paper and Packaging
Electronics	Rubber and Plastics
Ski Wax	

List Produced by CDC/ATSDR

PFAS Exposure Primarily by Oral Ingestion

- Consumption of food and water is the most important source for exposure to PFAS (includes migration of PFAS into food from boxes/packaging)
- Ingestion of contaminated dust is a significant source of exposure (carpets, upholstery, clothing)
- In infants, toddlers, and children, hand-to-mouth behavior is a significant source of exposure
- Minimal exposure through skin contact
- PFAS can be passed to babies during pregnancy (through placenta) and through breastfeeding

CDC/ATSDR website: https://www.atsdr.cdc.gov/pfas/pfas-exposure.html

PFAS and Breastfeeding

- Nursing mothers should continue to breastfeed
- American Academy of Pediatrics:

  "even though a number of environmental pollutants readily pass to the infant through human milk, the advantages of breastfeeding continue to greatly outweigh the potential risks in nearly every circumstance."

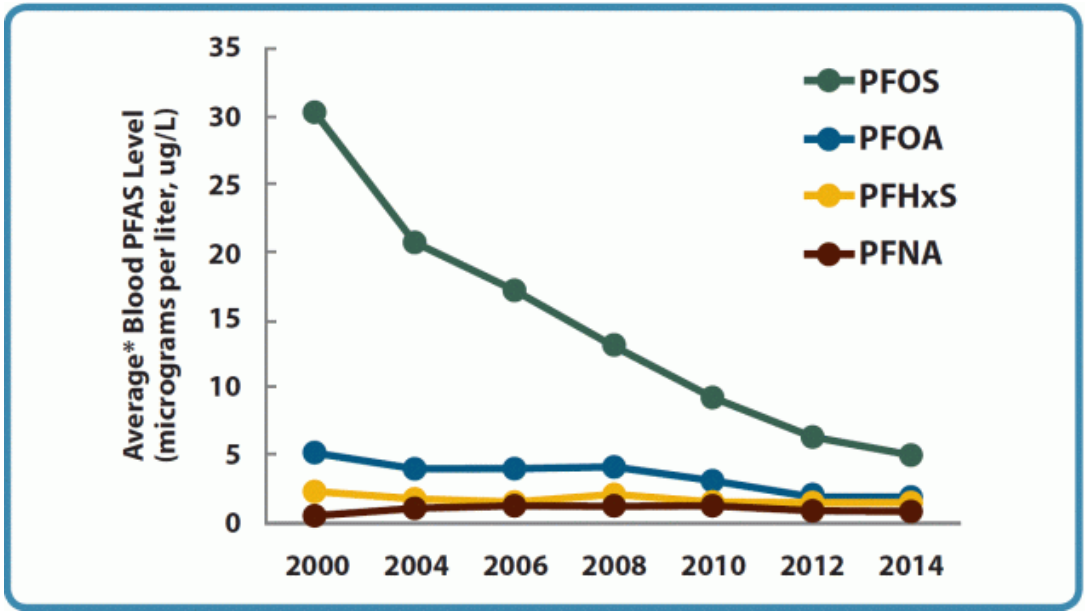
  (American Academy of Pediatrics, Council on Environmental Health. Breast Milk. In: Etzel, RA, ed. Pediatric Environmental Health, 3rd ed. Elk Grove Village IL:American Academy of Pediatrics; 2012. P. 199.)

CDC/ATSDR website: https://www.atsdr.cdc.gov/pfas/pfas-exposure.html

PFAS Exposure is Decreasing Nationally

- PFOA and PFOS have been phased out of production in the U.S.
- Exposure levels in the general U.S. population have been decreasing
- Exposure to PFAS in drinking water will lead to higher than average general U.S. exposures

Blood Levels of the Most Common PFAS in People in the United States from 2000-2014



* Average = geometric mean

Data Source: Centers for Disease Control and Prevention. Fourth Report on Human Exposure to Environmental Chemicals, Updated Tables, (January 2017). Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

CDC/ATSDR website: https://www.atsdr.cdc.gov/pfas/pfas-in-population.html

Long-Term Health Effects Being Studied

- Changes to the liver enzymes levels
- Increases in total cholesterol levels
- Increases in uric acid levels, which may affect blood pressure
- Changes in sex hormone levels that could affect reproductive development and puberty
- Changes in thyroid hormone levels
- Lower immune function (lower antibody response to immunization)
- Growth and development (lower birth weight in infants, obesity in adolescents/adults, cognitive and behavioral development)
- Occurrence of some types of cancers: prostate, kidney, and testicular cancer

Local and National Work to Address PFAS Exposure Concerns

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Resources

- NH DHHS PFAS website: https://www.dhhs.nh.gov/dphs/pfcs/index.htm
- PFAS exposure data in NH communities: https://wisdom.dhhs.nh.gov/wisdom/
- CDC/ATSDR PFAS website: https://www.atsdr.cdc.gov/pfas/index.html

NH PFAS Blood Testing Data (2015-2018)

NH Health WISDOM | Search | Search | A A A | User

Home | PFAS Blood Testing and Community Exposure

Per- and Polyfluoroalkyl Substances (PFAS) Blood Testing and Community Exposure

Data | **About PFAS**

Interactive Dashboards

Merrimack Village District PFAS Blood Testing Program
Pease PFAS Blood Testing Program (2015)
Pease PFAS Blood Testing Program (2016-present)
Southern New Hampshire PFAS Blood Testing Program

NH Health WISDOM performs best when using Google Chrome, Mozilla Firefox, Microsoft Edge or Internet Explorer 11.

How are people exposed to PFAS?

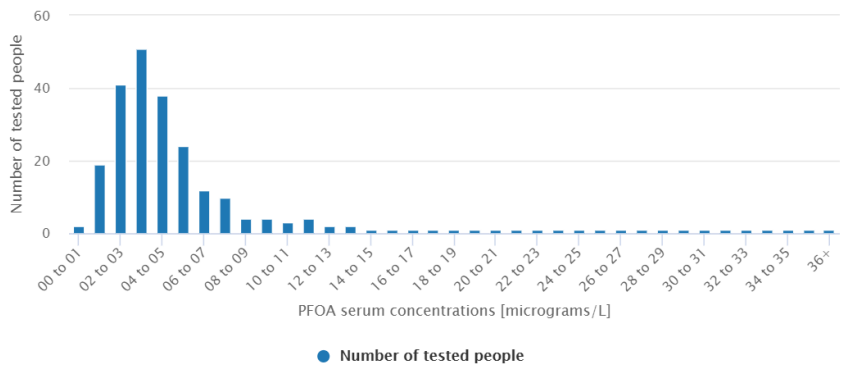
PFAS are synthetic chemicals that have been widely used to make a range of household and commercial products including stain resistant furniture, carpeting, and clothing; water-repellant fabrics; and grease-resistant food packaging. Because of this widespread use, most people have been exposed to these chemicals in their everyday lives, usually through oral ingestion, and when tested, almost all people have detectable levels of PFAS in their blood. If someone's drinking water has these chemicals, their blood levels are likely higher than the average U.S. resident.

How long do PFAS stay in the body?

PFOA

Outcome

PFOA serum concentrations, MVD



Outcome

Average PFOA serum concentrations
Comparison of MVD to general U.S. population

	Number of people tested	5th percentile of serum concentrations [µg/L]	Average of serum concentrations [µg/L]	95th percentile of serum concentrations [µg/L]
MVD participants - all	217	1.6	3.9	10.1
MVD participants - ages 3 to 11	14	2.1	3.2	7.9
U.S. population** - ages 3 to 11	639	not available	1.9	4.2
MVD participants - age 12 and above	201	1.6	4.0	10.1
U.S. population* - age 12 and above	2165	not available	1.9	5.6

- Children (3 to 11 years old) tested in the MVD group had an average PFOA level that was 1.3 micrograms/L higher than the average level in the same age range of the general U.S. population. This difference does appear to be statistically significant.
- Adults (12 years and older) tested in the MVD group had an average PFOA level that was 2.1 micrograms/L higher than the average level in the same age range of the general U.S. population. This difference does appear to be statistically significant.

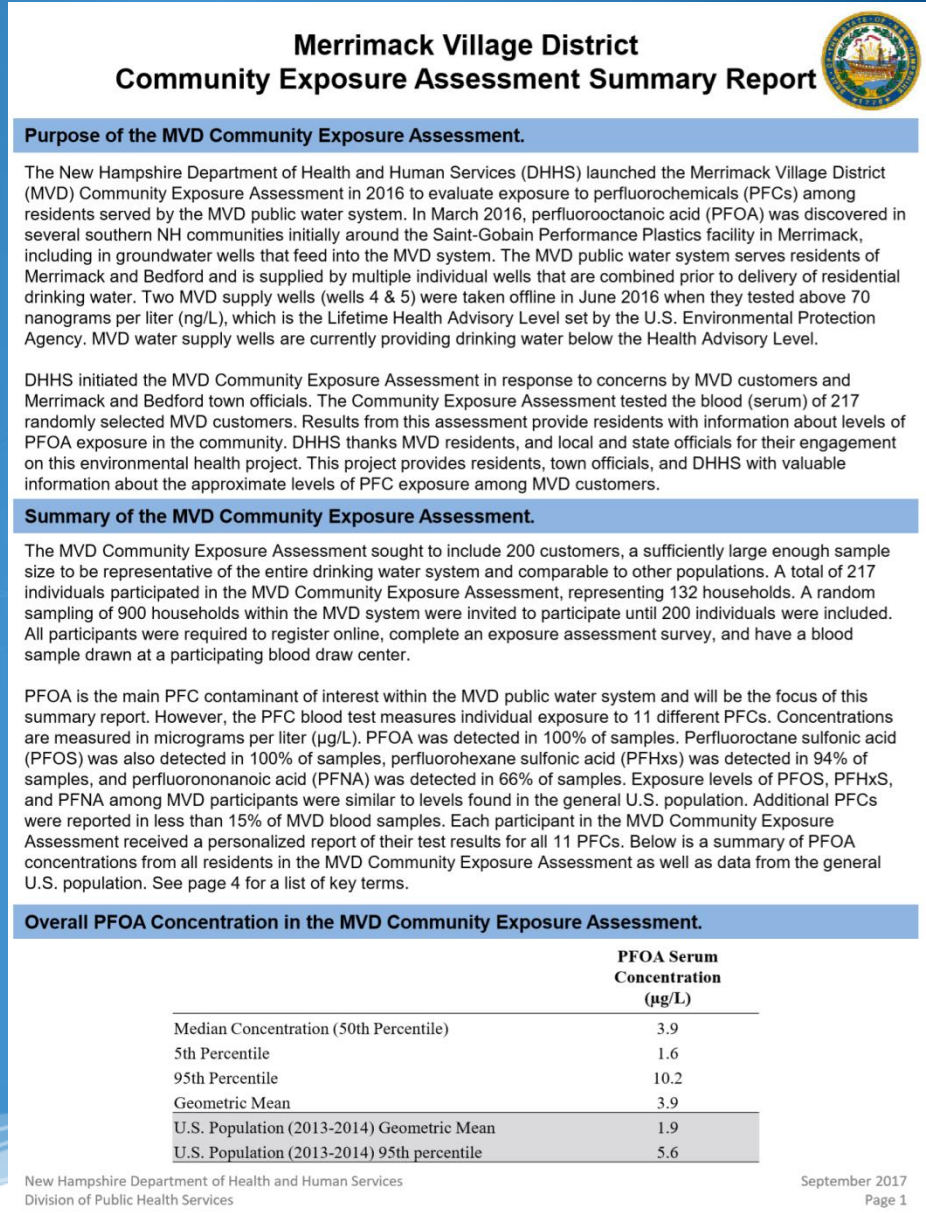
* PFAS serum levels in U.S. population (age 12 and above) are from the NHANES 2013-2014 study (https://www.cdc.gov/exposurereport/pdf/FourthReport_UpdatedTables_Volume1_Jan2017.pdf)
** PFAS serum levels in U.S. population (ages 3 to 11) are from a study of a subset of children participating in NHANES 2013-2014.
Citation: Ye, X. et al., International Journal of Hygiene and Environmental Health (2017), http://dx.doi.org/10.1016/j.ijheh.2017.09.011 .

Source: wisdom.dhhs.nh.gov

NH DHHS Website: https://wisdom.dhhs.nh.gov/wisdom/

MVD Community Exposure Assessment

- Evaluated PFAS exposure among residents served by public water system
- PFAS blood testing on a sampling of 217 residents (132 households)
- Residents had higher levels of PFOA exposure compared to the general U.S. population



Merrimack Village District
Community Exposure Assessment Summary Report

Purpose of the MVD Community Exposure Assessment.

The New Hampshire Department of Health and Human Services (DHHS) launched the Merrimack Village District (MVD) Community Exposure Assessment in 2016 to evaluate exposure to perfluorochemicals (PFCs) among residents served by the MVD public water system. In March 2016, perfluorooctanoic acid (PFOA) was discovered in several southern NH communities initially around the Saint-Gobain Performance Plastics facility in Merrimack, including in groundwater wells that feed into the MVD system. The MVD public water system serves residents of Merrimack and Bedford and is supplied by multiple individual wells that are combined prior to delivery of residential drinking water. Two MVD supply wells (wells 4 & 5) were taken offline in June 2016 when they tested above 70 nanograms per liter (ng/L), which is the Lifetime Health Advisory Level set by the U.S. Environmental Protection Agency. MVD water supply wells are currently providing drinking water below the Health Advisory Level.

DHHS initiated the MVD Community Exposure Assessment in response to concerns by MVD customers and Merrimack and Bedford town officials. The Community Exposure Assessment tested the blood (serum) of 217 randomly selected MVD customers. Results from this assessment provide residents with information about levels of PFOA exposure in the community. DHHS thanks MVD residents, and local and state officials for their engagement on this environmental health project. This project provides residents, town officials, and DHHS with valuable information about the approximate levels of PFC exposure among MVD customers.

Summary of the MVD Community Exposure Assessment.

The MVD Community Exposure Assessment sought to include 200 customers, a sufficiently large enough sample size to be representative of the entire drinking water system and comparable to other populations. A total of 217 individuals participated in the MVD Community Exposure Assessment, representing 132 households. A random sampling of 900 households within the MVD system were invited to participate until 200 individuals were included. All participants were required to register online, complete an exposure assessment survey, and have a blood sample drawn at a participating blood draw center.

PFOA is the main PFC contaminant of interest within the MVD public water system and will be the focus of this summary report. However, the PFC blood test measures individual exposure to 11 different PFCs. Concentrations are measured in micrograms per liter (µg/L). PFOA was detected in 100% of samples. Perfluoroctane sulfonic acid (PFOS) was also detected in 100% of samples, perfluorohexane sulfonic acid (PFHxs) was detected in 94% of samples, and perfluorononanoic acid (PFNA) was detected in 66% of samples. Exposure levels of PFOS, PFHxS, and PFNA among MVD participants were similar to levels found in the general U.S. population. Additional PFCs were reported in less than 15% of MVD blood samples. Each participant in the MVD Community Exposure Assessment received a personalized report of their test results for all 11 PFCs. Below is a summary of PFOA concentrations from all residents in the MVD Community Exposure Assessment as well as data from the general U.S. population. See page 4 for a list of key terms.

Overall PFOA Concentration in the MVD Community Exposure Assessment.

	PFOA Serum Concentration (µg/L)
Median Concentration (50th Percentile)	3.9
5th Percentile	1.6
95th Percentile	10.2
Geometric Mean	3.9
U.S. Population (2013-2014) Geometric Mean	1.9
U.S. Population (2013-2014) 95th percentile	5.6

New Hampshire Department of Health and Human Services
Division of Public Health Services

September 2017
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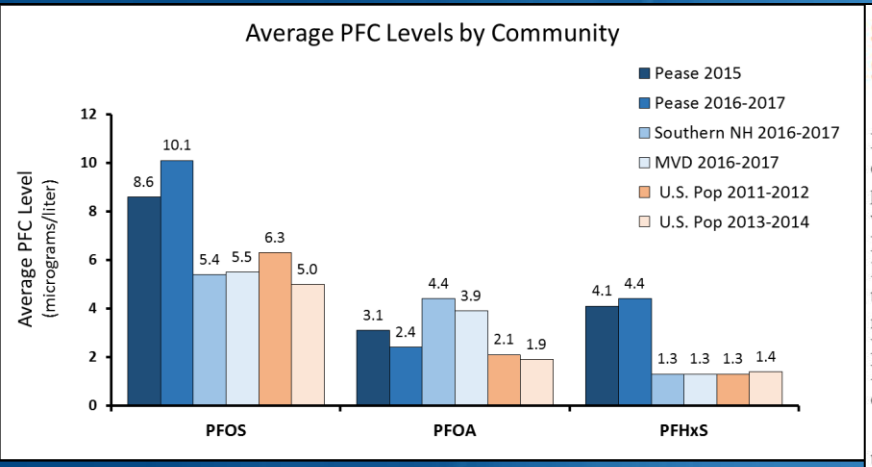
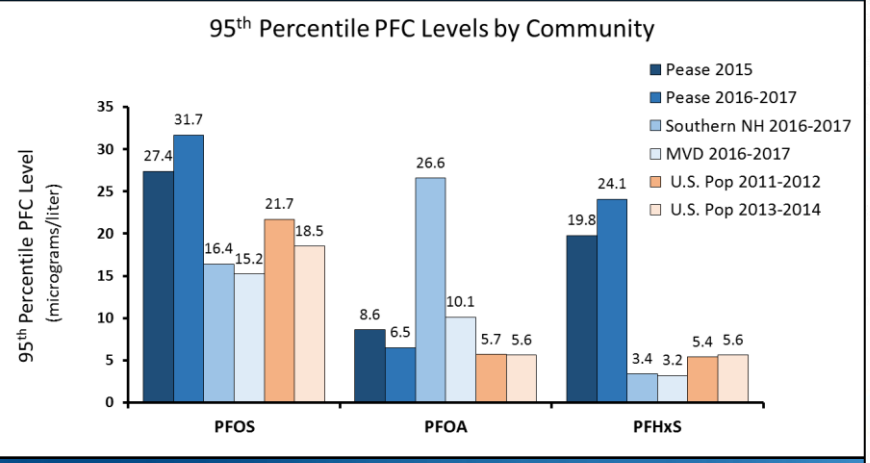
NH DHHS Website: https://www.dhhs.nh.gov/dphs/pfcs/documents/mvd-pfc-09252017.pdf

Summary and Comparison of Results





Summary of the New Hampshire Department of Health and Human Services' Perfluorochemical (PFC) Blood Testing Program, 2016-2017

Beginning in April 2015, the New Hampshire Department of Health and Human Services (DHHS) has conducted blood testing for people in communities where perfluorochemicals (PFCs) have been found in drinking water above lifetime health advisory levels. The DHHS PFC blood testing program measures a person's PFC blood level, or the amount of PFCs in the blood. The DHHS blood testing program was initially launched to test people who may have been exposed to PFCs on the Pease Tradeport. Between April and October 2015, 1,578 members of the Pease Tradeport community had their blood tested for PFC exposure.

In 2016, DHHS expanded the blood testing program to include residents of communities in southern New Hampshire, initially around the Saint-Gobain Performance Plastics facility in Merrimack, where PFCs have been found to contaminate private drinking water wells. DHHS has also conducted a Community Exposure Assessment among the Merrimack Village District (MVD) public water system, a random sample of 217 MVD customers to measure approximate levels of exposure. Below is a summary of 694 blood test results conducted in 2016-2017, including 258 individuals from the Pease Tradeport community, 219 individuals from southern New Hampshire communities on private drinking water wells, and 217 individuals who participated in the MVD Community Exposure Assessment. The results are compared to each other, 2015 blood test results from Pease, other exposed communities and the general U.S. population.

The comparisons below include average and 95th percentile PFC levels found in the communities. The average is the middle level found in the community. The 95th percentile reflects the upper-end of the blood levels that most individuals tested below (95% of individuals in the community tested below this level). The DHHS PFC blood testing program is ongoing and some results may change as additional results become available.

Summary Results for Individuals Who Participated in the MVD Community Exposure Assessment

- People participating in the MVD Community Exposure Assessment had higher levels of PFOA exposure compared with the general U.S. population.
- PFOA levels were lower than levels seen in other exposed communities around the U.S, including Bennington, VT and Hoosick Falls, NY, where residents living near a Saint-Gobain facility received blood testing.
- PFOA blood levels in MVD participants are similar to blood levels in other southern NH residents whose private drinking water wells tested between 40-60 ppt of PFOA.

Summary Results for Individuals in Southern NH on Private Wells

- Participants from southern New Hampshire had higher blood levels of perfluorooctanoic acid (PFOA) compared with the general U.S. population.
- Individuals with higher concentrations of PFOA in their private well water have higher blood PFOA levels.
- PFOA levels in southern NH residents were lower than levels seen in other exposed communities around the U.S, including Bennington, VT and Hoosick Falls, NY, where residents living near a Saint-Gobain facility received blood testing.

NH DHHS Website: https://www.dhhs.nh.gov/dphs/pfcs/documents/results-summary.pdf

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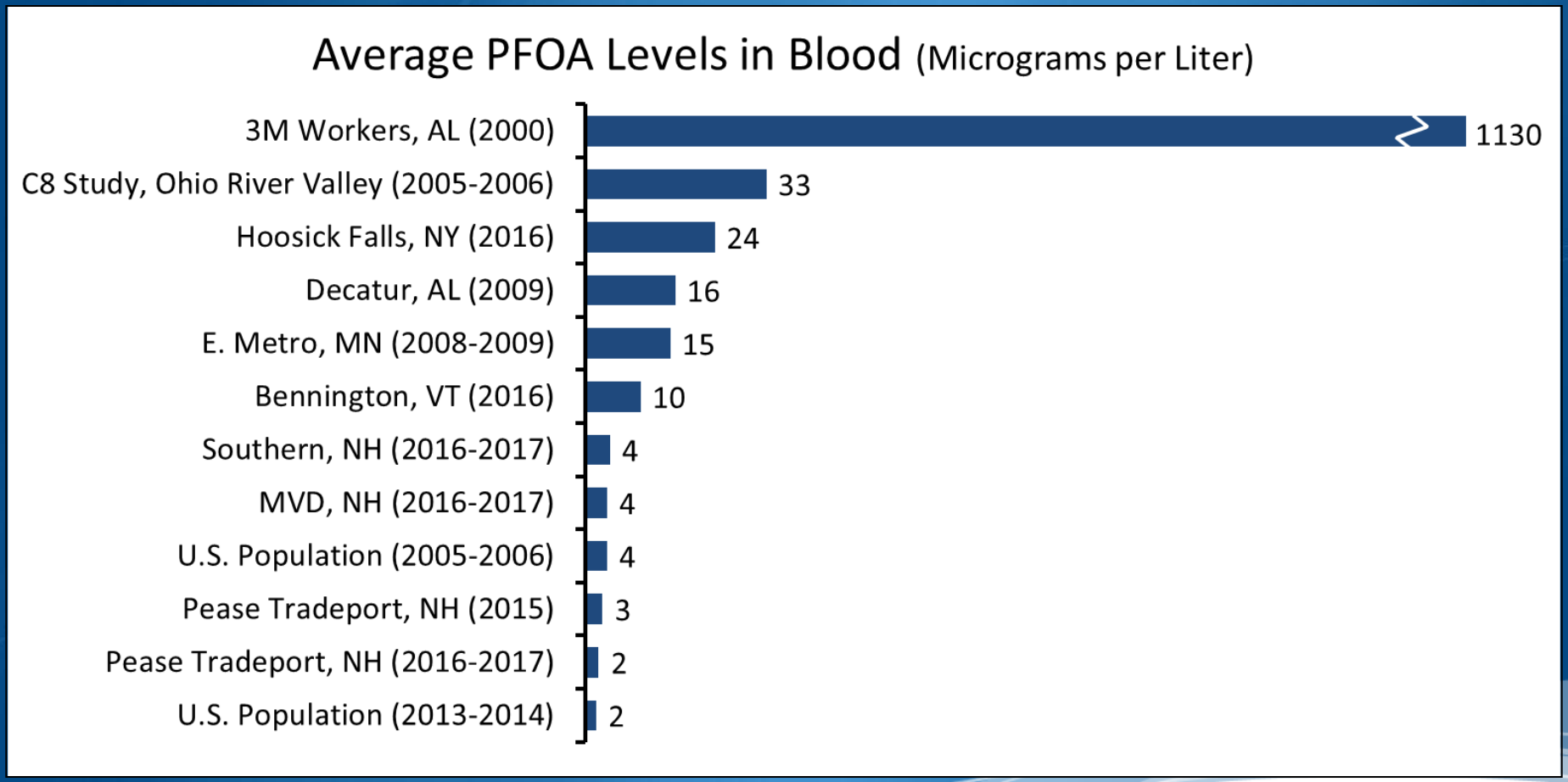
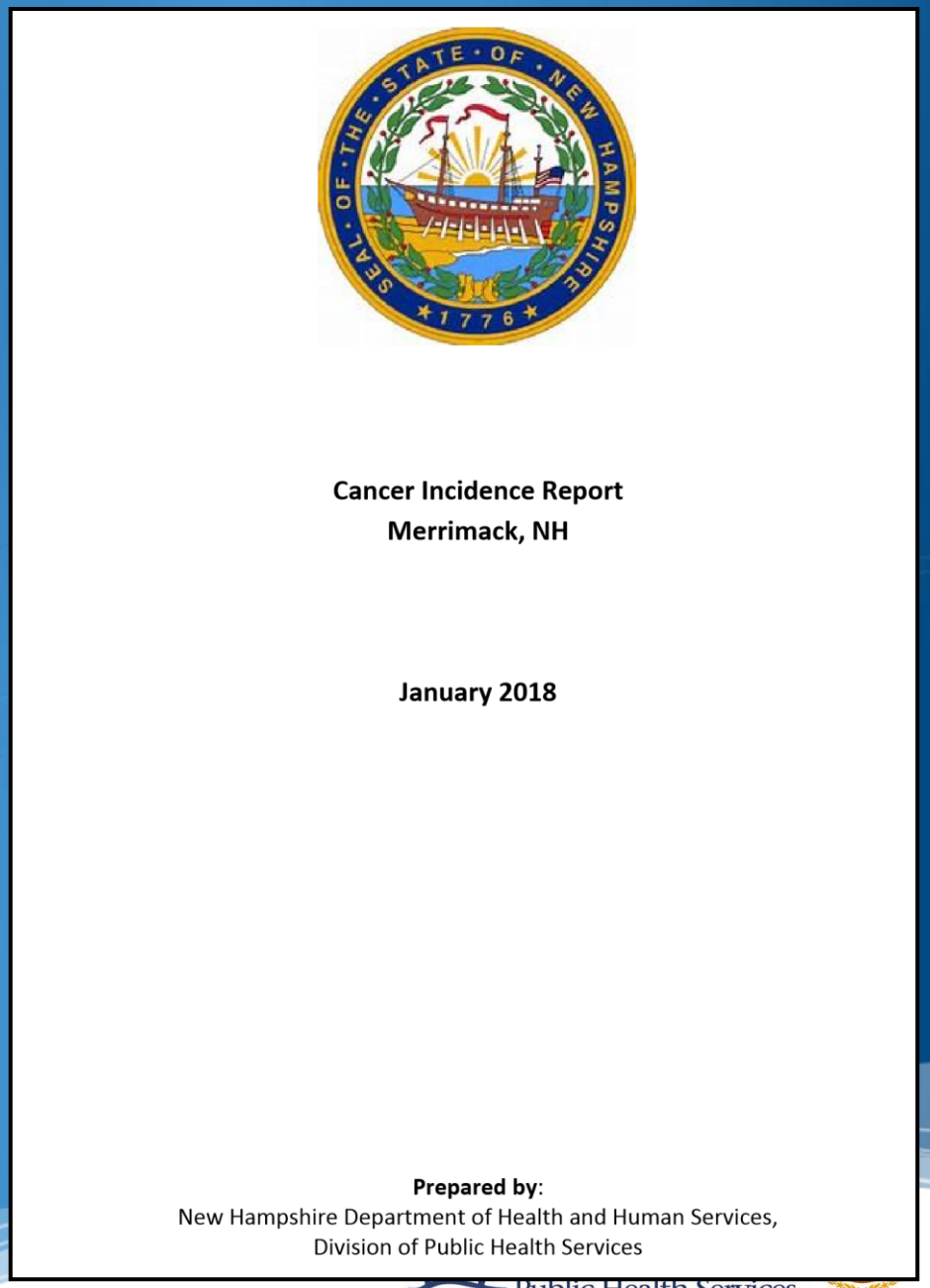
New Hampshire Department of Health & Human Services

Average PFOA Blood Levels Compared to Other Exposed Communities



Addressing Cancer Concerns

- Provides a brief review of the science looking at PFAS associations with certain cancers
- Reports on cancer incidence in Merrimack, NH



Cancer Incidence Report
Merrimack, NH

January 2018

Prepared by:
New Hampshire Department of Health and Human Services,
Division of Public Health Services

NH DHHS Website: https://www.dhhs.nh.gov/dphs/pfcs/documents/merrimack-cancer-012018.pdf

Healthcare Provider Messaging on PFAS

- Multiple Health Alert Network Messages have been sent
- We have worked with the NH Medical Society to increase awareness among providers

THIS IS AN OFFICIAL NH DHHS HEALTH ALERT

Distributed by the NH Health Alert Network
Health.Alert@nh.gov
June 28, 2019, 1330 EDT (1:30 PM EDT)
NH-HAN 20190628

NH DIVISION OF Public Health Services
Improving health, preventing disease, reducing costs *for all*
Department of Health and Human Services

Per- and Polyfluoroalkyl Substances (PFAS)
New Hampshire Update

Key Points and Recommendations:

1. The New Hampshire Department of Environmental Services (NHDES) has proposed new PFAS drinking water standards, called Maximum Contaminant Levels (MCLs), for four commonly identified PFAS compounds. Please review the attached Frequently Asked Questions (FAQ) document for more information.
2. The long-term risk to human health from PFAS exposure is unclear, but the Centers for Disease Control and Prevention's Agency for Toxic Substances and Disease Registry (CDC/ATSDR) is conducting a national PFAS health study to learn more about the potential human health impact from exposure to these chemicals.
3. New Hampshire has multiple communities with PFAS drinking water contamination. Healthcare providers may receive questions from patients about how to monitor the health of a person who has exposure to these chemicals in drinking water. Healthcare providers are urged to review the following available resources:
   - CDC/ATSDR clinician PFAS guidance: https://www.atsdr.cdc.gov/pfas/docs/pfas_clinician_fact_sheet_508.pdf.
   - CDC/ATSDR clinician continuing education webinar/training: https://www.atsdr.cdc.gov/emes/pfas_clinicians_training.html.
   - NH DHHS healthcare provider letter about PFAS blood testing: https://www.dhhs.nh.gov/dphs/pfcs/documents/pfas-provider-report.pdf.

ATSDR Healthcare Provider Guidance

- Help clinicians address health concerns and monitor the health of people exposed to PFAS

CDC/ATSDR Website: https://www.atsdr.cdc.gov/pfas/docs/pfas_clinician_fact_sheet_508.pdf

An Overview of Perfluoroalkyl and Polyfluoroalkyl Substances and Interim Guidance for Clinicians Responding to Patient Exposure Concerns

Interim Guidance

Revised on 5/07/2018

Introduction

The purpose of this fact sheet is to provide interim guidance to aid physicians and other clinicians with patient consultations on perfluoroalkyl and polyfluoroalkyl substances (PFAS). It highlights what PFAS are, which chemicals fall into this category of substances, identifies health effects associated with exposure to various PFAS, and suggests answers to specific patient questions about potential PFAS exposure.

Background

What are PFAS?

PFAS, sometimes known as PFCs, are synthetic chemicals that do not occur naturally in the environment. There are many different types of PFAS such as perfluorocarboxylic acids (e.g., PFOA, sometimes called C8, and PFNA) and perfluorosulfonates (e.g., PFOS and PFHxS). PFAS may be used to keep food from sticking to cookware, to make sofas and carpets resistant to stains, to make clothes and mattresses more waterproof, and to make some food packaging resistant to grease absorption, as well as use in some firefighting materials. Because PFAS help reduce friction, they are also used in a variety of other industries, including aerospace, automotive, building and construction, and electronics.

Why are PFAS a possible health concern?

According to the U.S. Environmental Protection Agency (EPA), PFAS are considered emerging contaminants. An "emerging contaminant" is a chemical or material that is characterized by a perceived, potential, or real threat to human health or the environment or by a lack of published health standards.

PFAS are extremely persistent in the environment and resistant to typical environmental degradation processes. The pathway for dispersion of these chemicals appears to be long-range atmospheric and oceanic currents transport. Several PFAS and their potential precursors are ubiquitous in a variety of environments. Some long-chain PFAS bioaccumulate in animals and can enter the human food chain.

PFOS and PFOA are two of the most studied PFAS. Exposure to PFOA and PFOS is widespread and global. PFOS and PFOA also persist in the human body and are eliminated slowly. Both PFOS and PFOA can be found in blood, and at much lower levels in urine, breast milk and in umbilical cord blood.

PFOS and PFOA may pose potential adverse effects for human health given their potential toxicity, mobility, and bioaccumulation potential. The likelihood of adverse effects depends on several factors such as amount and concentration of PFAS ingested as well as the time span of exposure.

Routes of Exposure and Health Effects

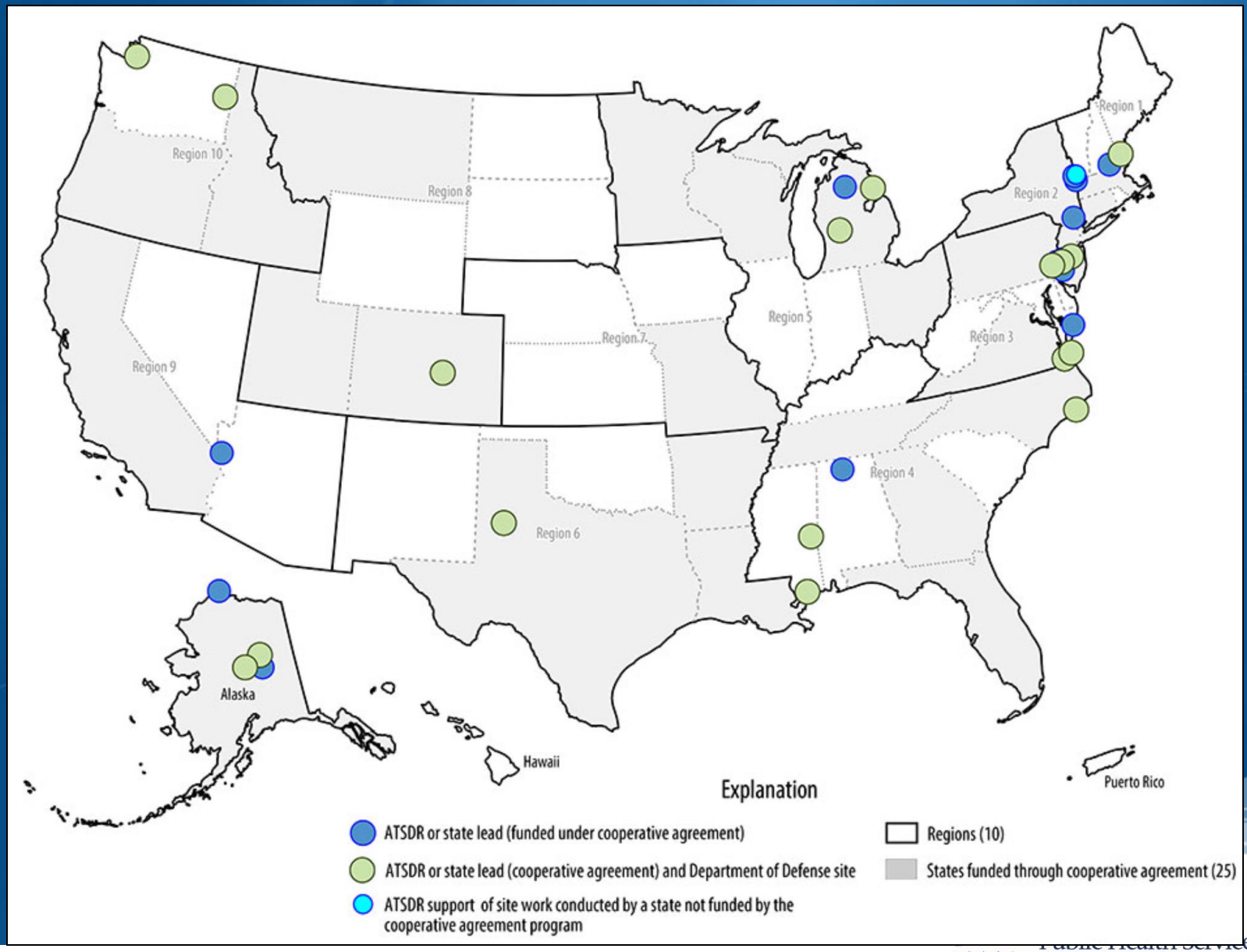
What are the main sources of exposure to PFAS?

For the general population, ingestion of PFAS is considered the major human exposure pathway. The major types of human exposure sources for PFAS include:

- Drinking contaminated water.
- Ingesting food contaminated with PFAS, such as certain types of fish and shellfish.
- Until recently, eating food packaged in materials containing PFAS (e.g., popcorn bags, fast food containers, and pizza boxes). Using PFAS compounds has been largely phased out of food packaging materials.
- Hand-to-mouth transfer from surfaces treated with PFAS-containing stain protectants, such as carpets, which is thought to be most significant for infants and toddlers.

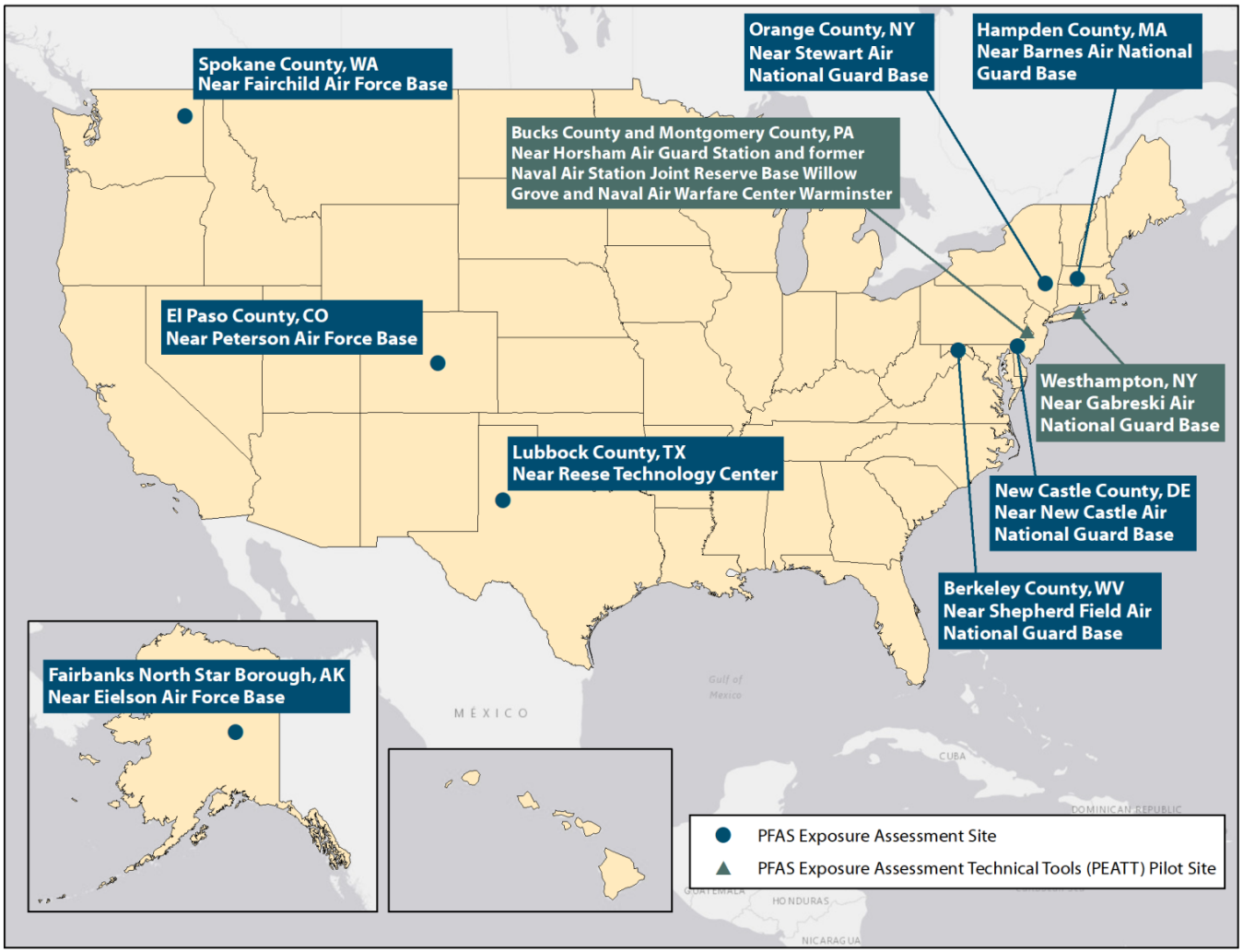
National Center for Environmental Health
Agency for Toxic Substances and Disease Registry

CDC/ATSDR Site Involvement



Website: https://www.atsdr.cdc.gov/pfas/atsdr_sites_involvement.html

Exposure Assessments being Conducted Nationally



Website: https://www.atsdr.cdc.gov/pfas/atsdr_sites_involvement.html

CDC/ATSDR Multi-Site Health Study

- Seeks to enroll at least 6000 adults and 2000 children from 8 different sites nationally:
  - New Hampshire: Pease Tradeport, Portsmouth
  - Colorado: El Paso Country
  - Michigan: Parchment/Cooper Township and North Kent County
  - Pennsylvania: Montgomery and Bucks Counties
  - New Jersey: Gloucester County
  - Massachusetts: Hyannis and Ayer
  - New York: Hoosick Falls and Newburgh
  - California: Communities near UC Irvine Medical Center

Website: https://www.atsdr.cdc.gov/pfas/Multi-Site-Health-Study.html

CDC/ATSDR Multi-Site Health Study

- Collect information about:
  - Immune response
  - Lipid metabolism
  - Kidney function
  - Thyroid disease
  - Liver disease
  - Blood sugar levels and diabetes
  - Cancer (although size of the study is not large enough to effectively evaluate the relationship between PFAS exposure and cancer)

Website: https://www.atsdr.cdc.gov/pfas/Multi-Site-Health-Study.html

Challenges Addressing PFAS Concerns

- The extent of contamination and exposure across the U.S. is large
- Clinical interpretation of PFAS blood test results (exposure assessment) is difficult
- We don’t understand human health risks well
- Health information and science is rapidly changing
- New PFAS compounds are created and used
- Evaluating mixtures of PFAS and other chemicals
- Implementation of water treatment systems

New Hampshire's Drinking Water Standards for PFAS

Jonathan M. Ali, Ph.D., Toxicologist
New Hampshire Department of Environmental Services

November 20th, 2019

PFAS and Health – A Free Information Session for Southern NH




NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Presentation Outline

1. What is the drinking water standard?
2. Why did NHDES recommend these limits for PFAS?
3. What can you do?
4. What are NHDES's next steps?

Regulatory Response to PFAS

2016 – New Hampshire adopted the EPA's 70 ng/L (total of PFOA + PFOS) as a groundwater standard

2018 – **House Bill 1101 & Senate Bill 309**, NHDES Shall:

1. **Establish Drinking Water Limits**
   Drafted January 2019. Finalized July 2019. Adopted September 2019. With consideration of all sensitive life stages.

2. **Regulate Air-to-Groundwater Pollution Sources**
   Example, ongoing comment period for S.G.'s air permit.

3. **Develop a Plan to Regulate PFAS in All Surface Waters**
   Due January 1st, 2020.

Granted authority to set **Drinking Water Maximum Contaminant Levels** (**MCLs**) and **Ambient Groundwater Quality Standards** (**AGQS**) for PFOA, PFOS, PFHxS and PFNA.

NHDES Maximum Contaminant Levels

Maximum Contaminant Levels (MCLs/AGQSs) for these 4 PFAS are:

Perfluoroctanoic acid	**(PFOA)**	**12 ng/L**
Perfluorooctane sulfonic acid	**(PFOS)**	**15 ng/L**
Perfluorohexane sulfonic acid	**(PFHxS)**	**18 ng/L**
Perfluorononanoic acid	**(PFNA)**	**11 ng/L**

Effective September 30th, 2019.

NHDES. (2019). NHDES Proposes New PFAS Drinking Water Standards Final Rulemaking Proposal for PFOA, PFOS, PFHxS and PFNA. https://www.des.nh.gov/media/pr/2019/20190628-pfas-standards.html

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Why did NHDES recommend these limits for PFAS?

PFAS Toxicology & Risk Assessment

Hazard Identification

What effects are associated with PFAS exposure?

Is there strong evidence in human and/or animal studies?

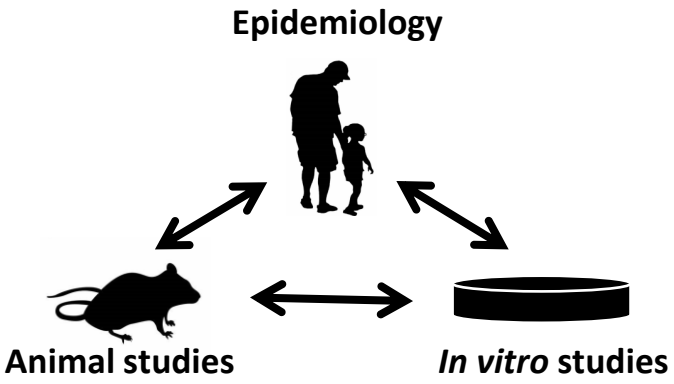
What are current limitations of our scientific knowledge?

Risk Assessment

What dose causes the adverse effect(s)?

What's the reasonable rate of exposure?

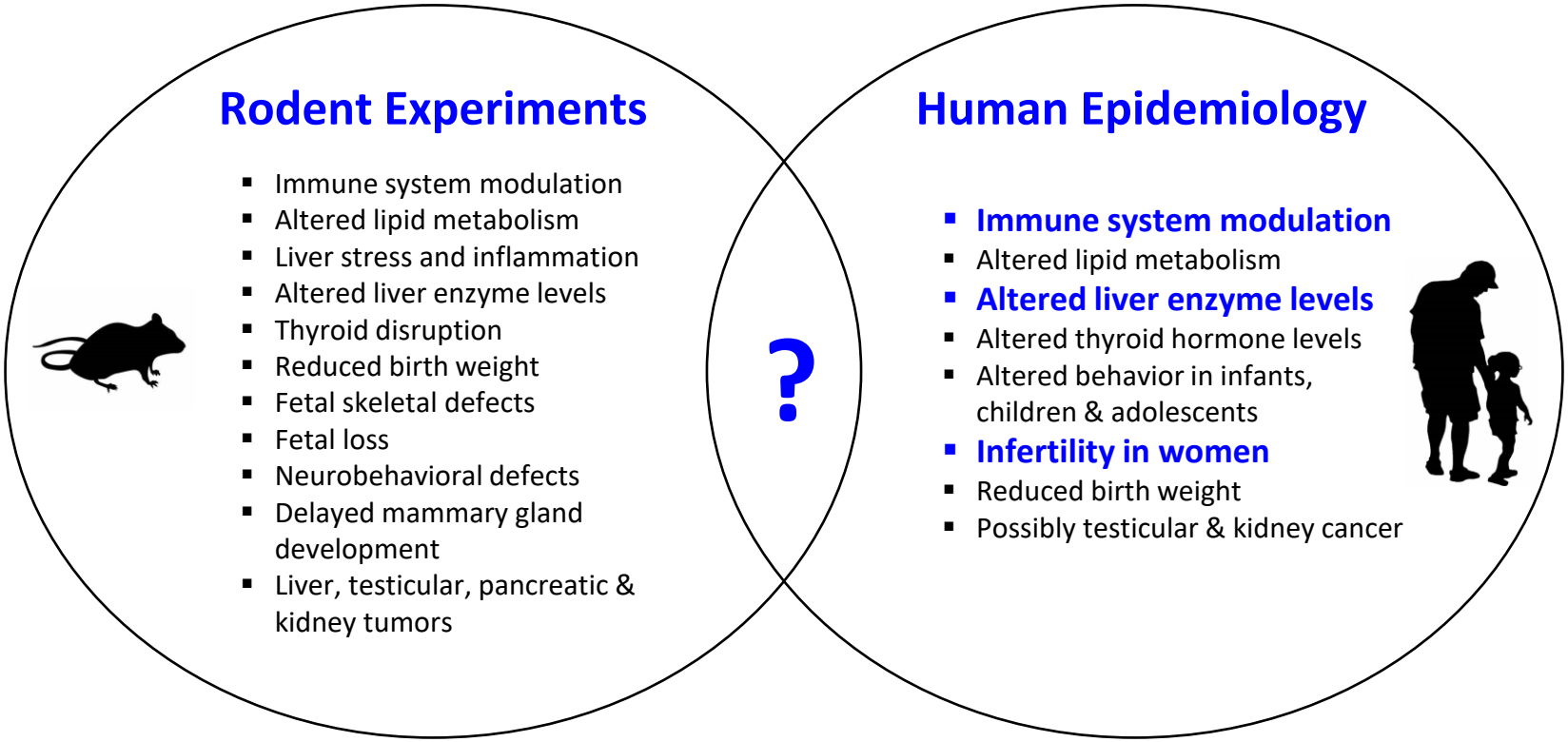
How likely are non-drinking water sources of exposure?



$$\frac{\text{POD (ng/mL)}}{\text{Uncertainty Factors}} \times \left[V_d\,(\text{mL/kg}) \times \frac{Ln(2)}{t_{1/2}}\right] \times \text{Relative Source Contribution (\%)} \over \text{Water Ingestion Rate (L/kg–day)} = \text{MCL (ng/L)}$$

PFAS Hazard Identification

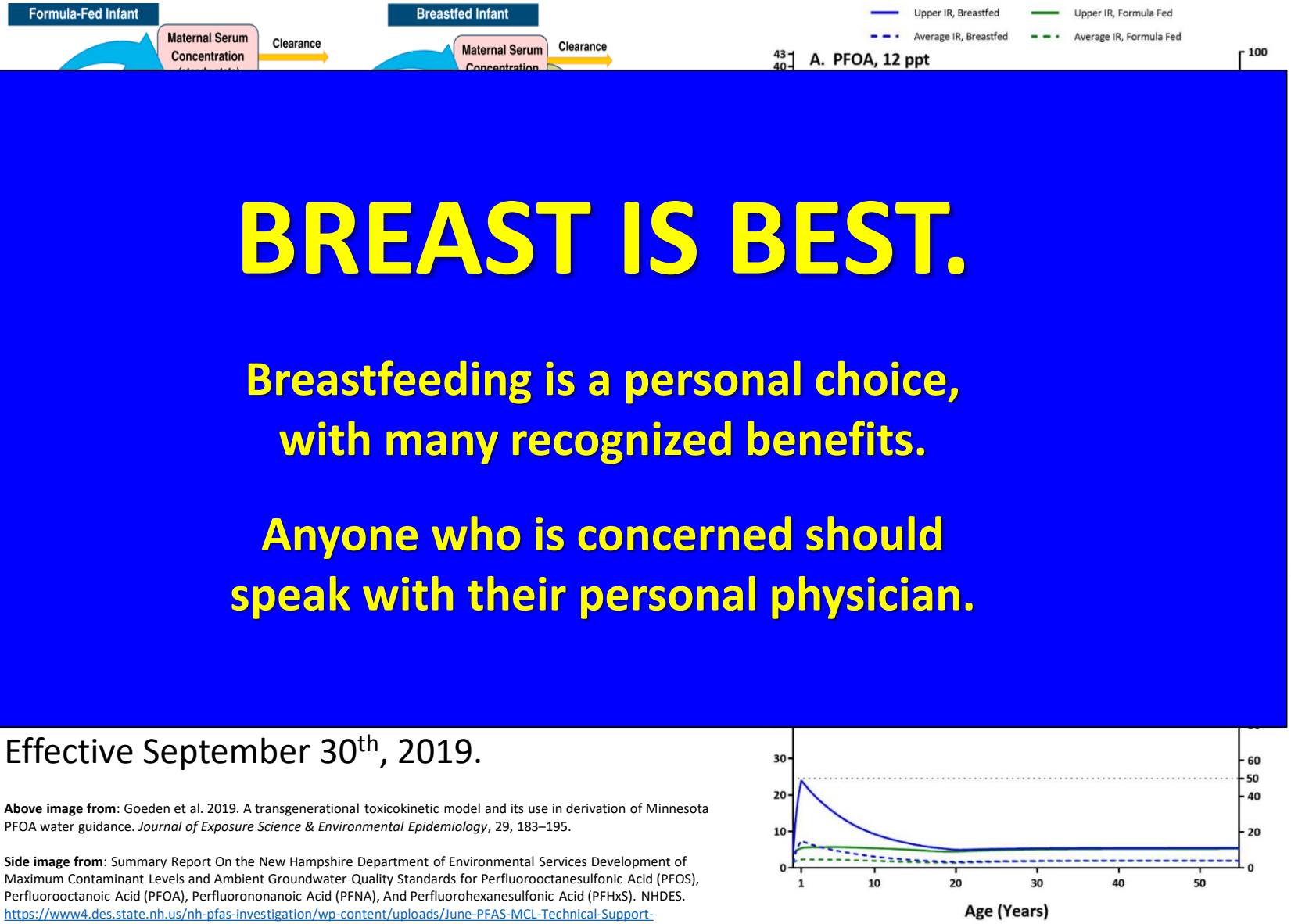
According to the **Agency for Toxic Substances and Disease Registry,** health outcomes that may be associated with PFAS include:



There is ongoing research by several U.S Federal agencies, academic institutions and private organizations.

Agency for Toxic Substances and Disease Registry (ATSDR). 2018. Toxicological Profile for Perfluoroalkyls – Draft for Public Comment, June 2018. https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf

Minnesota Department of Health's Modeling



BREAST IS BEST.

Breastfeeding is a personal choice, with many recognized benefits.

Anyone who is concerned should speak with their personal physician.

Effective September 30th, 2019.

Above image from: Goeden et al. 2019. A transgenerational toxicokinetic model and its use in derivation of Minnesota PFOA water guidance. *Journal of Exposure Science & Environmental Epidemiology*, 29, 183–195.

Side image from: Summary Report On the New Hampshire Department of Environmental Services Development of Maximum Contaminant Levels and Ambient Groundwater Quality Standards for Perfluorooctanesulfonic Acid (PFOS), Perfluorooctanoic Acid (PFOA), Perfluorononanoic Acid (PFNA), And Perfluorohexanesulfonic Acid (PFHxS). NHDES. https://www4.des.state.nh.us/nh-pfas-investigation/wp-content/uploads/June-PFAS-MCL-Technical-Support-Document-FINAL.pdf

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

What can you do?

What can you do?

1. **Well Owners** – Have your well tested.
   If needed, consider a treatment option right for you.
   Test for other well water contaminants (e.g. arsenic).

2. **Public Supply Users** – Check with your water provider.

3. **Anyone with health concerns** – Speak with your physician first.

4. **Additional questions?** – Contact us.

Treatment Options: https://www4.des.state.nh.us/nh-pfas-investigation/?page_id=171

Testing Laboratories: https://www4.des.state.nh.us/nh-pfas-investigation/wp-content/uploads/2019/06/pfoa-testing-labs.pdf

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

What are NHDES's next steps?

Next Steps for NHDES

1. Developing a plan, budget and timeline needed to set surface water standards.

2. On-going investigation of PFAS occurrence.

3. Evaluating emerging data on other PFAS.

4. Communicating with other agencies including neighboring states, the U.S. EPA, CDC, NH municipalities and community partners.

Acknowledgements

The staff at New Hampshire's Department of Environmental Services and Department of Health & Human Services.

New Hampshire's:

- Residents, community stakeholders, municipalities and legislatures,
- academic institutions,
- community advocacy groups,
- representatives for the business and regulated community.

Also, the input and collaborative communication with these agencies:

Connecticut Department of Public Health (CTDPH)
Environmental Council of the States (ECOS) PFAS Caucus
Federal-State Toxicology & Risk Analysis Committee (FSTRAC)
Interstate Technology & Regulatory Council (ITRC) PFAS Working Group
Maine Department of Health & Human Services
Massachusetts Department of Environmental Protection (MADEP)
Michigan Department of Health & Human Services (MIDHHS)
Minnesota Department of Health (MDH)
New England Interstate Water Pollution Control Commission (NEIWPCC)
New Jersey Department of Environmental Protection (NJDEP)
Northeast Waste Management Officials' Association (NEWMOA)

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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Check the NHDES Website: https://www4.des.state.nh.us/nh-pfas-investigation