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# CDC PUBLIC HEALTH GRAND ROUNDS

## PFAS and Protecting Your Health



**Event ID: 4207262**

**November 19, 2019**



**U.S. Department of  
Health and Human Services**  
Centers for Disease  
Control and Prevention

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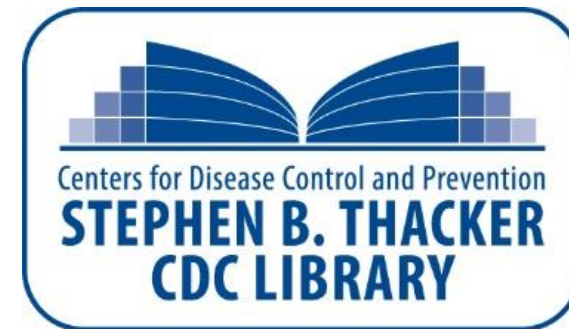
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scienceclips  
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# Today's Speakers and Contributors



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## Acknowledgments

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# Upcoming Programs of Interest

**January 21, 2020**

**Public Health Grand Rounds  
Pathogen Genomics**

**February 18, 2020**

**Public Health Grand Rounds  
Measles**



# CDC PUBLIC HEALTH GRAND ROUNDS

## PFAS and Protecting Your Health



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# The Science of PFAS: Knowns and Unknowns



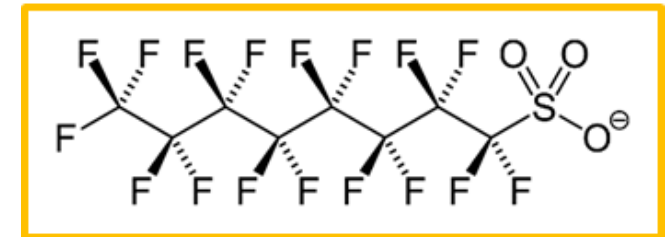
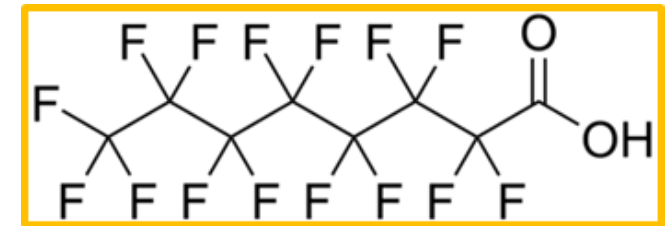
**Rachel D. Rogers, PhD**  
*Environmental Health Scientist*  
Agency for Toxic Substances and Disease Registry

# Outline

- **What are PFAS?**
- **History of Use**
- **Initial Investigations**
- **Federal Response**

# What are PFAS?

- **Stands for per- and polyfluoroalkyl Substances**
- **Carbon chain surrounded by fluorine atoms and acid group**
- **Many different PFAS species (>5,000)**
  - Pefluorocarboxylic acids (e.g., PFOA)
  - Perfluorosulfonates (e.g., PFOS)
- **Repel water and oil**
- **Act as surfactants and dispersants**
- **Persist in environment and in people's bodies**



# Sources of PFAS Exposure

- **Drinking contaminated water**
- **Eating fish caught from water contaminated by PFAS**
- **Accidentally swallowing contaminated soil or dust**
- **Eating food that was packaged in material that contains PFAS**
- **Using some consumer products**
  
- **Babies born to exposed mothers can be exposed during pregnancy and while breastfeeding.**
  - **Nursing mothers should continue to breastfeed.**

# History of PFAS Exposure and Health Studies

## 1930s-1950s

PFAS are first synthesized.  
Production for use in nonstick coatings and stain- and water-resistant products begins.

## 1980s

Preliminary PFAS toxicity studies in rodents suggest possibility of health effects.

## 2006

Eight major PFAS manufacturers begin to phase out PFOA and related compounds

## 1968

Evidence of PFAS in human serum first observed

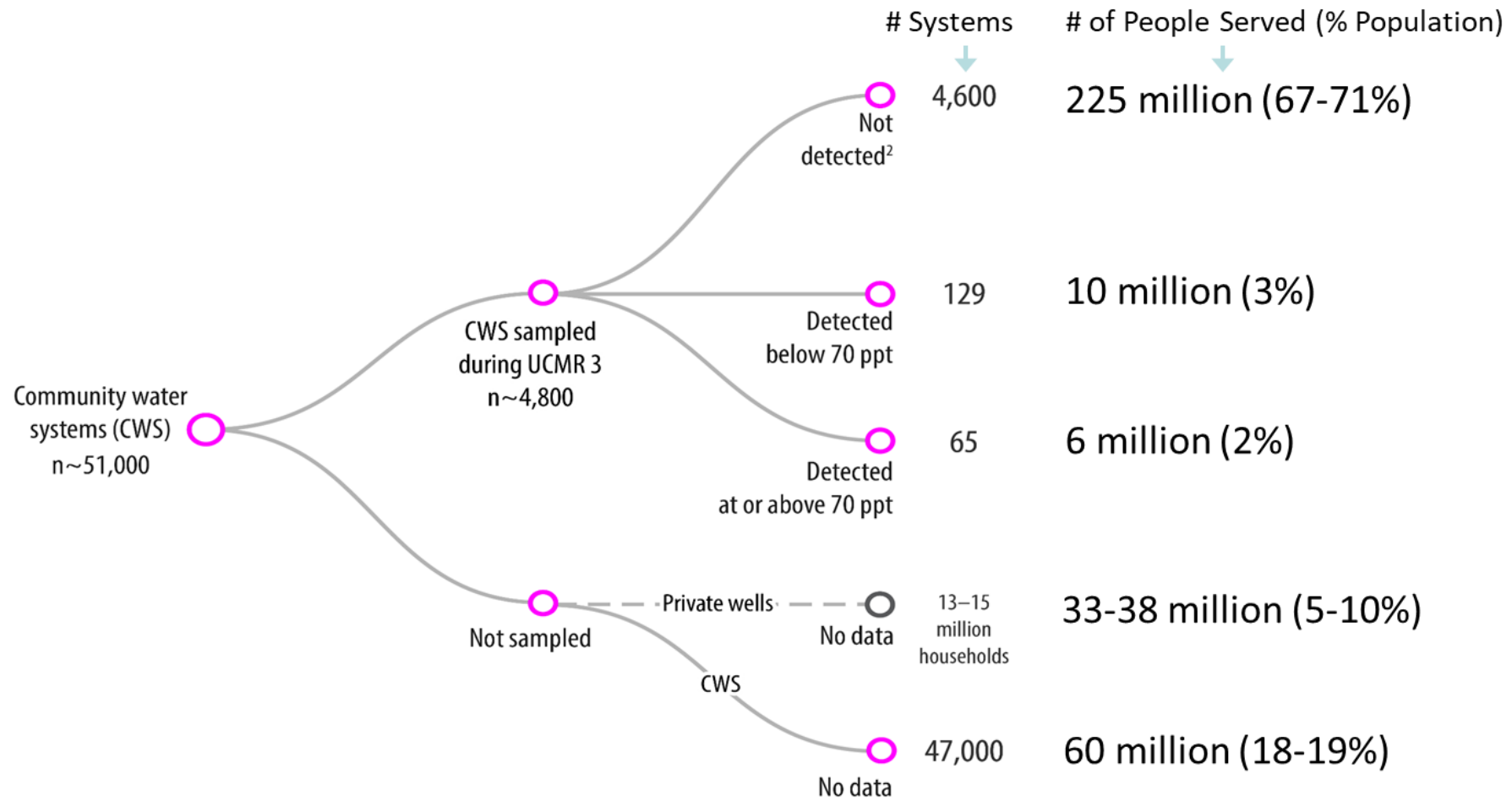
## 1999

PFAS detected in >98% of serum samples collected from the general U.S. population

# Initial Investigations – Public Drinking Water Testing

- **2013-2015: EPA measures PFAS in municipal water supplies via the UCMR3**
- **65 of about 4,600 systems tested have PFAS above EPA health advisory level**
  - Health advisory level in parts per trillion (PPT) = 70
- **Many drinking water supplies were not tested**

# Initial Investigations – Public Drinking Water Testing



PPT: parts per trillion

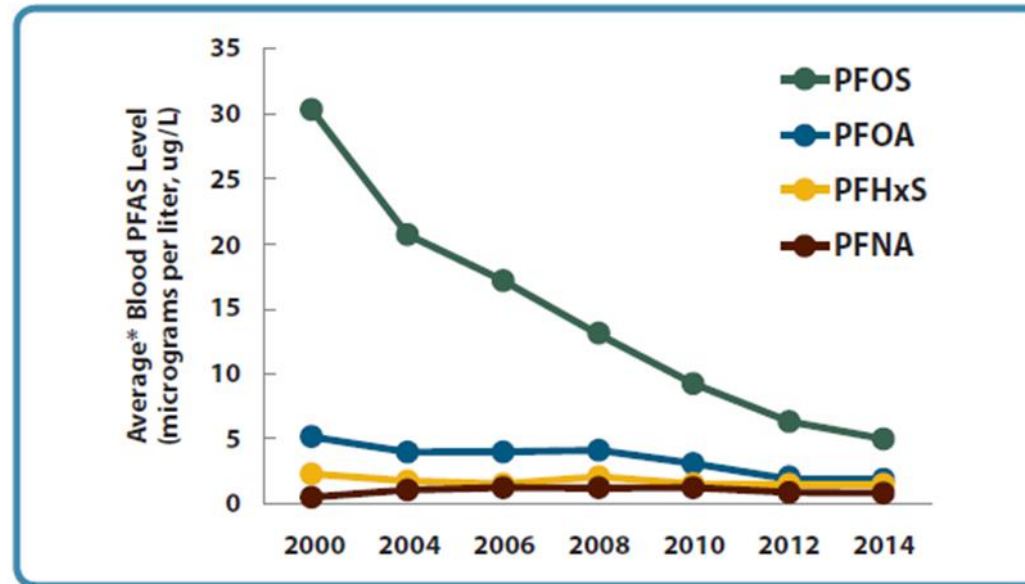


# Initial Investigations - Biomonitoring

- **Since 1999, NHANES has measured blood PFAS in the U.S. population**
- **Most people have PFAS in their blood, especially PFOS and PFOA**
- **As use of some PFAS has declined, blood PFAS levels have gone down**

# Between 1999–2014, Blood PFOA and PFOS Levels Declined

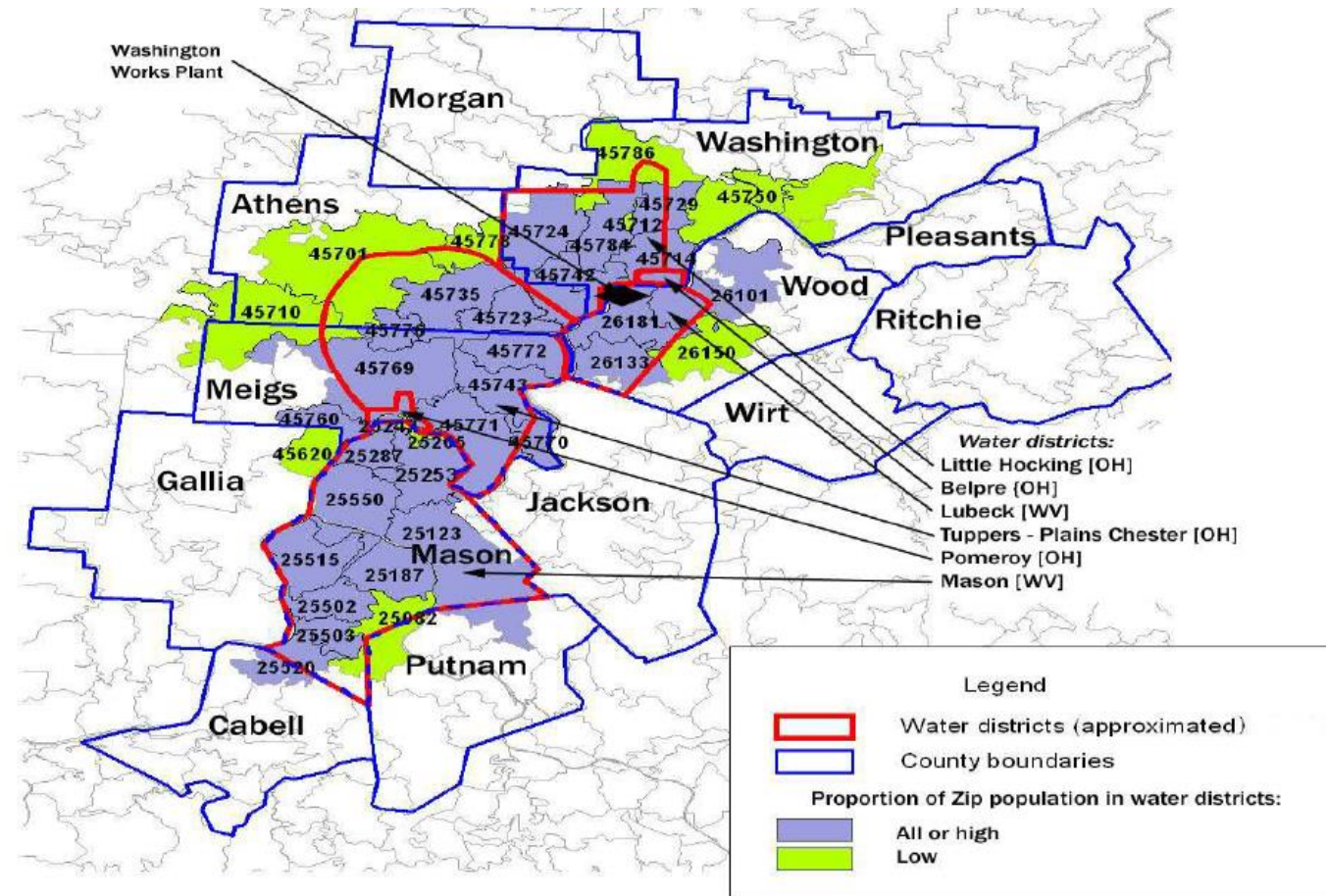
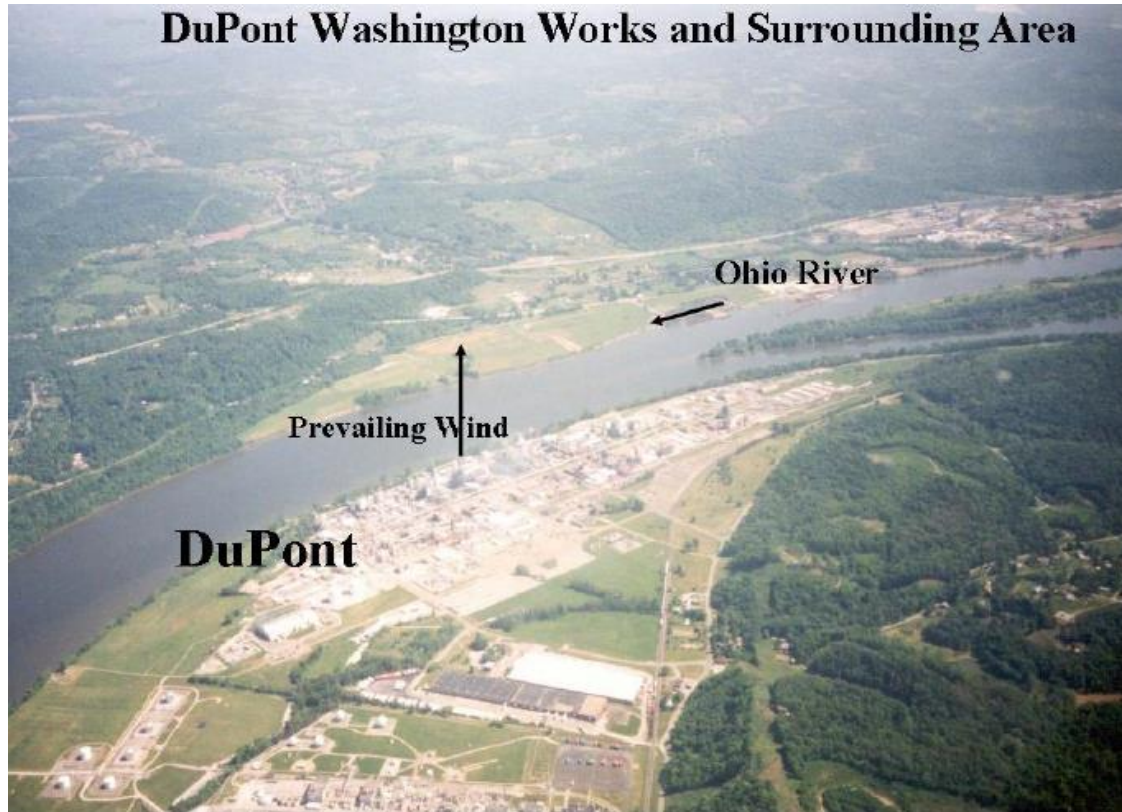
## Blood Levels of the Most Common PFAS in People in the United States from 2000-2014



\* 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.

# Initial Investigations of Possible Health Effects: C8 Science Panel



Point source of PFOA contamination

PFOA-Affected Water Districts

# Initial Investigations of Possible Health Effects: C8 Science Panel

## **The legal settlement (2005):**

- **Filtration of water in affected districts**
- **“C8 Science Panel” created to evaluate links of PFOA to disease**
- **“C8 Health Project” to monitor PFOA and other PFAS exposure and clinical effects (laboratory tests)**

# Initial Investigations of Possible Health Effects: C8 Science Panel

## ➤ 2005-2006: C8 Science Panel

- Epidemiological study of around 69,000 people living near DuPont Washington Works plant in West Virginia
- Gathered information through interviews, questionnaires, and blood sampling
- Assessed “probable links” between exposure to PFOA and health effects
- Focus groups and townhall meetings
- An extraordinary amount of logistics



C8 Science Panel: Kyle Steenland, Tony Fletcher, David Savitz



Paul Brooks, project lead and community physician

# Probable Links Between PFOA Exposure and Health Effects

- **High cholesterol**
- **Ulcerative colitis**
- **Thyroid disease**
- **Testicular cancer**
- **Kidney cancer**
- **Pregnancy-induced hypertension**

# Federal Response

## January 2009

EPA's Office of Water established provisional health advisories to assess potential risk from short-term exposure via drinking water.

## August 2015

ATSDR released draft Toxicological Profile for perfluoroalkyls.

## August 2017

PFOA, PFOS, PFNA, and PFHxS joined ATSDR's Substance Priority List.

## April 2018 - present

NCEH and ATSDR continue to investigate the relationship between PFAS and human health and provide resources to communities.

## May 2012

EPA required all community water systems serving >10,000 customers to monitor for PFCs twice in a 12-month period during 2013-2015.

## May 2016

EPA issued Lifetime Health Advisory of 70 ppt for PFOA and PFOS, individually or combined.

## March 2018

CDC/ATSDR receives funding to conduct PFAS exposure assessments and a multisite health study.

PFNA: Perfluorononanoic acid

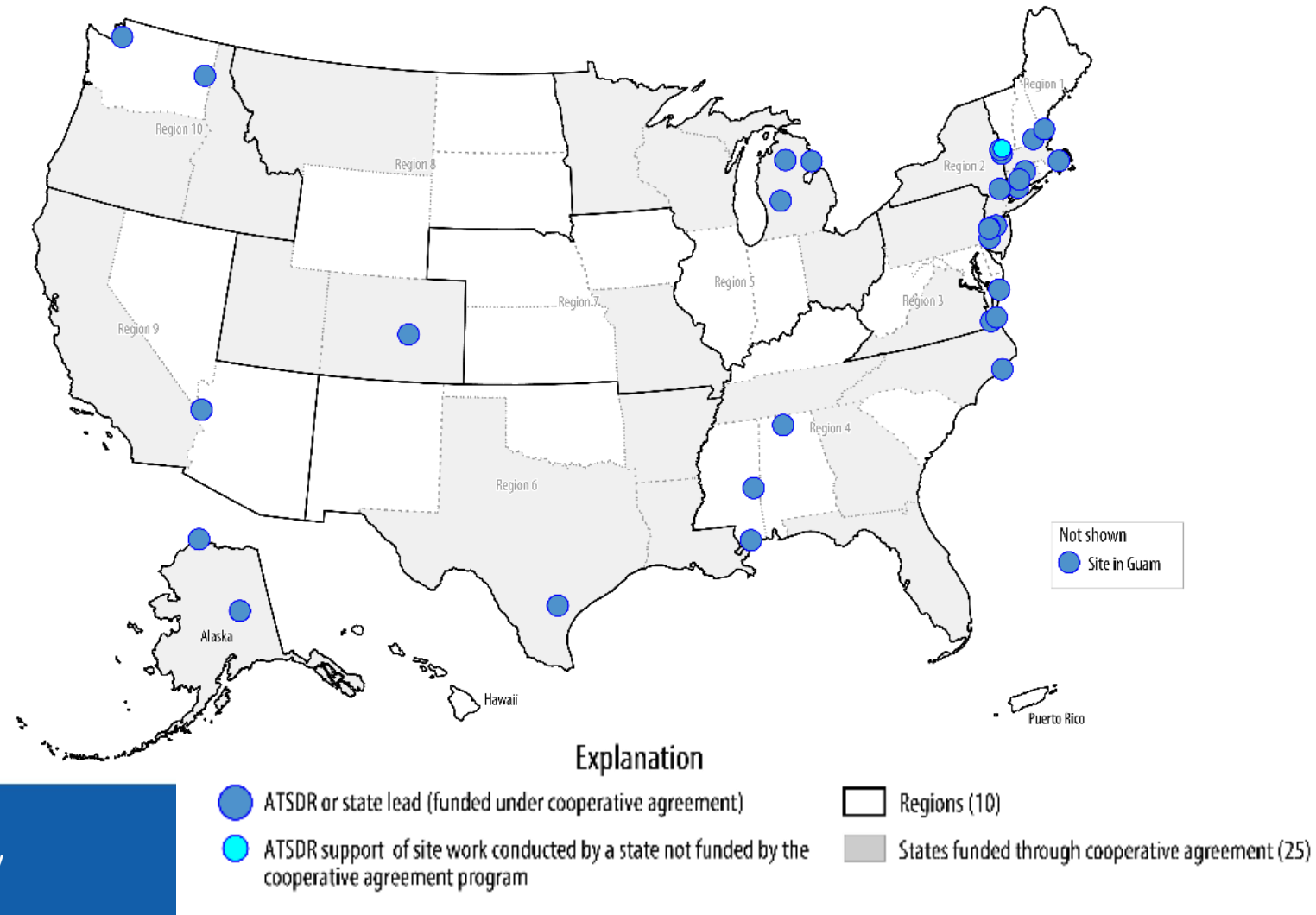
PFHxS: Perfluorohexanesulphonic acid

PFC: perfluorinated chemicals

# Federal Response: Support to Communities

➤ **ATSDR has conducted or supported work at more than 40 sites**

ATSDR involvement at sites with per- and polyfluoroalkyl substances (PFAS)

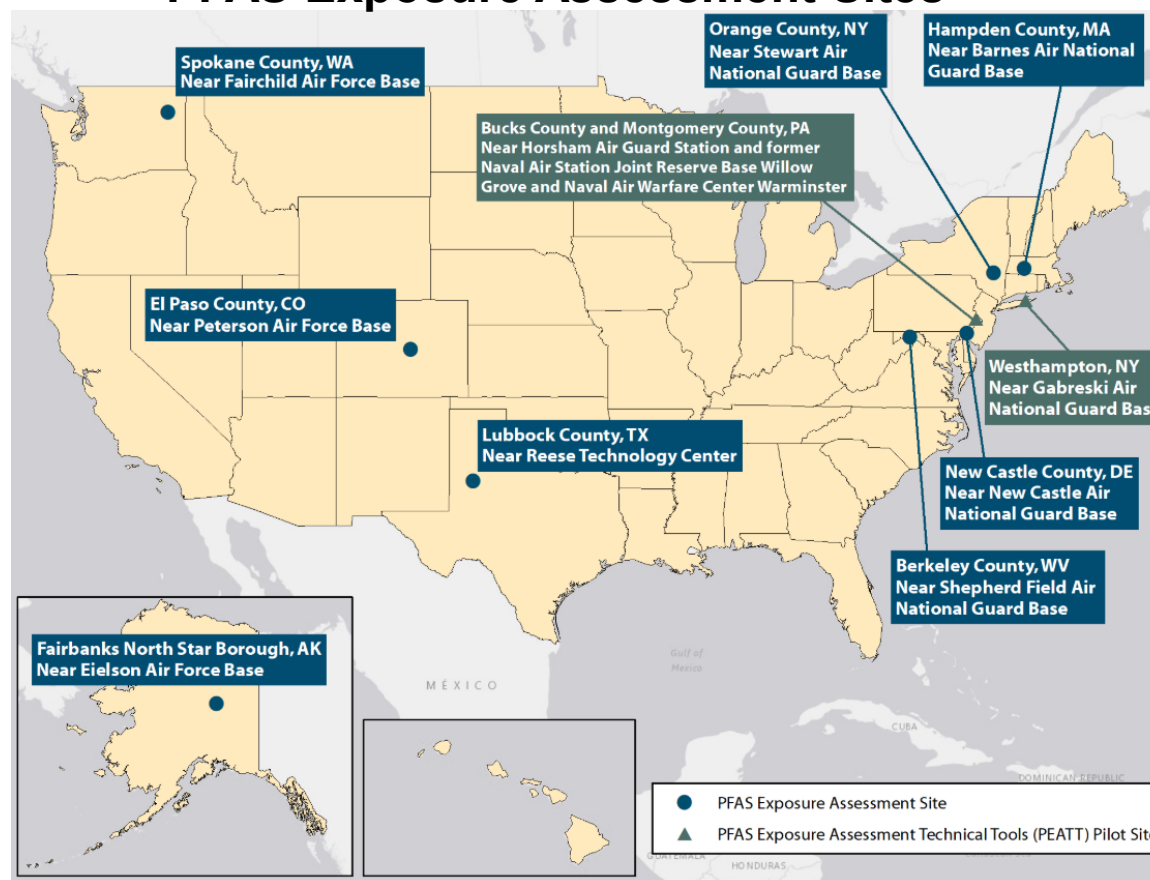




# Federal Response: Support to Communities

- **CDC/ATSDR PFAS Exposure Assessments**
- **CDC/ATSDR Multisite Health Study**
- **20+ ongoing CDC/ATSDR PFAS projects**

## PFAS Exposure Assessment Sites



# PFAS Public Health Challenges

- **Growing community concern, as more communities found to have been exposed**
- **Need more health information**
- **Need to expand environmental and biological sampling methods**
- **Understanding health effects of exposure to mixtures of PFAS**
- **New compounds being created and used**
- **Water treatment methods need to be developed and evaluated**
- **Clinical interpretation of PFAS test results**

# Human Health Effects of PFAS–The Intersection of Research Findings and Community Concerns






**Alan Ducatman MD, MS**  
*Professor Emeritus*  
West Virginia University

# Scope of the C8 Health Project

- **69,030 adults and children enrolled**
- **Extensive health survey with validation for 18 health outcomes**
- **10 PFAS; >50 clinical laboratory tests**
- **Secure data base**
- **Website with summary health communications**
- **Banked serum**



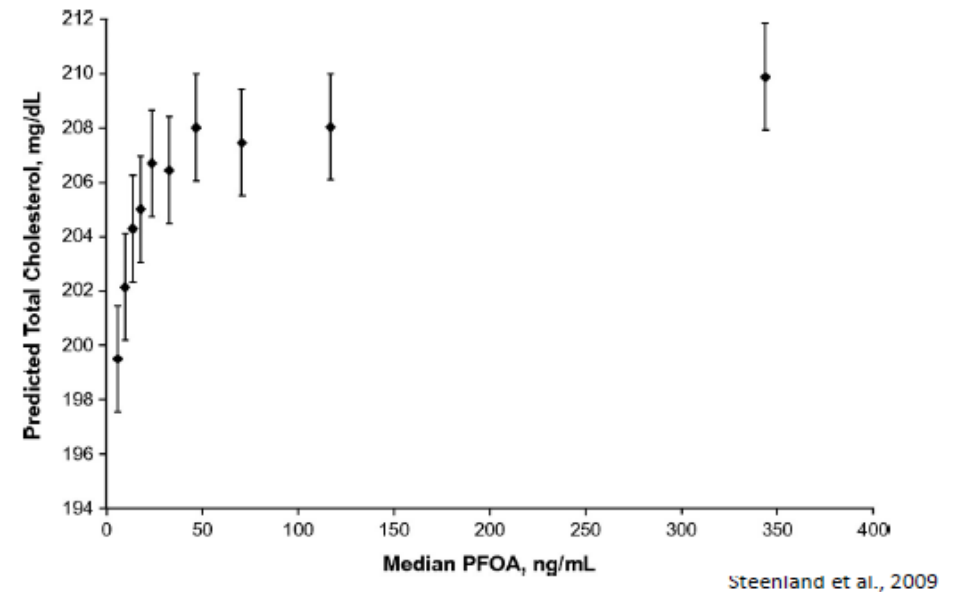
# Selected Health Outcomes of Concern Identified by the C8 Study

<u>Topic</u>	<u>Example</u>	<u>Evidence Basis</u>
<b>Altered lipid handling</b>	 <b>Cholesterol</b>	Strong, Near Certain
<b>Liver functions</b>	 <b>ALT (aka SGPT)</b>	Strong, Near Certain
<b>Uric acid handling</b>	 <b>Uric acid</b>	Strong, Near Certain
<b>PIH</b>	<b>BP in Pregnancy</b>	More likely than not

# Internal PFOA Dose and Cholesterol in C8 Population

- Higher PFOA exposure, as measured by blood levels, was associated with elevated total cholesterol
- Dose-response relationship suggests cause and effect

*Associations of Health Effects with Low Serum PFOA Levels – Example:  
↑ Cholesterol in Communities with Contaminated Drinking Water*



# Similar Health Effect Findings in other PFAS-exposed Populations

**Outcome topic (number of studies):**

**Population Examples**

➤ **Cholesterol (>15)**

➤ **Avon Longitudinal, Canadian Health Measures, Henan China, and Childhood populations**

➤ **Liver Functions (>5)**

➤ **C8 China, NHANES, Uppsala Sweden, Childhood populations**

➤ **Uric Acid (>5)**

➤ **C8 China, NHANES, Chemical Workers (Italy), and Childhood Populations**

➤ **PIH (3)**

➤ **Shanghai, China; Swedish Selma**

PIH: pregnancy induced hypertension

NHANES: National Health and Nutrition Examination Study

# Evidence of Diminished Immune Responses to Vaccines


## ➤ PFOA and PFOS

- Are presumed to be immune hazards to humans
- Suppress antigen-specific antibody responses in
  - ❑ Experimental models: high level of evidence (National Toxicology Program, NTP)
  - ❑ Humans: moderate level of evidence (NTP)

## ➤ Example: diminished antibody responses to tetanus and diphtheria vaccines in 5- to 7- year olds



# Other Health Outcomes of Concern: Reproductive and Developmental

<u>Topic</u>	<u>Example</u>	<u>Evidence Basis</u>
Transplacental transport	PFAS in Newborn	Strong/Certain
Breastfeeding	PFAS in Infant	Strong/Certain
Breastfeeding	 Duration	More likely than not

# Other Health Outcomes of Concern: Reproductive and Developmental

<u>Topic</u>	<u>Example</u>	<u>Evidence Basis</u>
Fecundity	↓ Time to pregnancy	Hot research topic
Sperm	Shape, motility	Hot research topic
Neurodevelopment	Performance testing	Hard research topic
Congenital defects	Brain development Midline clefts (e.g., cleft palate)	Research topic

**Fecundity: a woman's ability to have children**

# Health Outcomes of Concern: Endocrine Disruption

<u>Topic</u>	<u>Example</u>	<u>Evidence Basis</u>
<b>Thyroid disruption</b>	<b>Protein binding</b>	<b>Strong, importance debated</b>
Sterol hormones	Sex steroids Androgens (e.g., <b>testosterone</b> ) Estrogens (e.g., estradiol)	More likely than not
Insulin resistance	Corticosteroids Diabetes	Research topic Research topic

# Do PFAS Cause Cancer?

<b><u>Cancer type</u></b>	<b><u>Example</u></b>	<b><u>Evidence Basis</u></b>
<b>Testicular</b>	<b>Seminoma</b>	More likely than not
<b>Kidney</b>	<b>Renal Cell Carcinoma</b>	More likely than not
<b>Other urogenital</b>	<b>Prostate, Bladder</b>	Research topic
<b>Others</b>	<b>Liver, Pancreas</b>	Research topic

# Other Health Outcomes of Research Interest

## ➤ **Bone and joint health**

- Recent literature example: osteoporosis

## ➤ **Obesity**

- Following exposure in utero or early in life

## ➤ **Hypertension**

## ➤ **Microvascular disease**

- Sites include brain, kidney

## ➤ **Kidney disease**

## ➤ **Immune-mediated**

- Includes ulcerative colitis, asthma, allergy

# Certainty and Concern Are Not Always Aligned

- **Understandably, cancer, birth defects, and reproduction are frequent topics of community questions; this research is harder to do.**
- **What scientists may consider a cautious answer about exposures, outcomes, knowledge gaps, and barriers to good research, can also be heard by listeners as dismissive.**
- **Answers about what we do and do not know have to be framed carefully.**

# What Should Happen in Affected Communities?

## Priority 1. First Reduce the Exposure

- **When a contaminated water supply is identified as the primary source in an affected community, this is a public health priority in that community. Options are a source of clean, uncontaminated water, or a means to filter the contaminated water.**

## Priority 2: Reduce the Impact of Past Exposures

This leads to questions about **MEDICAL MONITORING**, defined as **case-finding** in order to refer individuals for further evaluation and, as appropriate, treatment.

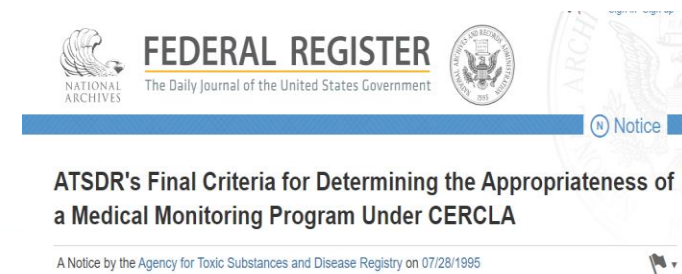
### Can Include:

- **Testing for early biologic effect, and**
- **an assessment of exposure using models of exposure or actual biological specimens (for example, blood or urine), when appropriate**



# CDC/ATSDR Guidance: When is Medical Monitoring Helpful?

- **Target community, exposure > threshold**
  - measured or modeled
- **Reasonable association: exposure → adverse outcomes**
- **Monitoring brings a net benefit**
  - ❑ Earlier detection
  - ❑ Treatment or intervention possible, can prevent or mitigate disease
  - ❑ Detection and treatment or intervention has more benefits than harm
  - ❑ Does not duplicate other testing



# Advantages of Community Level Medical Monitoring

- **Participant access to testing, including serum PFAS**
- **Summary report-back function**
- **Access to expertise**
- **Economies of scale**
- **Quality improvement**
- **Proven participation, appreciation**

# Positive Community Response to Medical Monitoring

## Combined “excellent” or “good” responses (percent) from C8 Health Project Participant Survey

➤ Public awareness:	88.0 %
➤ Ease of providing blood sample:	94.4 %
➤ Recalled receiving results:	97.5 %
➤ Overall experience	91.8 %

<b>Importance to health of family:</b>	<b>Very important</b>	<b>84.4%</b>
	<b>Moderately important</b>	<b>14.1%</b>

# One Reality of Community Level Monitoring: In Absence of Resources, Long Delays



# What Is Reasonable for Affected Individuals in Communities?

**A physician's perspective:**

**The CDC/ATSDR criteria for communities can also provide reasonable guidance to people and their providers, so long as:**

- The exposure is documented**
- The approach is simple, acceptable in the community, and has a net benefit for earlier diagnosis and then preventing or mitigating disease**

# What Is Reasonable for Affected Individuals in Communities?

- **Clinical Evaluation (in my view meeting recommended criteria for helping and being acceptable)**
  - Body mass index (BMI) measurement and managing obesity as needed
  - Clinician or self-administered testicular examination
  - Home blood pressure monitoring to augment measurements during pregnancy
  - Fertility and reproductive concerns- discussion

# What Is Reasonable for Affected Individuals in Communities?

- **Laboratory Testing** (in addition to serum PFAS)
  - lipid panel (cholesterol, LDL, HDL, triglycerides)
  - liver function tests such as ALT, AST, GGT
  - thyroid stimulating hormone (TSH)
    - especially during pregnancy
  - uric acid and creatinine
  - urinalysis

# Health Communications About PFAS Testing

- **Needs to be done thoughtfully.**
- **Those affected by contaminated water may not agree that they are “better off without testing”.**
- **Barriers should be stated honestly; it has been hard and costly to get individual testing of PFAS exposure.**

Other than money and time investment, there is in my view no downside to the individual obtaining PFAS lab data.



# Summary

- **Some health effects of PFAS exposure are well documented, others the subject of ongoing investigation, and our knowledge is based on only a few of the many possible PFAS contaminants.**
- **Reduction of exposure and reducing the effects of past exposure are overarching principles of public health response.**
- **Medical monitoring according to established public health guidance is beneficial to populations in exposed communities and can reasonably inform choices for individuals.**

# How Michigan Is Taking Action on PFAS



**Steve Sliver**

*Executive Director*

Michigan PFAS Action Response Team

Michigan Department of Environment, Great Lakes, and Energy

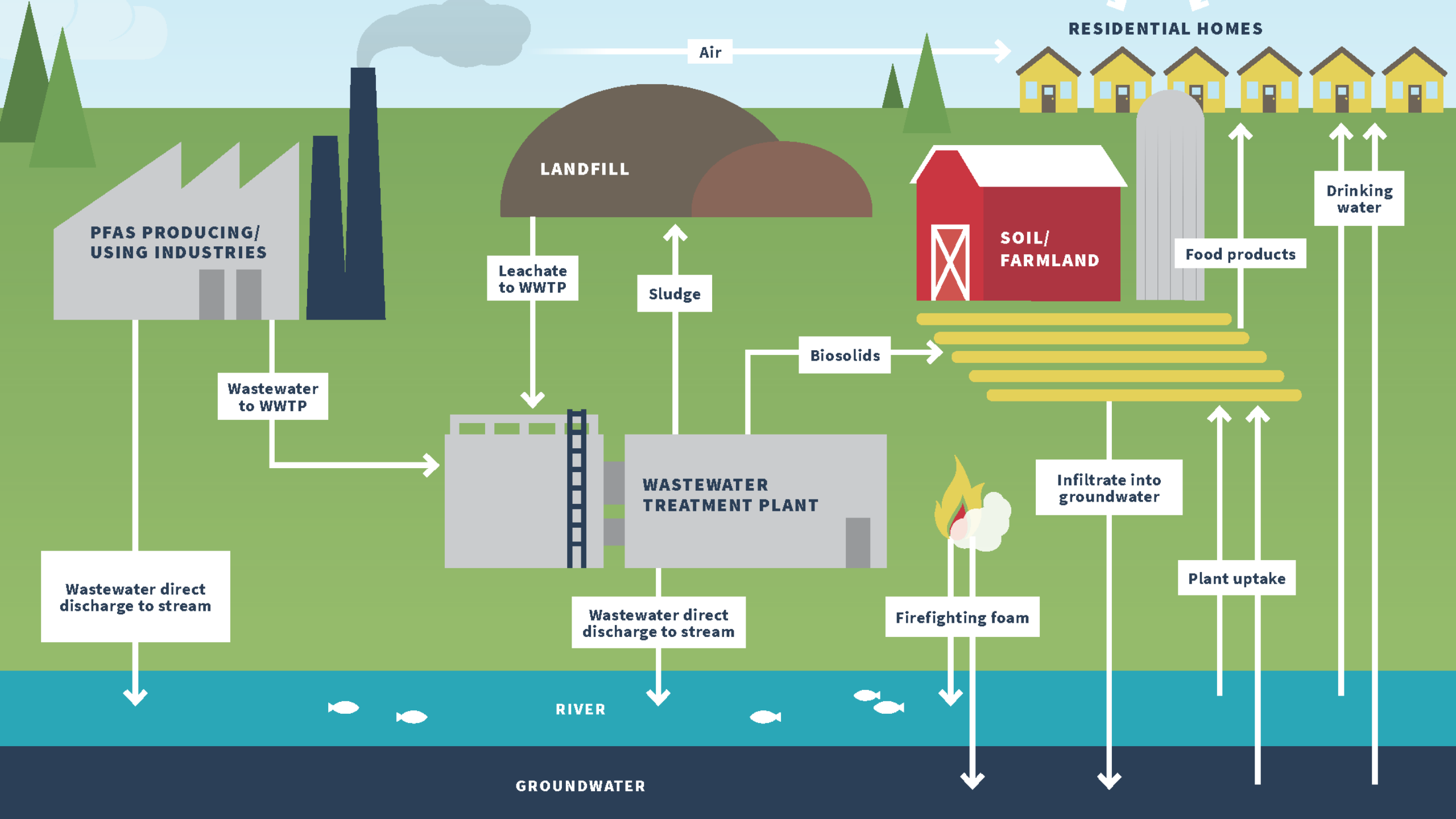


# Objectives

- **Highlight Michigan's proactive approach to PFAS contamination**
- **Provide an overview of PFAS contamination in Michigan and actions to identify and reduce exposures**
- **Highlight state-level opportunities for protecting public health**

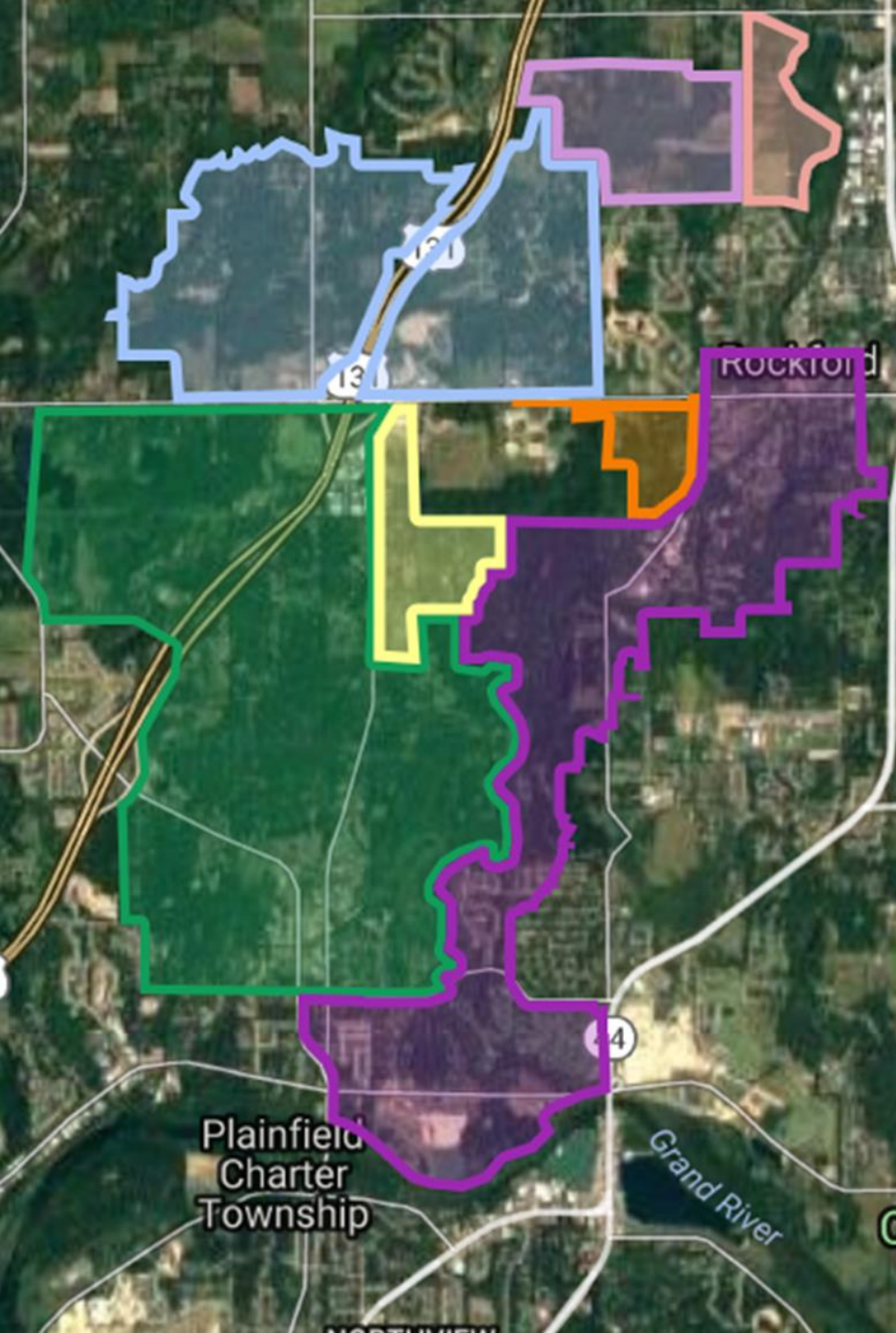
PFAS RESPONSE

**TAKING ACTION, PROTECTING MICHIGAN**



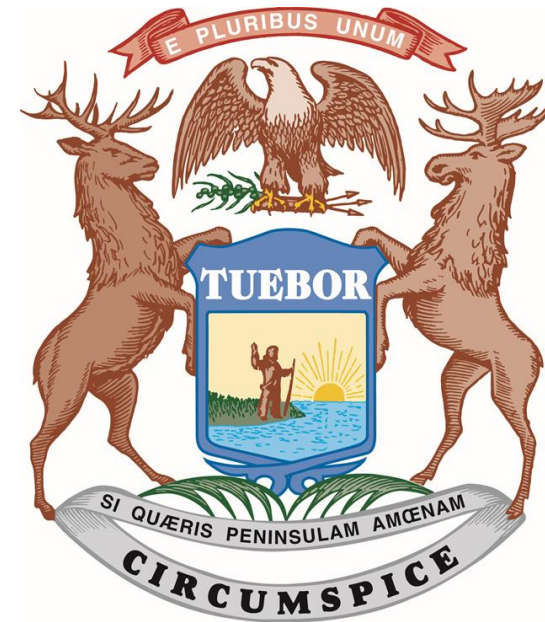
# PFAS Emerge in MI

- ❑ 2012 Wurtsmith Air Force Base “Do Not Eat” fish advisory
- ❑ 2013 Surface water survey
- ❑ 2017 Camp Grayling sample data
- ❑ 2017 North Kent County sample data



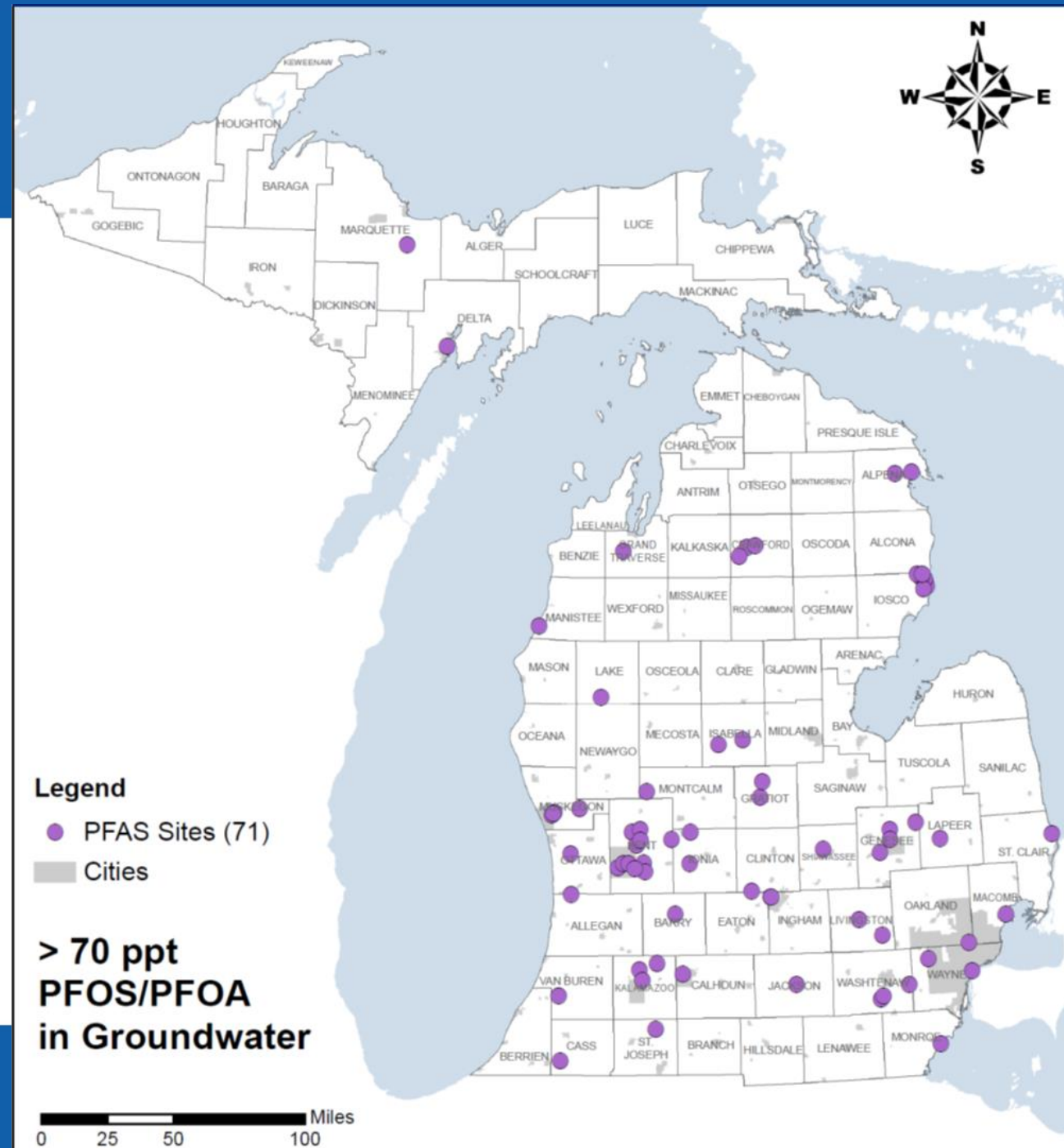
# Michigan PFAS Action Response Team (MPART)

- **Unique multiagency approach**
  - includes environment, agriculture, transportation, and health
- **Advisory body**
- **Leads coordination and cooperation at all levels of government**
- **Enables a comprehensive approach to identify and reduce exposures to PFAS contamination**



# Sites Being Investigated

- Prioritized investigations based on known or suspected sources, potential for exposure
- Protect drinking water
- Other investigations underway



# Surface Water Investigations

- Survey of surface water and fish
- Foam
- Wastewater





# Public Health Advisories

## Fish and Deer consumption 9 – 300 ppb PFOS



## Surface water foam





# Michigan PFAS Standards

## Drinking water

- ✓ 70 ppt PFOA/PFOS lifetime health advisory recommendation
- ✓ Maximum contaminant levels (MCLs)

## Surface water quality

- ✓ 12 ppt PFOS (11 ppt if DW source)
- ✓ 12,000 ppt PFOA (420 ppt if DW source)

## Groundwater cleanup

- ✓ 70 ppt PFOA/PFOS
- ✓ GSI per surface water quality standards

DW: drinking water

PPT: parts per trillion

GSI: groundwater surface water interface

# Public Water Supply Testing



## ➤ Phase I - 2018

- All community water supplies (1,114)
- All NTNCWS schools and daycares (619)
- All tribal systems (17)
- Informs additional testing of other supplies

## ➤ Phase II - 2019

- Non-community water supplies (750 total)
  - 237 children's camps
  - 162 medical care facilities

## ➤ Monthly monitoring

- All 65 surface water systems

## ➤ Quarterly monitoring

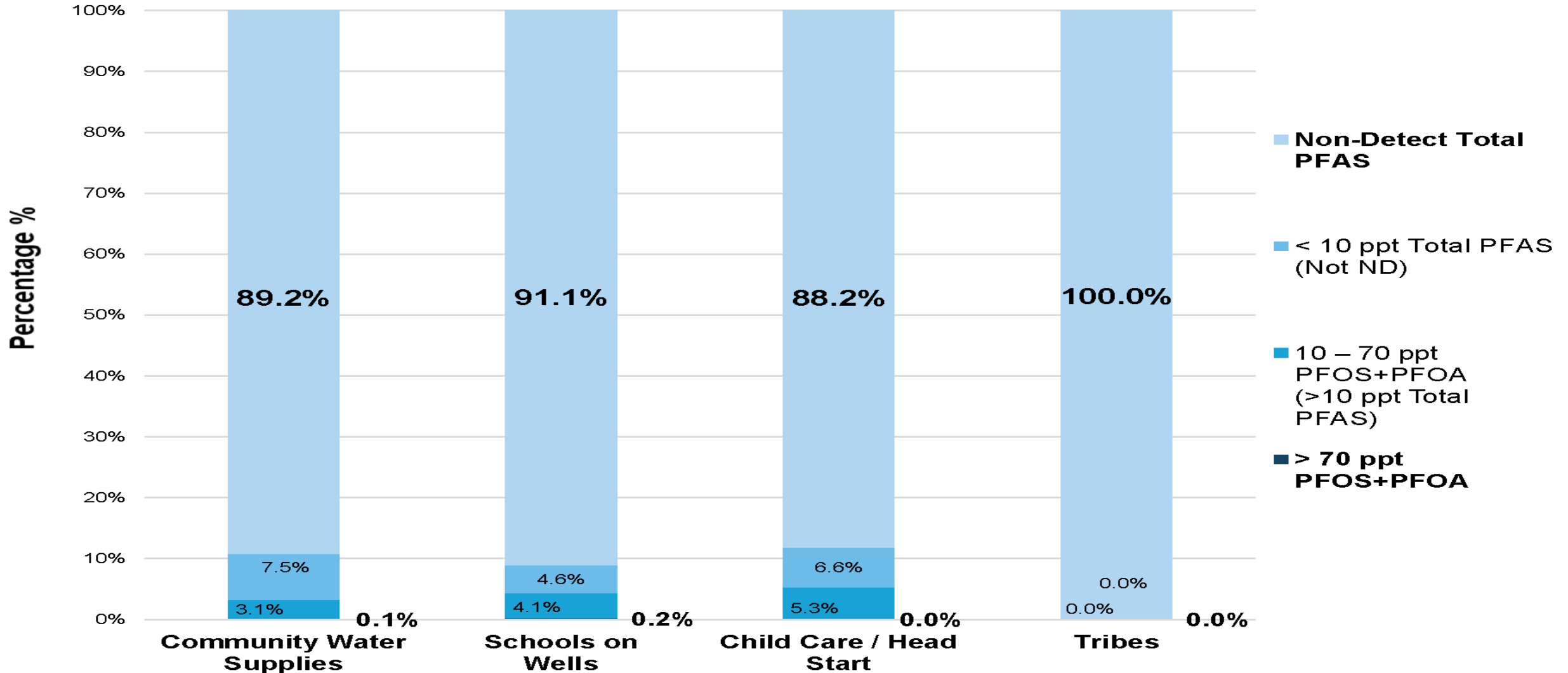
- 61 systems with >10 ppt total PFAS from Phase I

NTNCWS: Non-Transient Non-Community Water System

PPT: parts per trillion

# Phase I Results Show PFAS Contamination in Multiple Types of Community Settings

## Statewide Public Water Supply Testing Initiative Results\*



# Establishing State Drinking Water Standards

- **No federal standards on the horizon**
- **Science Advisory Panel Report, December 2018**
  - 70 ppt standard for PFOA/PFAS could be too high
  - other PFAS should be considered as well
- **Michigan's two-step approach to enforceable standards**
  - Science Advisory Workgroup completed June 27, 2019
  - rulemaking underway for planned issuance in April 2020

# Health-Based Values for Drinking Water

<u>Specific PFAS</u>	<u>Parts Per Trillion (ppt)</u>	<u>EPA Lifetime Health Advisory</u>
PFOA	8	70 ppt combined
PFOS	16	
PFHxS	51	N/A
PFNA	6	N/A
PFBS	420	N/A
GenX	370	N/A
PFHxA	400,000	N/A

# Michigan's Public Health Response to PFAS

- **Whole of state government response**
- **Source investigations and statewide drinking water surveillance**
- **Evidence-informed policymaking**
- **Public health actions to reduce PFAS exposure**





# MICHIGAN PFAS ACTION RESPONSE TEAM (MPART)

[www.michigan.gov/pfasresponse](http://www.michigan.gov/pfasresponse)

The logo for the Michigan Department of Environment, Great Lakes, and Energy (EGLE), consisting of the letters "EGLE" in a stylized, blocky font with a green-to-blue gradient.

MICHIGAN DEPARTMENT OF  
ENVIRONMENT, GREAT LAKES, AND ENERGY





# PFAS Contamination: Community Perspective



**Andrea Amico**  
*Co-founder*  
Testing for Pease

# Objectives

- Describe PFAS contamination at the former Pease Air Force Base in Portsmouth, NH
- Outline origins of Testing for Pease
- Understand the role of community action and organizing in protecting public health
- State community concerns and needs



# Welcome to the Pease International Tradeport

- **Large business park on the seacoast of New Hampshire**
- **Development of the Pease Tradeport started in 1991**
- **Three wells supply drinking water**
- **Currently home to ~ 250 businesses and still growing**
  - 2 daycare centers
  - restaurants
  - healthcare and medical office buildings
  - five colleges
  - golf course
- **More than 10,000 people employed on Pease daily**
- **Home to Portsmouth International Airport (PSM)**
- **Air National Guard base still active on Pease**



# PFAS Contamination at Pease Air Force Base in Portsmouth, NH

- 1956 to 1991 Strategic Air Command (SAC) base
- 4,365 acres of land with 3 on-site drinking water wells
- In 1991, Pease AFB closed
- In 1991, Pease became a Superfund site
- Home to the Air National Guard 157th Air Refueling Wing

A **Superfund site** is any land that has been contaminated by hazardous waste and identified by the EPA as a candidate for cleanup because it poses a risk to human health and/or the environment.



# Origins of PFAS Contamination at Pease

- **May 2014 – newspaper revealed that PFAS contamination was discovered in three wells supplying drinking water to the Pease International Tradeport.**
- **All three drinking water wells had detectable levels of many PFAS.**
- **One well tested over the EPA Public Health Advisory limits and was shut down immediately.**
- **Source of PFAS was aqueous film forming foam (AFFF).**
  - Used to fight petroleum related fires



**Water contamination shuts down well at Pease**



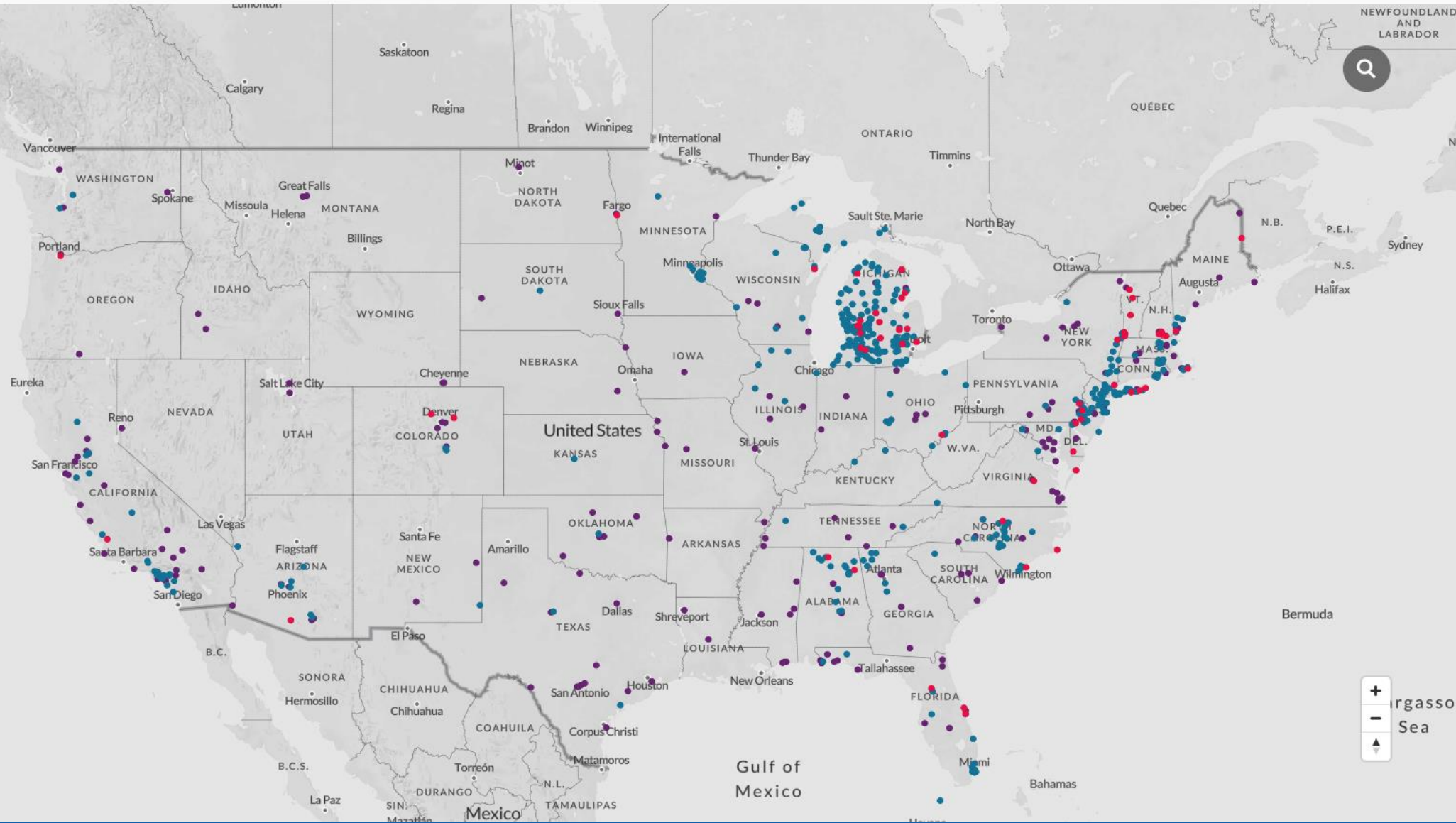
# PFAS Contamination is Widespread



PFAS Contamination in the U.S.



- On** Military Sites
- On** Drinking Water
- On** Other Known Sites



# What Is Testing for Pease?

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



Alayna Davis, Andrea Amico, Michelle Dalton



# Community Action

Action achieved for the Pease community:

- PFAS blood tests from 2015–2018 (~ 1800 participants)
- Filtration of two of the drinking water wells (September 2016)
- Remediation of PFAS contamination (ongoing)

## Air Force plant removes PFAS from Pease water





# Community Action

## Action achieved for the Pease community:

- ATSDR Feasibility Assessment completed May 2017
- Federal law giving DoD authority to fund Pease health study, exposure assessments, and multisite studies
- ATSDR Pease pilot health study started Fall 2019

**Many communities have NOT experienced all of the action we have seen at Pease**



NEWS > PRESS RELEASES

## Shaheen Announces Pilot PFAS Study at Pease to Move Forward

AUGUST 29, 2019



# PFAS Community Leaders Taking a National Platform

- **Attended EPA's first National PFAS Summit in DC – May 2018**
- **Met with then EPA administrator Scott Pruitt – May 2018**
- **Testified at the Senate's first hearing on PFAS – September 2018**
- **Presented at National PFAS Conferences – 2017, 2019**



# PFAS Community Leaders Taking a National Platform

- Attended the president's State of the Union address – February 2019
- Gave a TEDx talk “How an Ordinary Person Can Become an Advocate” – September 2019
- Executive steering committee member for ATSDR's First PFAS Community Engagement Summit – June 2019



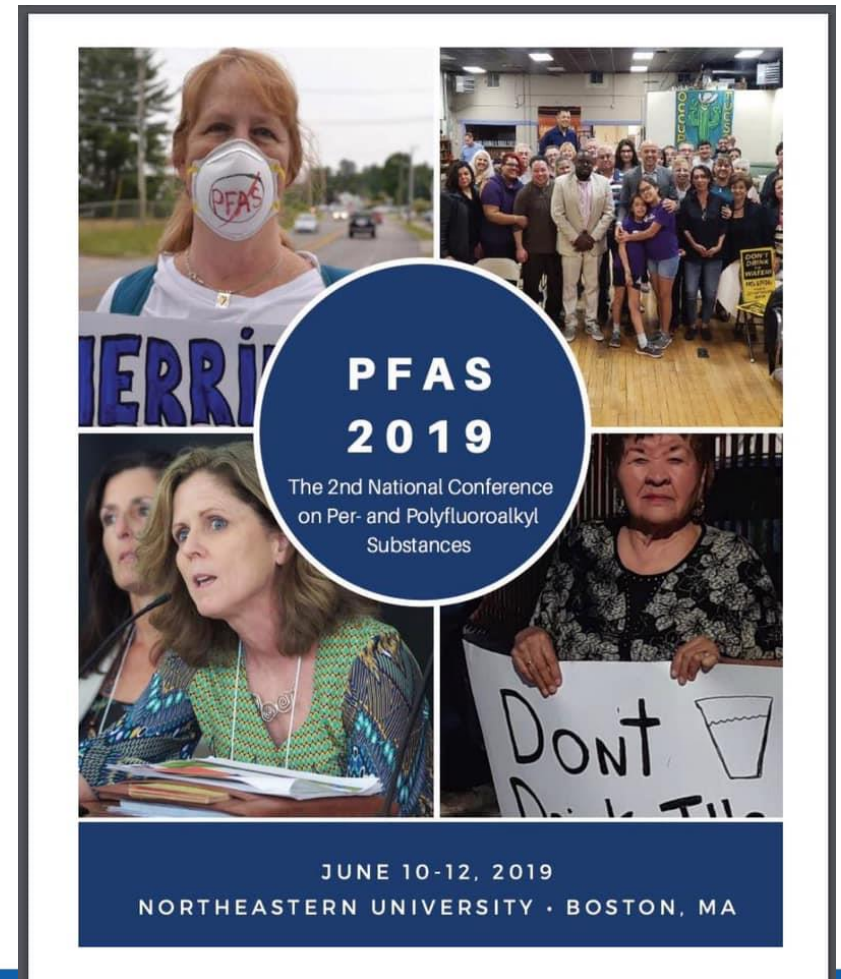
# National PFAS Contamination Coalition

- Formed in June 2017
- Made up of community PFAS leaders all across the U.S. and Guam
- Working on common goals to enact change at the federal level
- Provide support, education, and act as a resource to others



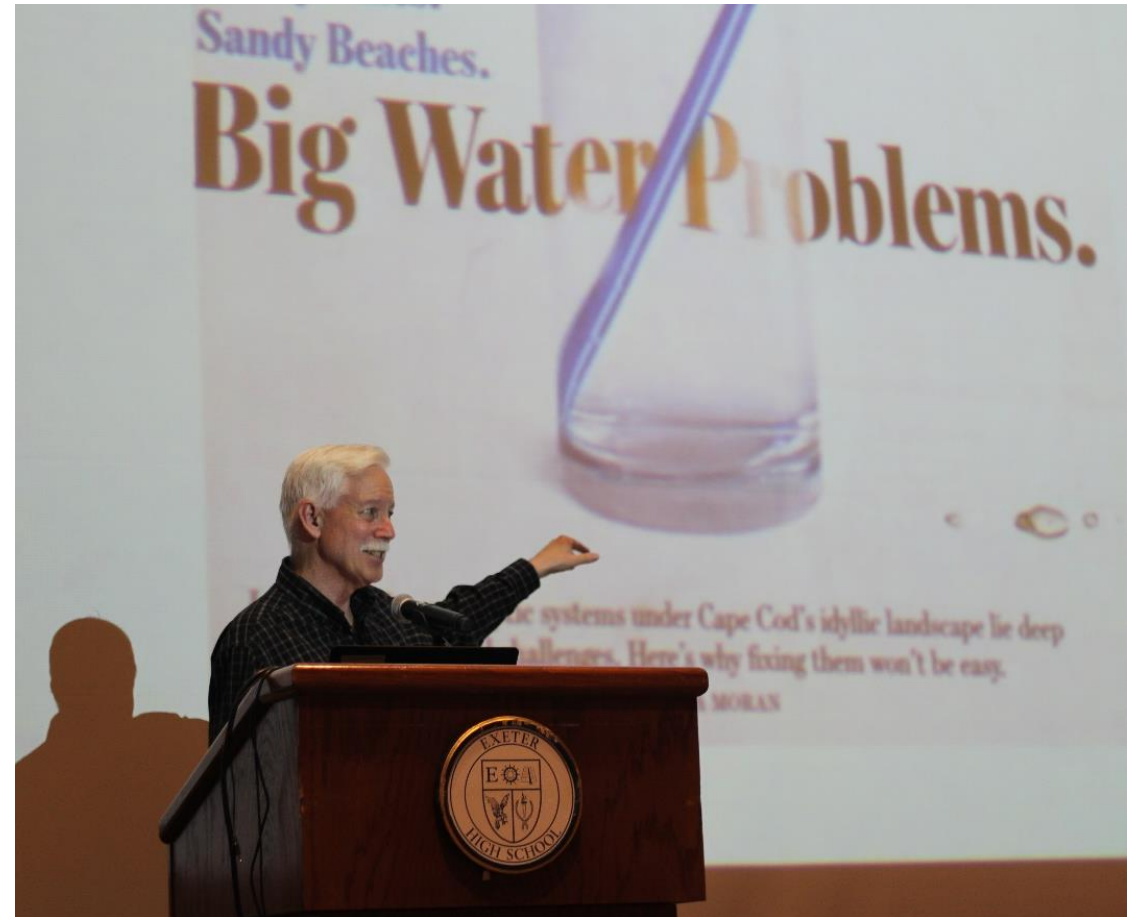
# National PFAS Contamination Coalition

- Coordinated trips to local, state, and federal meetings and hearings
- Presented and attended PFAS conferences
- Met with many elected officials, government agencies, scientists, academics, and nongovernmental organizations



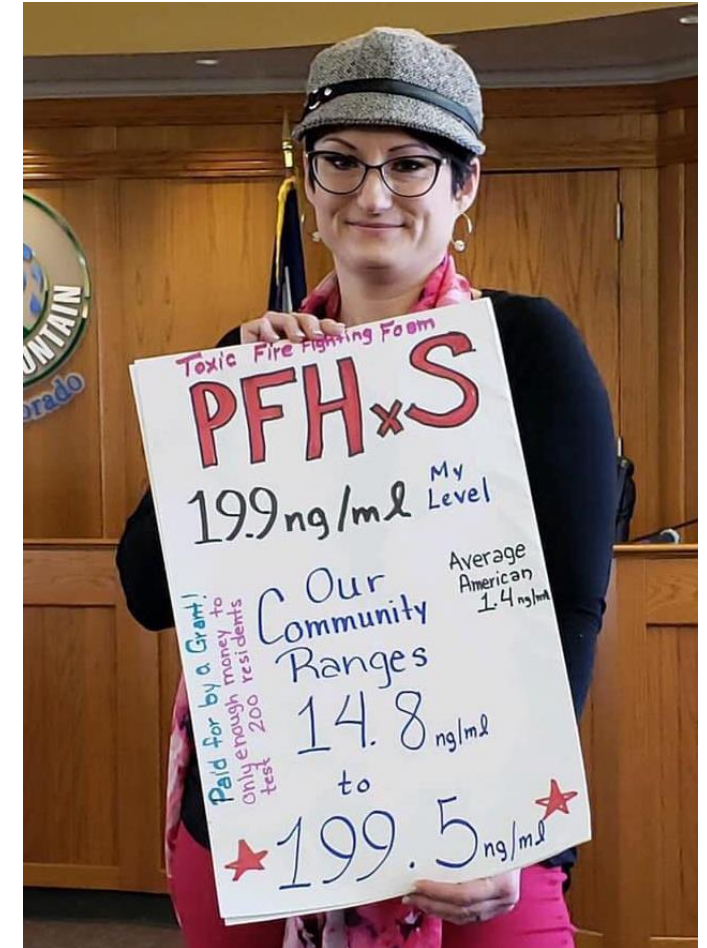
# Community Challenges and Concerns

- **Why are PFAS presumed safe until proven toxic?**
- **Lack of federal health advisories, health and toxicology data for all PFAS**
- **Current EPA LHAs for PFOS and PFOA are too high and do not protect public health and sensitive populations (infants, children, already exposed populations)**
- **Multiple health effects impacting many systems in the body**



# Community Challenges and Concerns

- Communities should not be financially responsible for alternative water supply, remediation, filtration, blood testing
- Having few labs capable of standardized testing of water and blood causes multiple barriers to PFAS testing
- Lack of physician education and medical monitoring guidelines on PFAS



# Community Challenges and Concerns

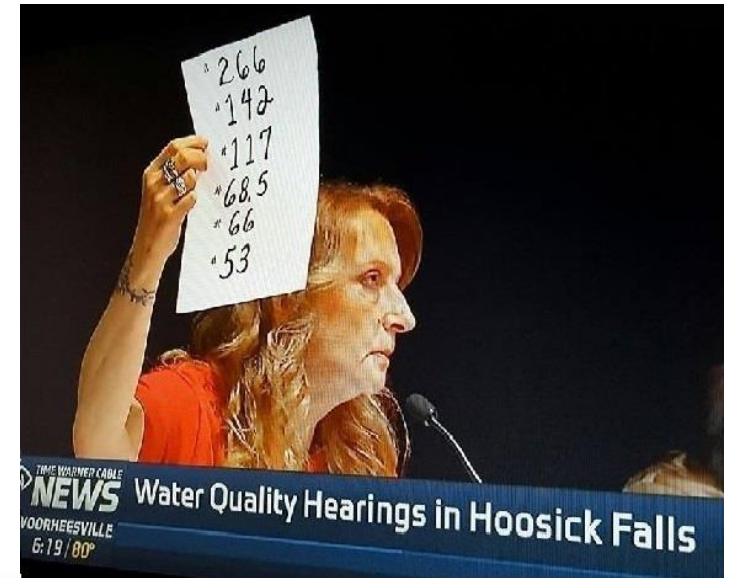
## ➤ PFAS contamination has significant economic consequences:

- Property values decreased
- Businesses lack the ability to attract and retain talented employees and customers
- Chronic illness reduces employee attendance and productivity and drives up healthcare costs



## ➤ Additional expenses:

- Medical bills
- Bottled water
- Home filtration systems
- Blood and water tests
- Community organizing





# Community Challenges and Concerns

## ➤ Chronic illness as a result of PFAS exposure

- loss of work, wages
- loss of happiness
- loss of productivity
- loss of life



# Community Challenges and Concerns

- **Not seen as stakeholders**
- **Lack of transparency**
- **Inconsistent responses to contamination**
- **Inconsistent messaging from government agencies**
- **Ongoing exposure from unregulated contaminants**
- **Data is not made readily available to stakeholders**
- **Impacted communities do not have resources to engage independent technical support**
- **Communities, rather than polluters, bear the brunt of financial costs**



# Community Needs

- **Classify PFAS as hazardous substance**
- **Treat PFAS as a class and regulate them together, not one compound at a time**
- **Establish MCL of 1 ppt for all PFAS**
- **Use non-fluorinated firefighting foam alternatives**
- **Do not allow the introduction of any new PFAS into production due to the large number already in the environment**
- **Establish medical monitoring guidelines and provide outreach to physicians**
- **Improve lab analytical methods to test for many PFAS in water and blood and make those more accessible, affordable nationwide**



# Community Needs

- **Prioritize public health when making critical regulatory decisions**
- **Shorten response time on taking meaningful action**
- **Label all products containing PFAS**
- **Provide funding to states to support more testing, clean up, and community response**
- **Value community members as critical stakeholders by including us in meetings and ask for our input on important decisions – “Nothing about us without us”**



# Thank You!!!

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TESTING *for* PEASE

***“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***