



Update on Silent Spring Institute MA PFAS & Your Health Study



SILENT SPRING INSTITUTE
Researching the Environment and Women's Health

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Silent Spring Institute

Barnstable Town Council | April 30, 2026

We are an independent, non-profit research organization dedicated to identifying the links between everyday chemicals and women's health, with a focus on breast cancer prevention.

History

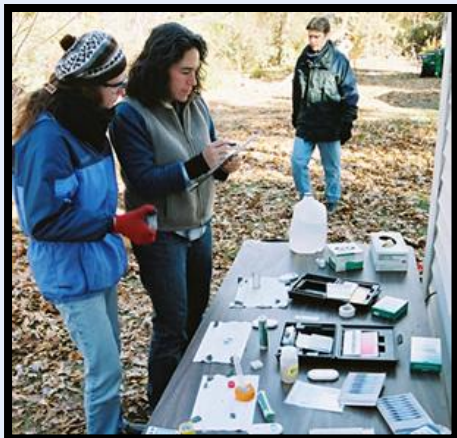
Founded by Massachusetts Breast Cancer Coalition in 1994.

Now a leading scientific research organization on environmental causes of breast cancer.



"A lab of our own"

Silent Spring Institute researchers have been studying endocrine disrupting compounds and other unregulated water contaminants on Cape Cod since the 1990s.



Septic systems



Ponds & estuaries



Groundwater



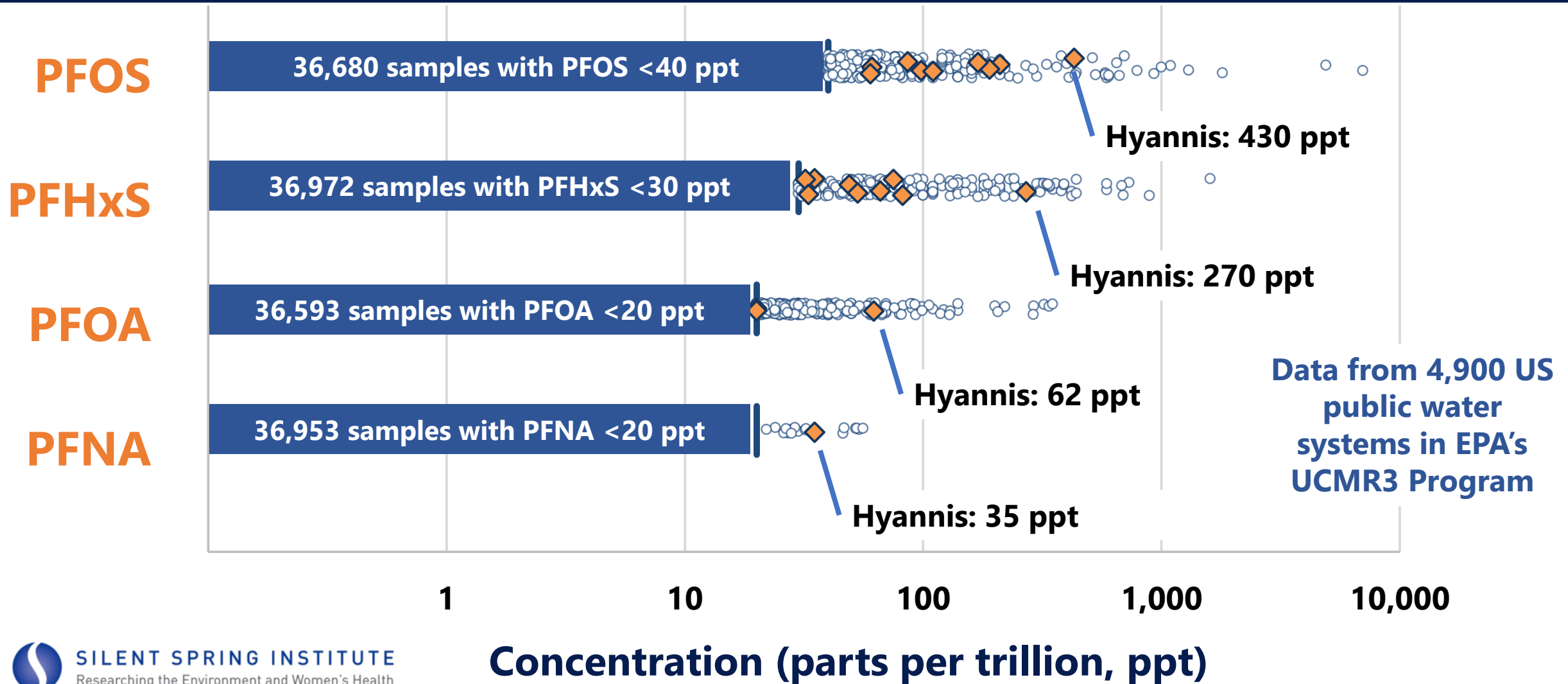
Drinking water

PFAS in Hyannis drinking water



- 2010: Silent Spring first discovered PFAS in Hyannis water
- In 2013-2015, Hyannis had higher PFAS than any other water supply in MA
- In 2016, Hyannis started filtering water to remove PFAS
- All Hyannis water is now filtered to remove PFAS

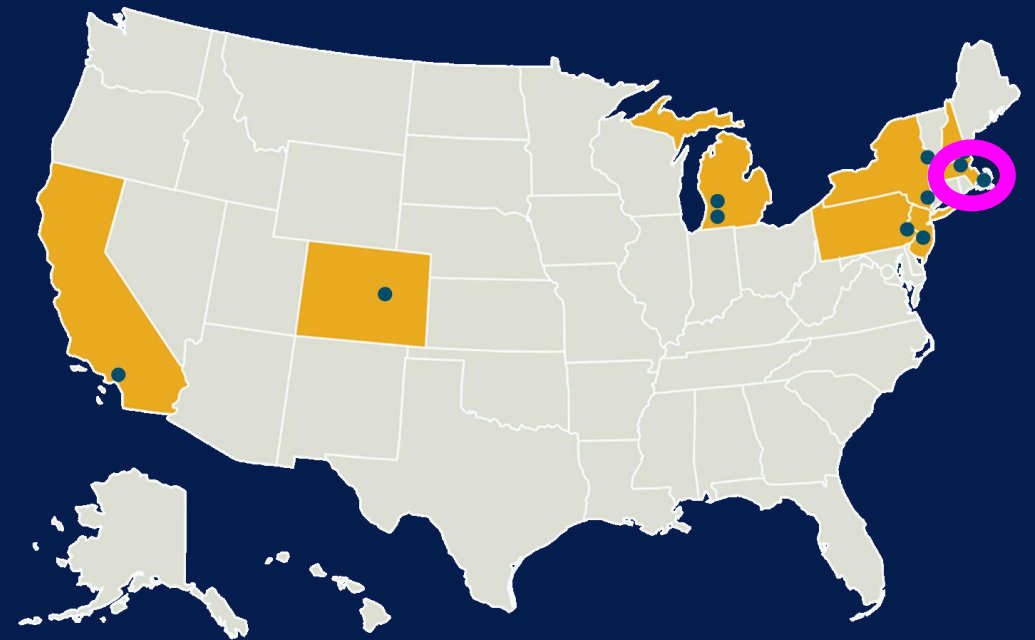
2013-2015: Some samples from Hyannis (and 1 from Mashpee) were in top 1% of samples in the US



CDC PFAS Multi-site Health Study

- Funded by **CDC** and Agency for Toxic Substances and Disease Registry (**ATSDR**)
- Goal: improve understanding of PFAS-related health effects
- Includes adults and children from communities with a history of PFAS drinking water contamination

Includes communities in 8 states:
CA, CO, MA, MI, NH, NJ, NY, PA





Massachusetts PFAS & Your Health Study in Hyannis and Ayer



Research partners

Silent Spring Institute (lead)
Harvard School of Public Health
Eastern Research Group

Local partners

Mass. Breast Cancer Coalition
People of Ayer Concerned about
the Environment (PACE)



Massachusetts PFAS & Your Health Study in Hyannis and Ayer

- **Hyannis enrollment (2021-2023):**
385 adults and 41 children (4-17)
- **Study components:**
 1. Blood draw and clinical visit
 2. Questionnaire
 3. Neurobehavioral tests (children only)
- **Blood samples tested for PFAS
and clinical lab tests**





Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Environment International

journal homepage: www.elsevier.com/locate/envint



Full length article

Multi-site study of communities with PFAS-contaminated drinking water: Methods, demographics, and PFAS serum concentrations



Marian Pavuk^{a,*}, John L. Adgate^b, Scott M. Bartell^c, Erin Bell^d, Linda M. Brown^e, Robert J. Laumbach^f, Laurel A. Schaider^g, Thomas J. van t' Erve^h, Jordan M. Bailey^h, Julianne Cook Botelhoⁱ, Antonia M. Calafatⁱ, Chris R. Cutler^j, Steven Forand^d, Judith M. Graber^f, Tamarra James-Todd^k, Zuha Jeddy^j, Kayoko Katoⁱ, Nayara Mowry^j, Anil S. Nair^e, Pamela Ohman-Strickland^f, Patrick Rago^{a,l}, Adam M. Schaefer^j, Anne P. Starling^{b,m}, Veronica M. Vieira^c, Meghan M. Weems^a, Kristine F. Wiant^e, Frank J. Bove^a



PFAS Multi-site Study: Community-Level Blood Test Results

based on the paper by Pavuk and others (2025)



KEY FINDINGS

- We found 4 PFAS compounds in the blood of almost every adult and child in the study.
- The levels of these 4 PFAS varied from site to site, as different sites had different PFAS sources and levels of contamination.
- Adults in the study had higher average levels of PFOA and PFHxS than adults in the general U.S. population.
- Children in the study had higher average levels of PFHxS than children in the general U.S. population.
- Among participants ages 12 to 49 years, males had higher levels of most PFAS than females.

Peer-reviewed paper describing Multi-site Study protocols and blood test results

<https://doi.org/10.1016/j.envint.2025.109589>



SCAN QR CODE

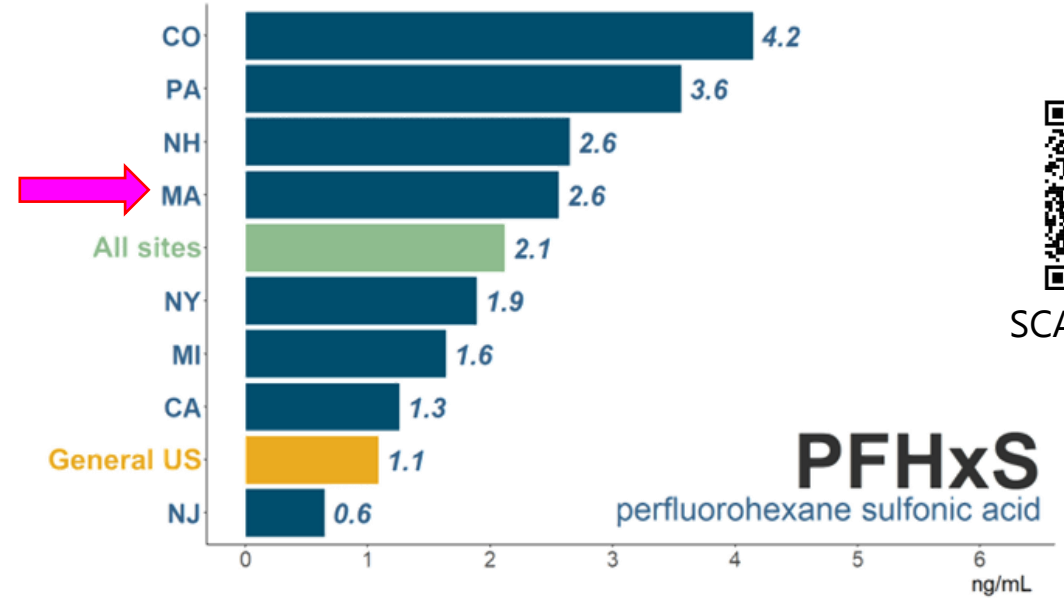
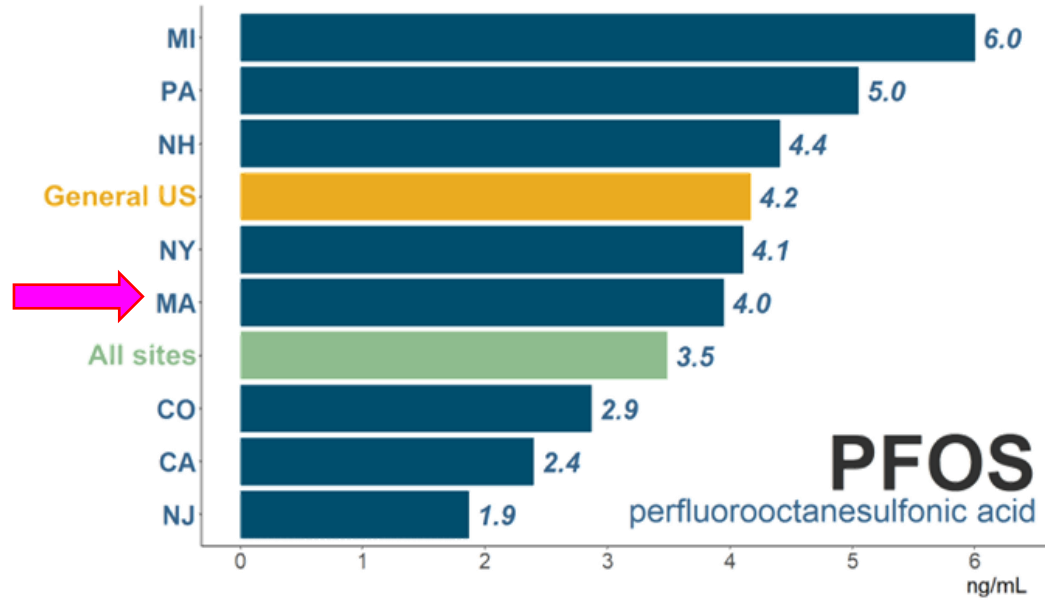
Fact sheet with summary of paper's key findings

www.atsdr.cdc.gov/media/pdfs/2025/07/MSS-Community-PFAS-Blood-Levels-Fact-Sheet-508.pdf

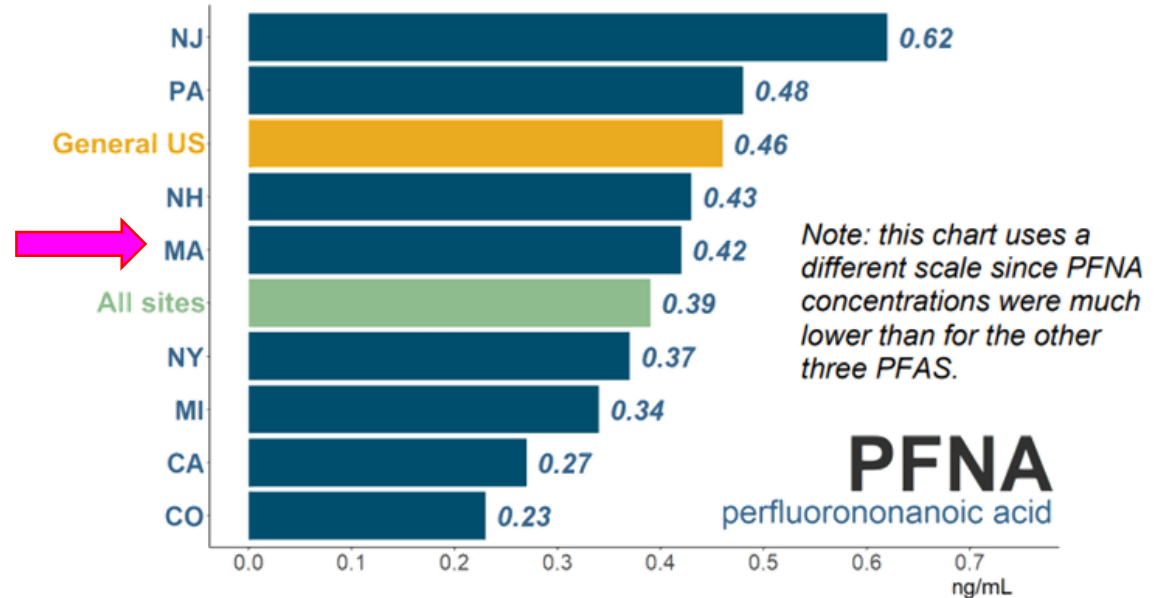
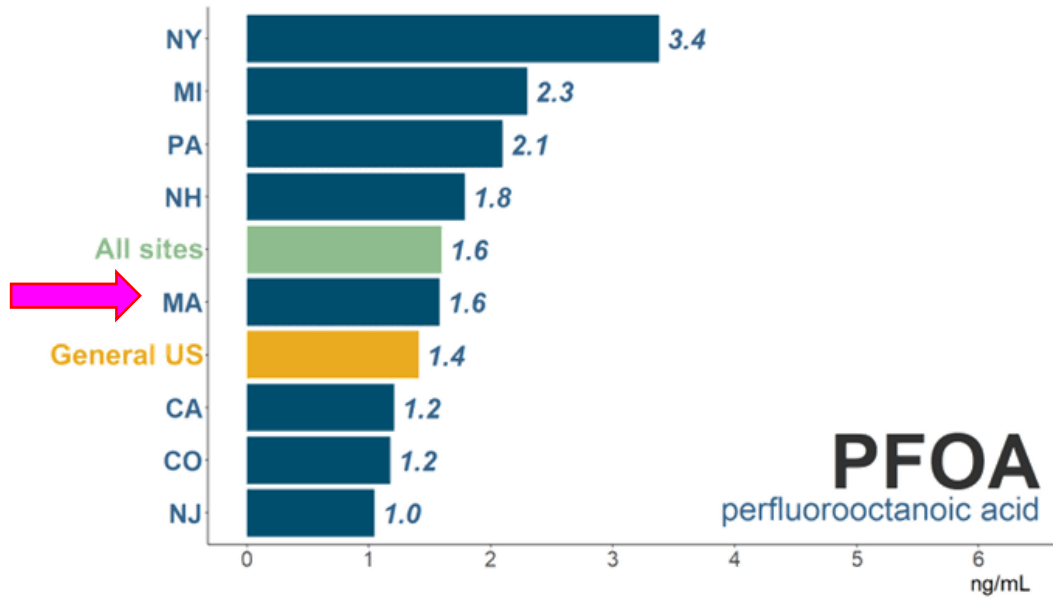


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Average (geometric mean) PFAS blood levels by site



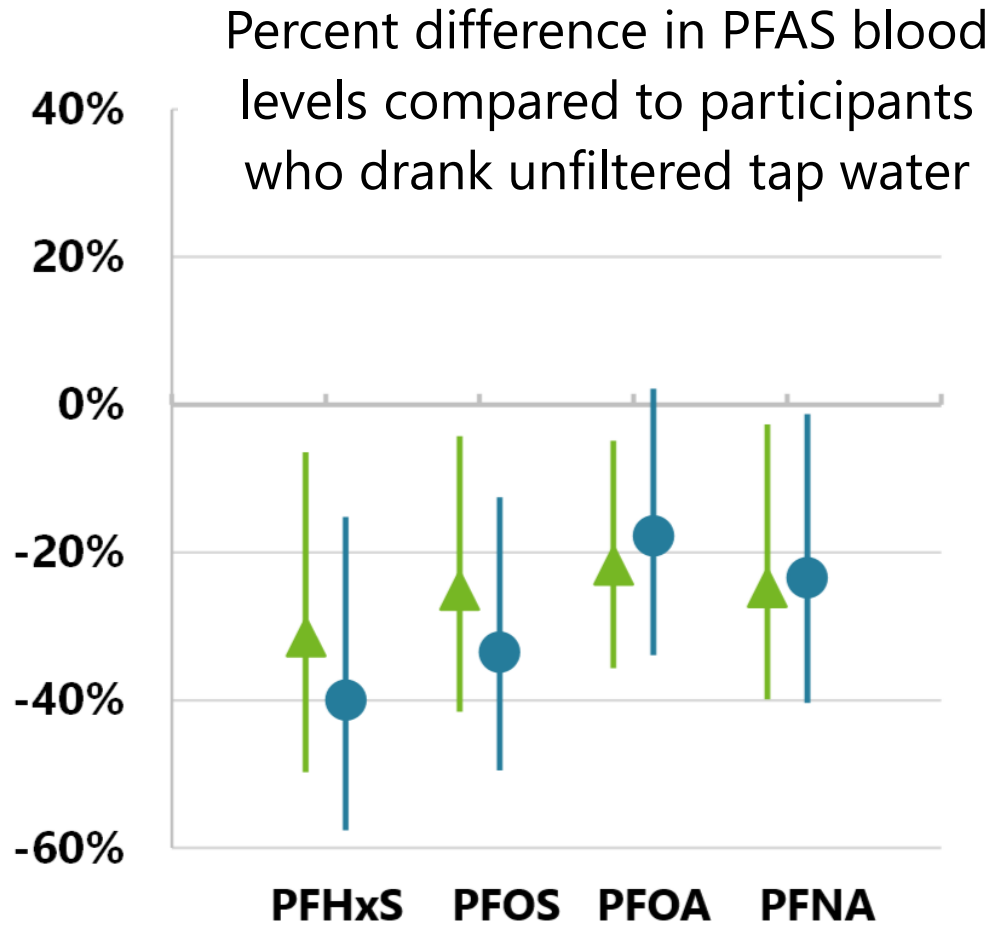
SCAN QR CODE



Past water contamination still influences PFAS blood levels 4-7 years after municipal treatment

In Hyannis, participants who used home water filters or drank mostly bottled water had 18-40% lower PFAS in their blood than people who drank unfiltered tap water even years after municipal treatment.

*Heckel et al. In review
J Expo Sci Env Epidemiol.*



*Staff Scientist
Emily Heckel*



Results from Hyannis participants are part of analyses across 8 states in Multi-site Study



Lipids
(Marian Pavuk, MD, PhD)



Thyroid
(Michael Bloom, PhD)



Diabetes
(Anne Starling, PhD)



Blood Pressure
(Yuting Wang, PhD, MPH)



Metabolic Syndrome
(Abby Bline, PhD)



Heart Disease
(Celina Phillipson, MS)



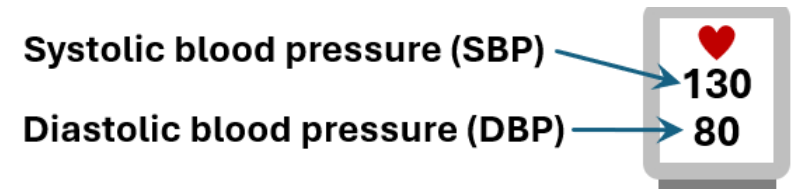
Obesity
(Yerin Jung, PhD)

Investigating links between PFAS and blood pressure



Postdoctoral Fellow
Dr. Yuting Wang

- Analyzed results from 5,826 adults
- Higher levels of some PFAS in blood were associated with higher blood pressure
 - Strongest effects for PFOS and PFHxS
- Associations were strongest in younger adults



High blood pressure (HBP): SBP>130 or DBP>80

	SBP	DBP	HBP
PFHxS	↑	↑	↑
PFOS	↑	↑	↑
PFOA		↑	
PFNA	↑		
PFDA	↑		
PFUnDA			
MeFOSAA	↑		
PFAS Mixture	↑	↑	↑

↑ Positive associations (p<0.05)

Current work



- **Reconstructing past PFAS exposures**

- Groundwater modeling to estimate PFAS in Hyannis water to 2000
- Applying a model to convert drinking water levels to blood levels
- Understanding effects of chronic long-term exposures



- **Investigating links to other health effects**

- COVID-19 antibodies, diabetes, lipids, cardiovascular disease, obesity, neurobehavioral test results (children), and thyroid function



- **Sharing results**

- Email update to participants, fact sheets and videos, outreach to clinicians, and Multi-site Study webinar in September 2026

Funding is needed to continue the MA PFAS & Your Health Study

Additional funding would allow us to collect new data to answer important questions:

- How have blood levels changed in Hyannis over time?
- Are there any dietary factors that may promote faster release of PFAS from the body?
- What are long-term health effects from PFAS exposures among adults and children?

**Thank you to
Rep. Xiarhos
and Rep. Vieira**

Amendment #1012 to H.5500 ×

Amendment #1012 to H5500

Silent Spring Institute PFAS Research and Study

Mr. Xiarhos of Barnstable moves to amend the bill in section 2, in item 7008-1116, by inserting after "projects" the following:- "provided further, that not less than \$25,000 shall be expended to the Silent Spring Institute for the research and study of PFAS exposure"

Additional co-sponsor(s) added to Amendment #1012 to H5500

Silent Spring Institute PFAS Research and Study

REPRESENTATIVE:

David T. Vieira

To learn more, visit: PFAS Exchange

- Fact sheets
- Community map
- Data interpretation tool
- Resources for clinicians

www.pfas-exchange.org



How to Reduce Your Exposure to PFAS

PFAS (per- and polyfluoroalkyl) substances are a class of chemicals that companies add to consumer products to make them nonstick, waterproof, and stain-resistant. They are found in carpets and upholstery, waterproof apparel, non-stick cookware, grease-proof food packaging, and even dental floss. They are also used in firefighting foams for putting out fuel fires.

Unfortunately, studies have linked these chemicals with a range of health problems including the disease, cancer, high cholesterol, obesity, an effects on the immune system. Luckily, there are simple steps you can take to reduce your exposure to PFAS and create a healthier environment for you and your loved ones.



PFAS-REACH

PFAS Research, Education, and Action for Community Health

In your personal life:

- ✓ Avoid stain-resistant carpets and upholstery, as well as stain-resistant treatments and waterproofing sprays.
- ✓ Avoid products with the ingredient PTFE or other "fluoro" ingredients listed on the label.
- ✓ Choose steel.
- ✓ Filter carbons.
- ✓ Eat non-contaminated.
- ✓ Avoid wraps.
- ✓ Look for uncoated.

In your community:


- ✓ Tell retailers and manufacturers you want products made without PFAS.
- ✓ Urge your local water utility to test for PFAS.
- ✓ Ask your state legislators to set up a statewide water and blood testing program.

PFAS-REACH

PFAS Research, Education, and Action for Community Health

PFAS: A Word About Drinking Water Guidelines


Are PFAS regulated in drinking water? PFAS (per- and polyfluoroalkyl) substances are currently not regulated under the Safe Drinking Water Act. This means there are no federal drinking water standards and public water supplies do not have to test or treat their water for PFAS under federal law. The U.S. Environmental Protection Agency (EPA) has set a non-enforceable health-based guideline level of 100 parts per trillion (ppt) for PFOA and PFOS.



How Can PFAS Affect Your Health?

PFAS (per- and polyfluoroalkyl) substances are among the most ubiquitous synthetic chemicals in the world. Approximately 98 percent of Americans have PFAS in their bodies. People can be exposed to these chemicals in many different ways—through the water they drink, the products they use, the air they breathe, and the food they eat. During pregnancy, PFAS can pass from the mother to the fetus through the umbilical cord, and babies can be exposed through breast milk or formula made with contaminated water.

Although the science on health effects is still evolving, scientists are increasingly concerned about low-dose exposures, as they continue to find health effects at lower and lower levels. More research is needed on other PFAS chemicals, in particular ones that companies have developed to replace PFOA and PFOS. Because people are exposed to multiple PFAS from multiple sources, researchers are beginning to investigate the effects of mixtures of PFAS on human health.



PFAS-REACH

PFAS Research, Education, and Action for Community Health

Human studies

- High cholesterol
- Ulcerative colitis
- Cancer
- Liver
- Thyroid
- Diabetes
- Asthma
- Depression
- Liver

Animal studies


- Cancer
- Liver
- Diabetes
- Depression
- Immune system
- Cholesterol
- Liver

Why do guidelines vary?

Guideline levels are created when regulators, after reviewing the science, calculate a level of exposure below which health effects are not expected to occur. Regulators consider different types of evidence and factors when developing guideline levels:

- Studies linking exposure to PFAS with various health effects (for instance, effects on the immune system, liver, or mammary gland development).
- The impact on vulnerable populations such as infants or pregnant women.
- How much water people drink in a day.
- How much exposure likely comes from drinking water versus diet and consumer products.
- Molecular studies that show what happens to PFAS after the chemicals enter the body.

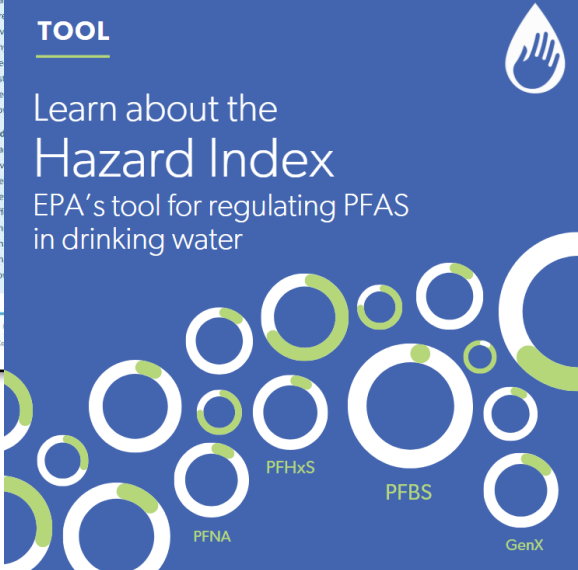
Although some variation is expected among the



TOOL

Learn about the Hazard Index

EPA's tool for regulating PFAS in drinking water



NIH
NIH/NIEHS

PFAS-REACH is a five-year project funded by the National Institute of Environmental Health Sciences (NIEHS) under grant R01ES028111.

Thank you!

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