

2024 Battelle Chlorinated Conference

June 2-6, 2024 | Denver, Colorado

Translating Forever Chemicals

Lessons Learned from PFAS Communication

Emma Goldberg

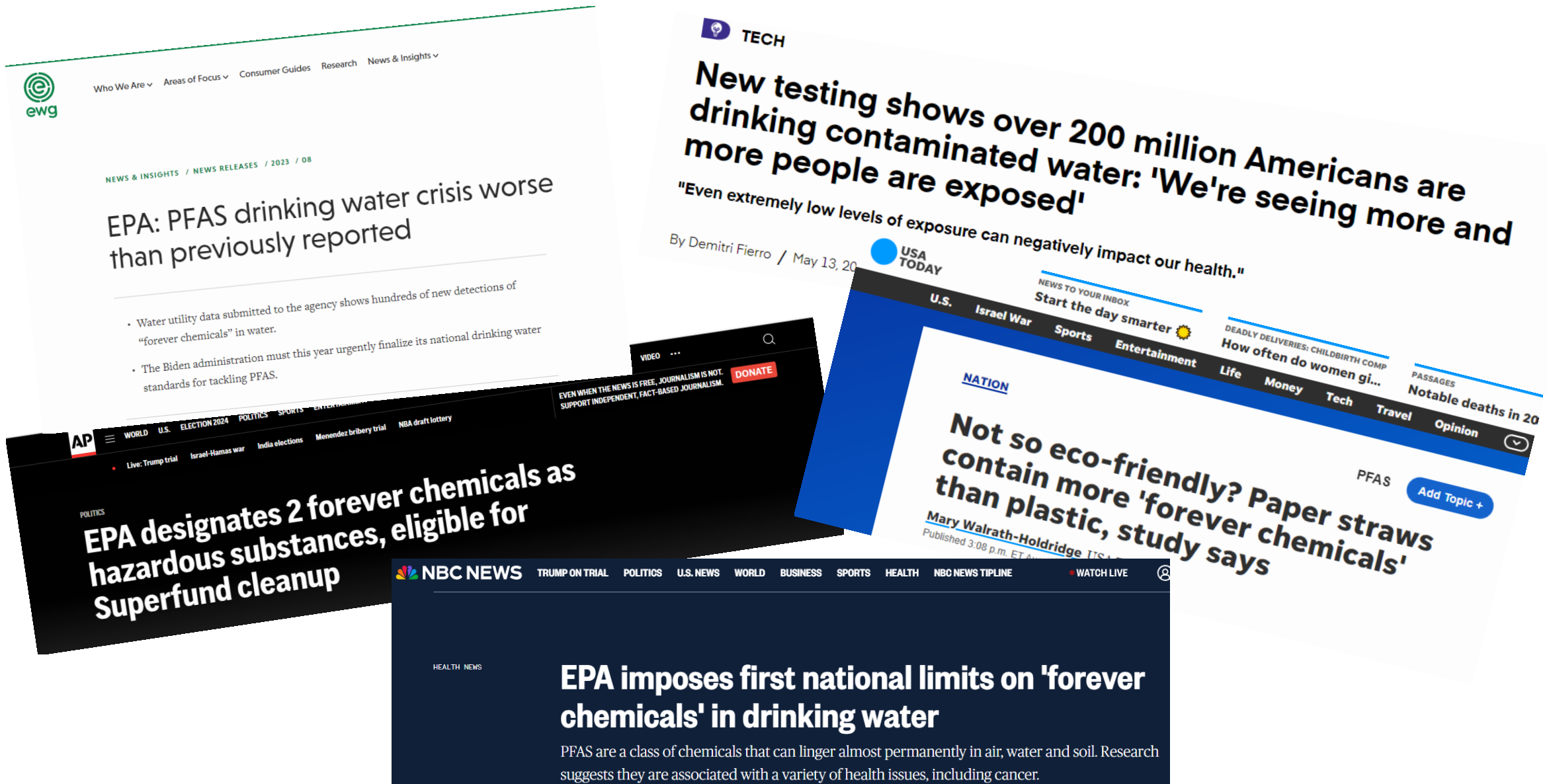
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June 5, 2024



Why Communicate About PFAS?



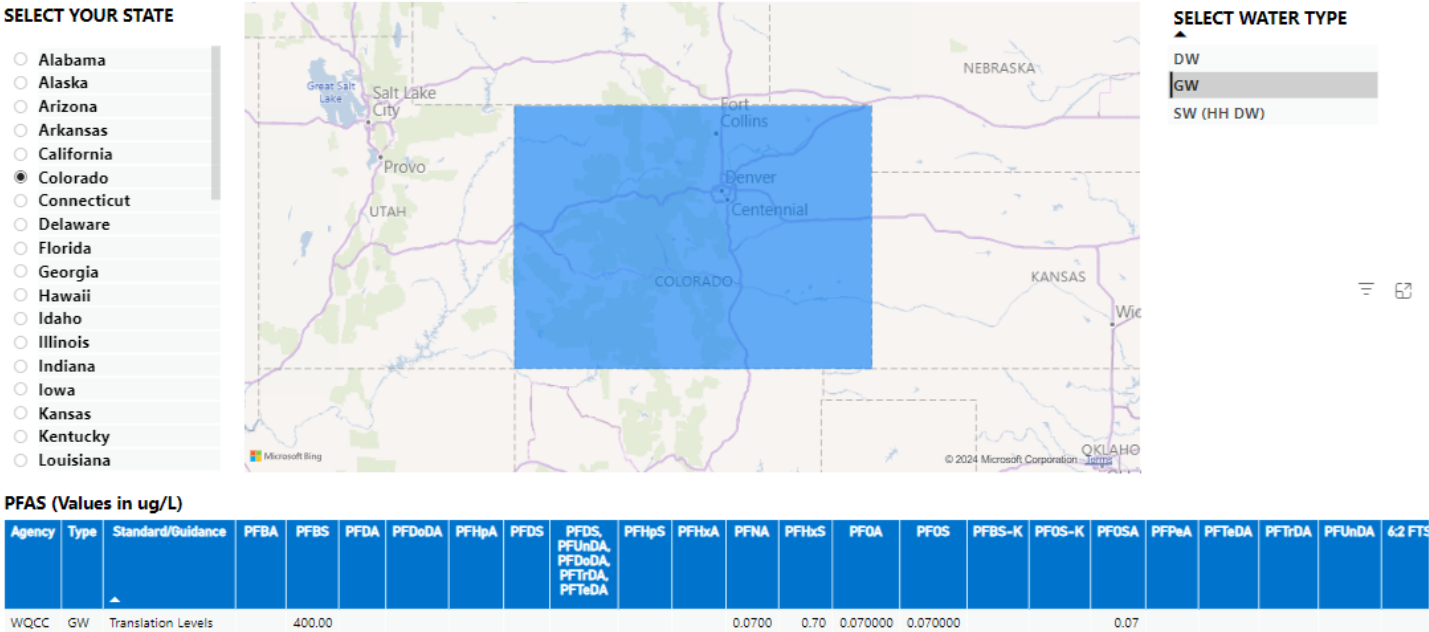
Status of PFAS Regulations

- PFAS National Primary Drinking Water Regulation announced in April 2024
 - Maximum Contaminant Levels (MCLs) for PFOA, PFOS, PFHxS, PFNA, GenX, and PFBS

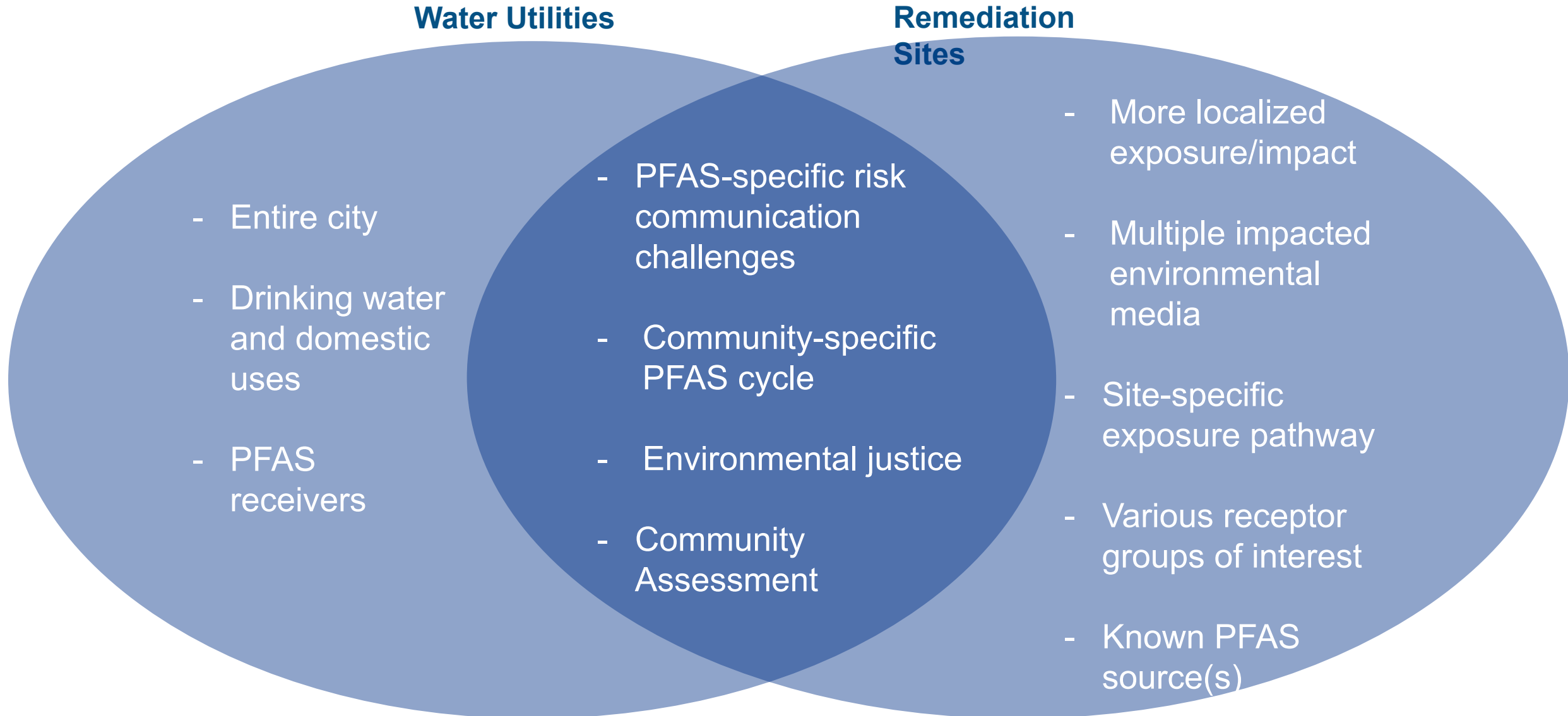


- PFOS and PFOA CERCLA designation in May 2024
- Groundwater action levels in some states

<https://www.cdmsmith.com/en/Client-Solutions/Insights/PFAS-Regulations-Map>



PFAS Risk Communication for Different Clients



PFAS Risk Communication Challenges

Regulatory

- Federal and state standards, guidance, and policies for PFAS not uniform
- Only available for a handful of compounds

Fate and Transport

- Complicated due to the potential of multiple or interacting sources
- Persistence, transformation, and migration in the environment

Toxicological/ Epidemiological

- Risks not fully known or characterized
- Blood testing available, but not diagnostic or prognostic

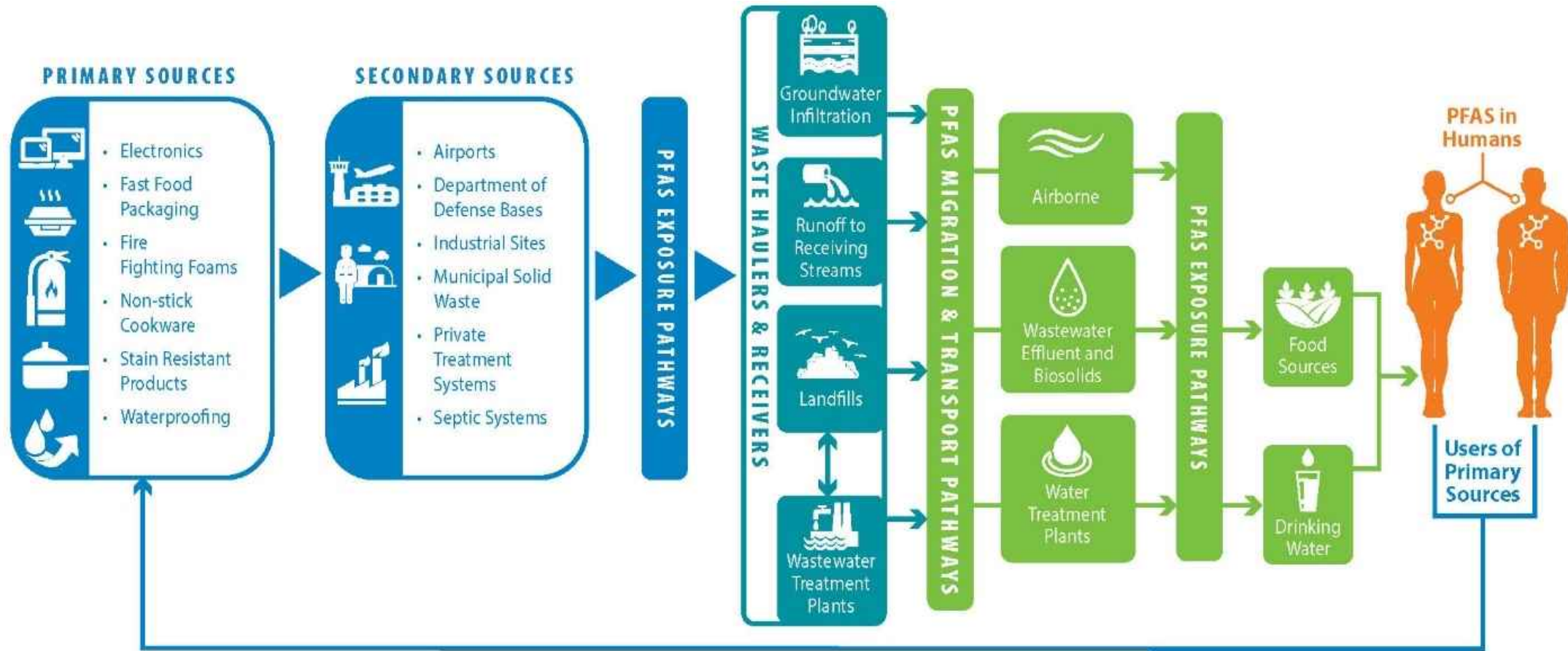
Analytical Ability

- Numerous PFAS compounds in existence, and not all can be measured

Quality of Life

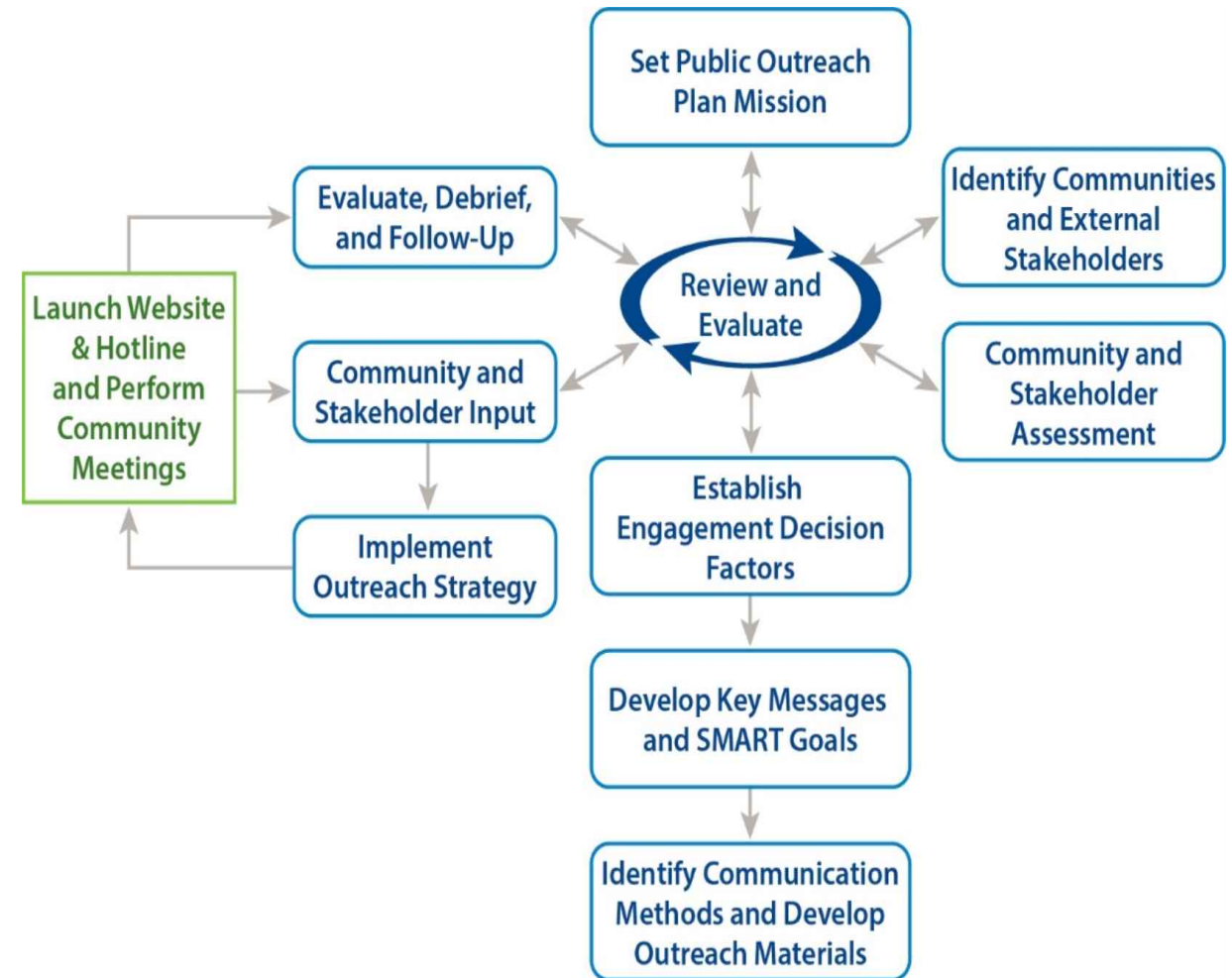
- Community outrage due to involuntary risk
- Misinformation and misperception of risk

Overcoming Risk Communication Challenges: Build a Community-Specific PFAS Cycle



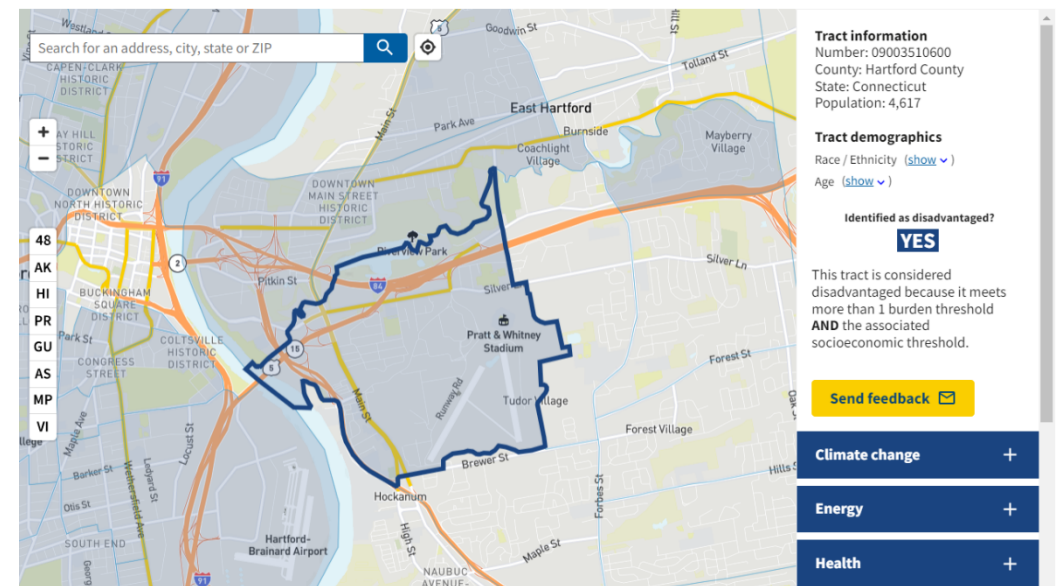
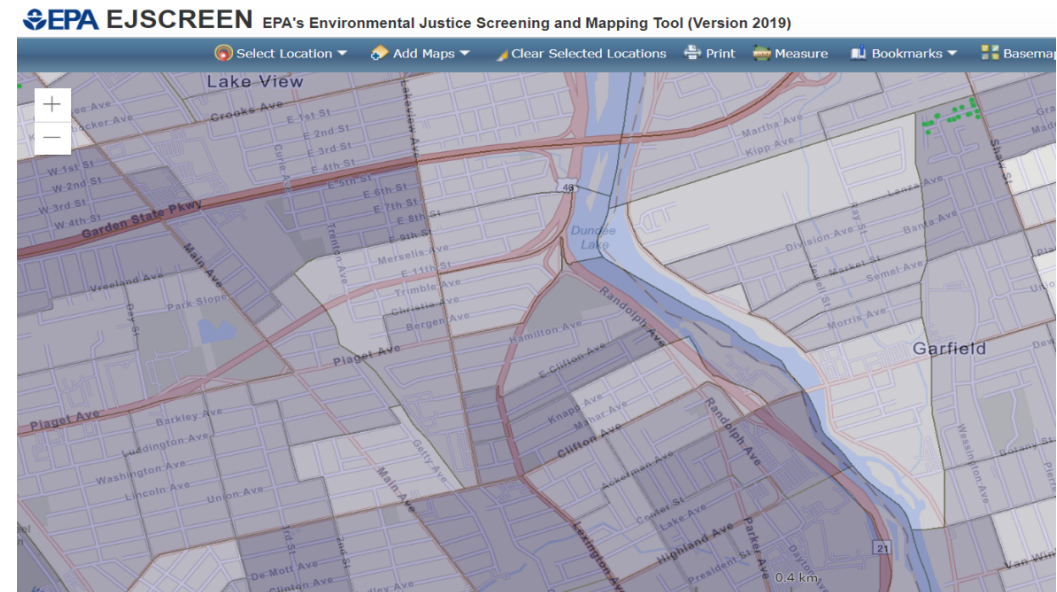
Develop Public Outreach Strategy and Plan

- Formalized outreach framework
- Communicate remediation timeline
- Community and stakeholder assessment
 - Underserved populations
 - Stakeholder profiles
 - Community values
- Determine communication methods
 - Virtual meetings
 - Fact sheets, frequently asked questions & answers, surveys, press releases, etc.

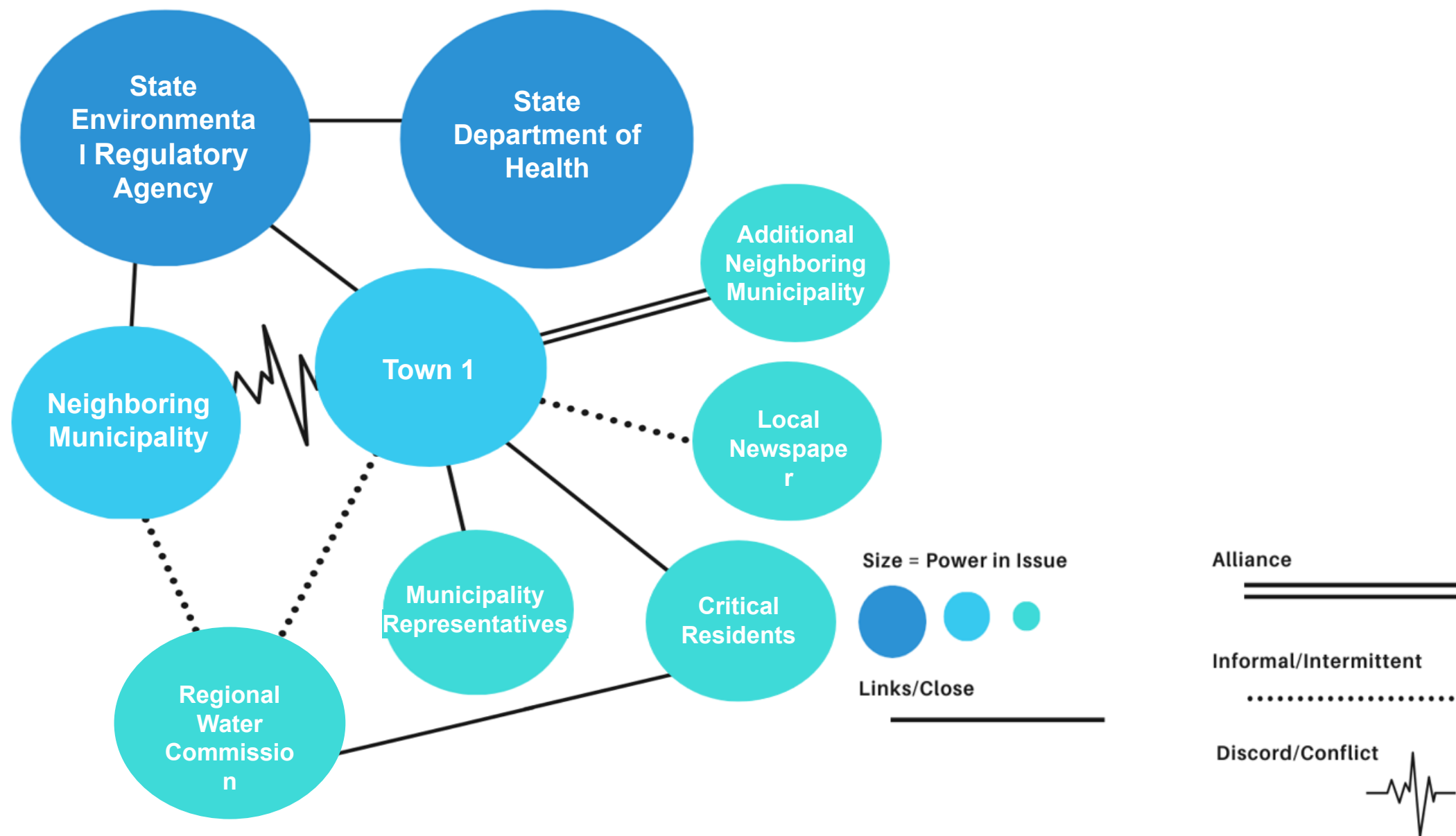


Consider Environmental Justice Populations

- Identify vulnerable, underserved, or environmental justice (EJ) populations
 - Cultural considerations
 - Translation needs
 - Education level
 - Access to broadband
- Tools for EJ population screening
 - U.S. Environmental Protection Agency (EPA) EJSCREEN
 - U.S. Center for Disease Control and Prevention (CDC) Social Vulnerability Index
 - Climate and Economic Justice Screening Tool
- Verify results with stakeholders or via canvassing



Example Community and Stakeholder Assessment





Integrating Community Assessment Findings

Select Community Assessment Findings	Select PFAS Community Risk Perception Factors	Select Key Message Topics
PFAS have been found in groundwater and there is community concern about what the site is doing to reduce the contamination.	Ability to reduce personal exposure Remediation of PFAS contamination at the site Site PFAS concentrations are above EPA-issued MCLs	As sampling continues, results will be shared with the public within the context of the community-specific PFAS cycle. Community can voice their concerns and engage in the decision-making process. MCLs address drinking water, not groundwater. Site will continue to monitor and comply with regulations, and community can work with utilities for drinking water information.

Communicating Key Messages



Focus on accessibility and readability



Leverage existing community networks



Use community's preferred communication modes



Set and evaluate public outreach and communication SMART goals

Key Message Tips



Be transparent about what you know and **do not** know.



Clearly state what regulations apply.



Give actions to those involved to protect themselves from PFAS in general.

Goal: Show a proactive response that listens to concerns

Example Public Comms Materials

What are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a large group of chemicals used since the 1940s in common household and commercial products. PFAS chemicals are often used to keep food from sticking to cookware. They also make clothes, carpets, and furniture resistant to water and stains. The manufacturing and consumption of these products delivers PFAS into our natural environment and into our drinking water supplies.

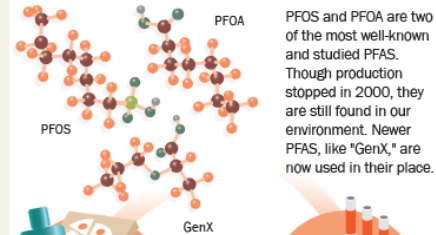
Because they are used in so many everyday products, most people in the United States and other industrialized countries now have PFAS in their blood. Studies of PFOA and PFOS (two common PFAS) found that most people's exposure to PFAS comes from their diet. Drinking water and inhaling dust with PFAS are two other common PFAS exposures. Understanding how PFAS can enter our environment, our homes, and our bodies can help us manage our exposure.

Stay Informed

Look to official sources of information to stay up-to-date on the latest news.

Reliable sources include:

- [The U.S. Centers for Disease Control](#)
- [The U.S. Environmental Protection Agency](#)



PFOS and PFOA are two of the most well-known and studied PFAS. Though production stopped in 2000, they are still found in our environment. Newer PFAS, like "GenX," are now used in their place.

We swallow, inhale, or rub PFAS into our skin by using certain products, eating or drinking impacted food and water, and breathing in the dust in our homes.

PFAS enter the environment when companies make products with PFAS.

PFAS can enter the environment as we throw away products that have PFAS, and through our own bodily waste.

Resources we use from the environment - drinking water, food, air - are more likely to have higher levels of PFAS over time.

PFAS build up in the human body over time. Scientists are still studying the health effects of higher PFAS blood levels, which may include certain types of cancer, high cholesterol, or decreased vaccine response in children.

PFAS do not break down naturally and build up in the environment over time.

How We Can Reduce Our Exposure

PFAS exposure can vary depending on your local environment, but you can take steps to reduce the PFAS around you. You can identify PFAS in products by looking for "fluoro" or "perfluoro" in an ingredients list. Choosing products that do not have PFAS can require some research, but it is an effective way to reduce your exposure. It can also mean giving up some product features such as "non-stick," or "water- or stain-resistant." Consider replacing older and worn-out products that have these features. Studies have also found that cooking more of your meals at home can lower PFAS blood levels.



Avoid buying non-stick cookware that has PFAS and stain-resistant furniture and carpeting. Look for "fluoro" or "perfluoro" in an ingredients list or ask the manufacturer.



Limit eating foods packed in materials that use PFAS. Common food packaging that may have PFAS includes microwave popcorn bags, fast food boxes (like french fry containers and pizza boxes), and bakery bags.



Minimize the dust in your home to limit PFAS particles in the air. Change your home's air filter on a regular basis and leave your shoes at the door to avoid tracking in dirt and pollutants.



Avoid personal care products that have PFAS. These include certain types of dental floss, nail polish, facial moisturizers, and cosmetics.



Learn about the PFAS levels in your local drinking water. If you want an at-home treatment option, look at the [NSF International list of products](#) certified to remove PFAS from drinking water in the home.



[PFASCentral.org](#) maintains a list of manufacturers and retailers that have PFAS-free policies.

How Does PFAS Affect Your Water?

Water quality is regulated to protect public health and drinking water quality is public information. Thus, water often provides the first clues about health-related trends we need to pay attention to.

Water also connects all of us. Vast as it may seem, our world is a closed system. There is no such thing as "new" water. All water is shared, and it flows in and out of streams, rivers, oceans, and each of us. Along the way, it often carries the things that we put in it, including chemicals like PFAS.

Water utilities are responsible for maintaining water quality according to regulations while also keeping drinking water affordable. Treatment to remove PFAS from water can happen at utilities and in our homes - using technologies like activated carbon and reverse osmosis - but this treatment can be expensive. Our country's regulatory process helps make sure we are delivering the safest water at the lowest cost. Your water utility's website is the best place to find reliable information about relevant regulations and our local drinking water quality.

Example Public Comms Materials

Town-wide PFAS Assessment and Planning Approach

Town of Nantucket, MA

What are per- and polyfluoroalkyl substances (PFAS)?

A group of man-made substances that:

- Do not break down easily
- Stay in the environment for a long time
- Were manufactured and are used broadly in consumer products since the 1950s

Primarily enter the environment via direct discharge of Class B Aqueous Film Forming Foam (AFFF) and waste streams from use of consumer products

- Are widely detected in soil, water, and food

To learn more about PFAS refer to MassDEP's website.

Where do PFAS come from?

PFAS can be found in a variety of products. Certain PFAS substances are used in the United States as a result of the Environmental Protection Agency's (EPA) regulation. PFAS are still produced in many consumer products since the 1950s.

PFAS SOURCES

PACKAGING, RUBBER, PAPER, PLASTIC, TEXTILES, APPAREL, CARPETING, CONTAINERS

Why is Nantucket concerned about PFAS?

On October 2, 2020, Massachusetts Department of Environmental Protection (MassDEP) published final regulations establishing a drinking water standard, or a Maximum Contaminant Level (MCL), for the sum of six PFAS. The MCL is 20 parts per trillion (ppt) for what the regulations call PFAS6, or the sum of six PFAS:

PFAS6
PFOS + PFOA + PFHxS + PFNA + PFHpA + PFDA
its maximum contaminant level (MCL) is **MCL=20ng/L**

MARCH 2021

Town-wide PFAS Assessment and Planning Approach

Town of Nantucket, MA

How can the Town be proactive about PFAS assessment and planning?

The Town of Nantucket (the Town) is actively building an island-wide PFAS management plan, focused on protecting the valuable groundwater resources of Nantucket used for drinking water.

Short-term GOALS

- Initiated the development of a cohesive PFAS management plan, focused on protecting the valuable groundwater resources of Nantucket used for drinking water
- Preliminarily identified potential PFAS sources associated with municipal facilities and established the "PFAS Cycle" on Nantucket
- Initiated development of a Town-wide public outreach plan and communication team to inform residents about PFAS through consistent communication

Long-term GOALS

- Develop and implement PFAS management strategy to reduce PFAS risks to human health and the environment
- Perform key action items to manage information and data, inform the public, and build towards source reduction strategies

This fact sheet explains the assessment's conclusions. Access the full report [HERE](#).

Town-wide PFAS Assessment | Town of Nantucket, MA
Water System Expansion in the Area West of Nantucket Memorial Airport as a Direct Response to PFAS

PROJECT: A water system expansion project is underway to provide municipal water to residents with PFAS-impacted domestic wells west of the Airport.

BACKGROUND: Groundwater contamination has been detected near the Airport and is affecting drinking water quality in nearby private residential wells. The contamination is from a group of man-made substances called per- and polyfluoroalkyl substances (PFAS). These substances do not break down easily in the environment and can pose a public health concern.

CURRENT PHASE

1 Planning and Conceptual Design

- Establish funding mechanisms
- Town filed for MassDEP construction funding assistance through the State Revolving Fund (SRF) Drinking Water Program
- Municipal supply well capacity evaluation
- Hydraulic modeling to confirm approach
- Route layout and pipe sizes
- Preliminary locations of valves and hydrants
- Topographic and utility survey

2 Permitting

- Massachusetts Endangered Species Act (ESA) review
- Wetland permitting, if necessary
- Permitting work will overlap with final design

3 Final Design

- Design plans and details
- Technical specifications and contract documents
- Town approval

4 Bidding

- Document distribution to potential contractors
- Bid opening
- Contract award

5 Water Main Construction

- Water pipes, valves, hydrants
- Service connections to meter pit at property line
- Trench paving (except on gravel roads)

6 Home Connection Requirements

- Nantucket Water Department connection fee
- Contract service connection to house
- Plumber to reconfigure house plumbing
- Private wells must be separated from plumbing
- Abandonment of private wells is recommended
- Town inspection of house plumbing

LEGEND

- Nantucket Water Department Water Mains (existing)
- Airport Extension Water Mains (under construction)
- Town Expansion Area for Water Service: 8" or 12-inch diameter pipe, 14,800 feet of new water main, Service area includes 80 homes
- WellB13 is a municipal public water supply well

Map is a schematic for planning purposes only and not drawn to scale.

KEY ISSUES

- Total duration from start of Step 1: Conceptual Design to Step 5: Completion of Construction is expected to be between 2-3 years. This assumes funding appropriation is put in place, and does not include any winter construction shutdown period.
- Town is pursuing approval of a new water supply well to address additional water demand. State permits expected to be issued mid-2022 (MERA approval, MassDEP Source Approval, MassDEP Water Withdrawal Permit amendment). Design and construction to follow in 2022-2023.
- Additional system-wide water conservation measures may be needed before new well is online.

For more information on PFAS and the actions the Town is taking to address PFAS found on the island -

[The Town PFAS website](#)

[PFAS Fact Sheet](#)

Town-wide PFAS Assessment and Planning Approach

Town of Nantucket, MA

How does use of consumer products result in migration of PFAS to waste receivers/haulers?

- Wastewater and MSW waste streams received by the WWTFs and landfill, respectively
- Waste streams leaching from septic systems to groundwater
- Direct release to ground surface or a water body, which may migrate to groundwater

How do humans transport PFAS?

Humans transport PFAS by generating MSW, wastewater, and other waste streams impacted by residential and commercial use of PFAS-containing products. Island-wide use of common consumer products containing PFAS may be potential sources at the Nantucket Landfill and WWTF waste streams (effluent/residuals or biosolids).

What is being p...

- Wanna detect Mass (MCL) town

Information for Property Owners and Residents Who Have Sampled Their Domestic Well for PFAS

Town-Wide PFAS Assessment | Town of Nantucket, MA

PFAS are man-made substances used broadly in consumer products since the 1950s. PFAS have entered the environment via disposal of consumer products in landfills and wastewater. As PFAS do not break down easily, they stay in the environment for a long time, and are widely found in soil, water, and food.

If you sampled your domestic drinking water well for PFAS, this information can help you determine the next steps required. Massachusetts regulates the combined total concentration of six PFAS compounds (PFAS6) in drinking water. The first step is to compare your PFAS6 results to the Massachusetts Drinking Water Standard of 20 nanograms per liter (ng/L).

PFAS6 = PFOS + PFOA + PFHxS + PFNA + PFHpA + PFDA
Massachusetts Drinking Water Standard: **20 ng/L**

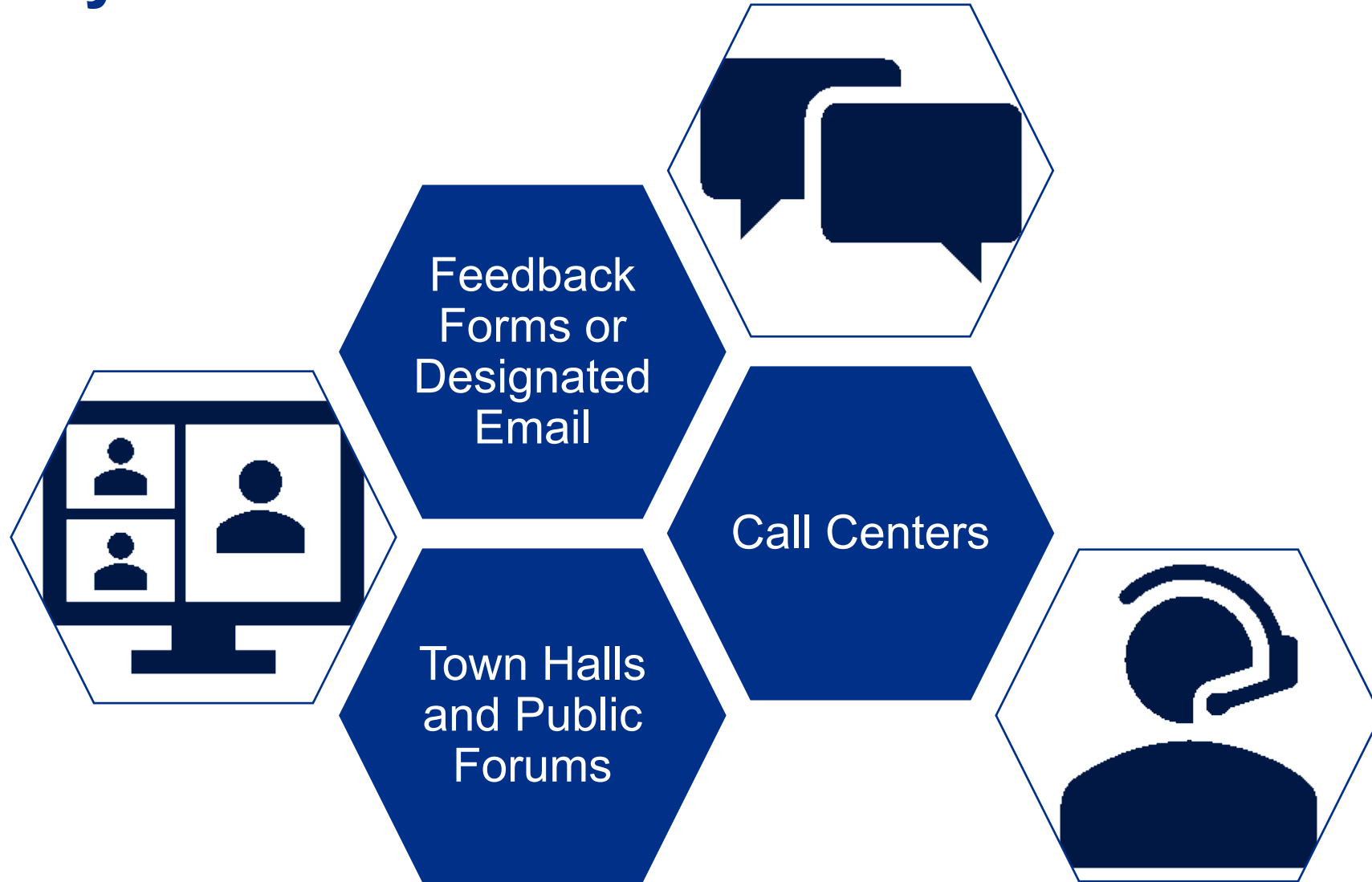
My well was tested. What are the next steps?

Select one of three paths below based on your PFAS6 testing results:

Path 1	Path 2	Path 3
Below Standard 20 ng/L	Between 20 ng/L and <90 ng/L	Greater than or equal to 90 ng/L
None required	Recommend contacting the Massachusetts Department of Environmental Protection (MassDEP) to review results and determine next steps. Note: The Massachusetts Contingency Plan (MCP) Regulations require verbal notice of PFAS6 exceedance to MassDEP within 2 hours, and an assessment of risk to determine if immediate action is required.	Recommend contacting MassDEP to review results and determine next steps. Note: The MCP Regulations require verbal notice of PFAS6 exceedance to MassDEP within 2 hours, and an assessment of risk to determine if immediate action is required.
Owner could choose to conduct periodic testing (e.g. annual sampling)	Water with PFAS6 concentrations between 20 ng/L and <90 ng/L is unacceptable for long-term use as drinking water. MassDEP may offer the property owner technical help to make sure safe water is available. Property owner should begin to determine an alternate safe drinking water source.	Property owners should take immediate action to identify and secure an alternate safe drinking water source, and stop using the impacted water. Immediate actions may include: - Using bottled water - Installing a home treatment system - MassDEP may offer the property owner technical help to make sure safe water is available.
Owner could choose to continue periodic testing (e.g. annual sampling)	Options to Consider	Options to Consider
	- Bottled water (www.mass.gov/doc/list-of-bottlers-october-7-2021) - Installing a point-of-entry treatment (POET) system - Connecting to municipal water if readily available - Alternate well source (i.e., new well, or, if available, community well)	- Bottled water (www.mass.gov/doc/list-of-bottlers-october-7-2021) - Installing a point-of-entry treatment (POET) system - Connecting to municipal water if readily available - Alternate well source (i.e., new well, or, if available, community well)

Turn the page for helpful definitions and contact information

Community Feedback





Example FAQs

Does [site] discharge wastewater or stormwater to drinking water sources? Have these systems or discharges been tested for PFAS?

I live next to [site]. Am I at risk from PFAS from that facility?
How can I learn about my risk?

How do known PFAS levels compare to EPA MCLs?

How do EPA MCLs affect remediation sites? What is [site] doing about PFAS at legacy contaminated sites in states that do not have PFAS regulations?

Will PFAS be remediated at [site]? How? When?

Takeaways



PFAS are here to stay, and they will affect us all.



Proactive communication about PFAS can increase community trust.



Empowering a community through accessible communication is key.



Be prepared to adapt as we learn more.

Thank you!



To learn more, contact:

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