



Sources, Transport, Exposure & Effects of PFASs
UNIVERSITY OF RHODE ISLAND SUPERFUND RESEARCH PROGRAM

An update on PFAS testing in Cape Cod drinking water

Laurel Schaidler, PhD, Silent Spring Institute
Alyson McCann, University of Rhode Island
June 23, 2021

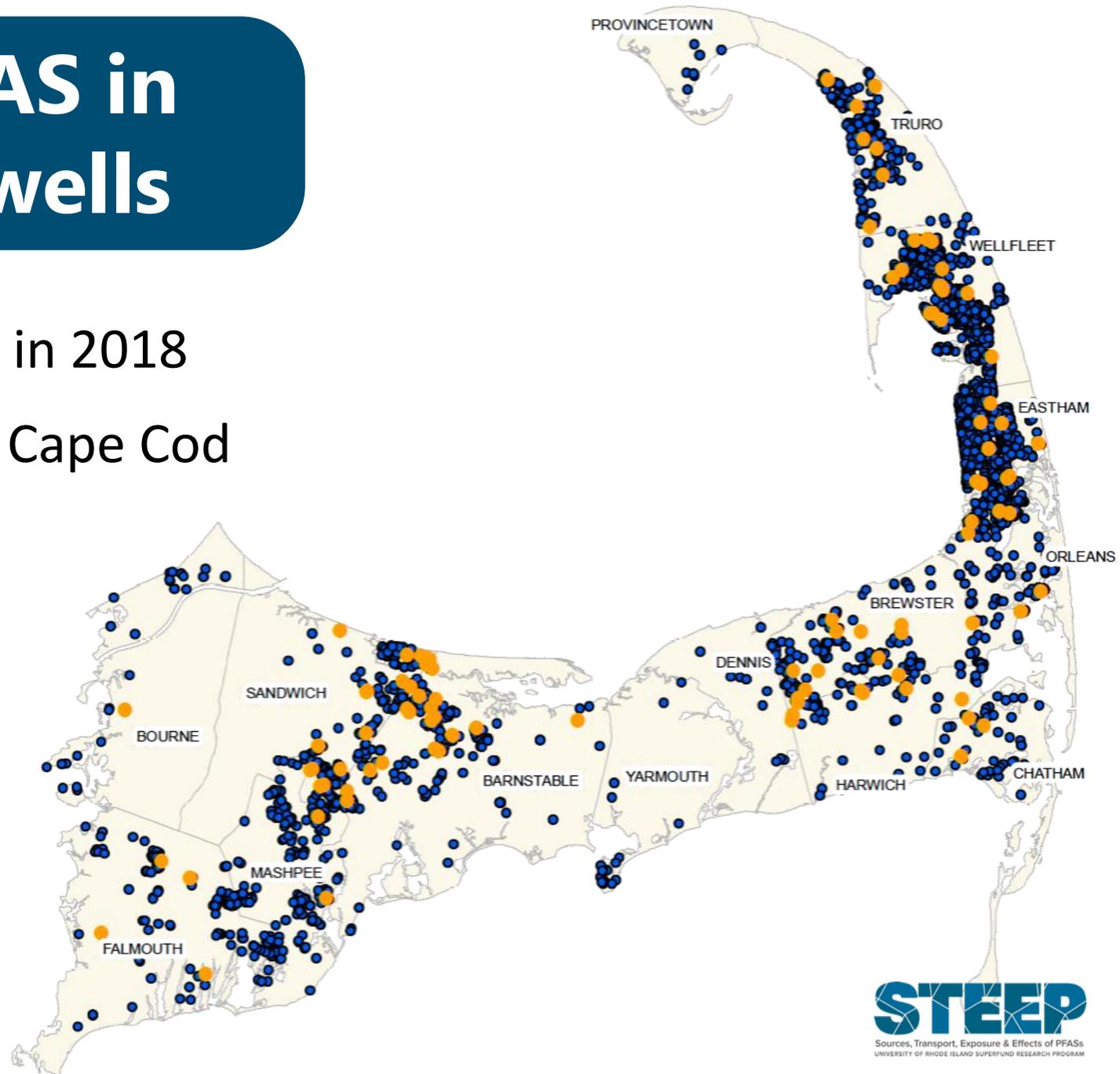


STEEP study of PFAS in Cape Cod private wells

- 101 volunteer wells sampled in 2018
- Locations of private wells on Cape Cod

Samples analyzed for:

- ✓ PFAS
- ✓ Nitrate
- ✓ Boron
- ✓ Trace metals



Private wells study team

Project leaders:

- Laurel Schaider, Silent Spring Institute
- Alyson McCann, University of Rhode Island

Harvard University:

- Elsie Sunderland, Heidi Pickard, Prentiss Balcom

Silent Spring Institute:

- Amanda Hernandez, Katie Boronow, Erik Haugsjaa

University of Rhode Island:

- Rainer Lohmann, Jitka Becanova, Lisa Philo, Amy Wengefeld

Massachusetts Breast Cancer Coalition:

- Cheryl Osimo



Initial findings

- No wells exceeded U.S. EPA guideline
- 3% of wells exceeded new Mass. standard of 20 ppt for 6 PFAS
- PFAS were detected in 46% of wells
- 28% of wells had 2 or more PFAS detected
- Both legacy and newer alternative PFAS
- Wells with higher nitrate were more likely to have PFAS

What's the quality of Cape Cod drinking water?



PRELIMINARY FINDINGS FROM STEEP'S PRIVATE WELL STUDY ON CAPE COD

Key Findings

- STEEP tested water samples from 101 private wells in 12 towns across Cape Cod. About 46% of wells had detectable levels of at least 1 PFAS chemical, and 28% had 2 or more PFAS chemicals detected.
- The percentage of wells with detectable levels of 1 or more PFAS chemicals varied somewhat across different parts of the Cape, with the highest percentage in the Mid Cape and the lowest percentage in the Lower Cape.
- Wells with higher levels of nitrate had higher PFAS concentrations. Since nitrate is an indicator of septic system impact, this suggests that septic systems could be a source of PFAS in private wells.
- None of the wells exceeded current federal or state health guidelines for PFAS. Massachusetts has proposed a stricter groundwater standard, and around 3% of wells exceeded this proposed state standard.

What are PFAS?

PFAS (per- and polyfluoroalkyl substances) are a large family of chemicals commonly added to nonstick, stain-resistant, and waterproof consumer products such as carpets and upholstery, waterproof clothing, cookware, food packaging, and even some dental floss. They are also added to some firefighting foams used at military bases, airports, and fire training areas. Due to their extreme persistence in the environment, PFAS are often referred to as "forever chemicals."

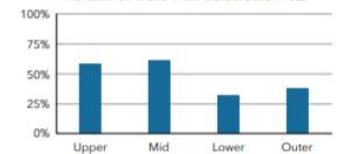
PFAS chemicals have been found in public water supplies across the U.S., including in Hyannis and Mashpee. A prior study by Silent Spring Institute in 2011 found PFAS in a majority of private wells tested on Cape Cod. Potential sources of PFAS contamination to Cape groundwater include septic systems, firefighting foams, and discharges from sewage treatment plants and landfills.

What did STEEP do?

STEEP tested untreated water samples from 101 private wells in 12 towns across Cape Cod. Water samples were analyzed for 25 PFAS chemicals, including the 5 PFAS chemicals in the Massachusetts drinking water guideline. Also measured were nitrate and boron, which indicate potential septic system influence, and some metals, such as lead and iron.

The U.S. Environmental Protection Agency (EPA) issued a health guideline of 70 parts per trillion (ppt) for PFOA and PFOS (combined), two PFAS chemicals frequently found in the environment and in people. In 2018, the Massachusetts Department of Environmental Protection (MassDEP) issued a health guideline of 70 ppt for the total amount of 5 PFAS chemicals (PFOA, PFOS, PFNA, PFHpA, and PFHxS) in public water supplies. In 2019, MassDEP proposed a stricter guideline for groundwater of 20 ppt for the total amount of these 5 PFAS chemicals plus a sixth (PFDA), and is working to develop a revised drinking water standard. Exposures to PFAS have been associated with higher cholesterol, effects on the liver and thyroid, decreased vaccine response in children, testicular and kidney cancer, changes in breast development, and other effects on growth and development.

Percent of wells with detectable PFAS



New MassDEP website to learn about PFAS in public water supplies

www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas

Click on: “PFAS detected in drinking water supplies in Massachusetts”

MassDEP addressing PFAS contamination PFAS information

Projects by Public Water Systems PWS in Massachusetts to address PFAS contamination. This story map consists of clickable seven tabs that present interactive maps, dashboards and photographs that describe the efforts by MassDEP and the PWSs to address PFAS contamination.



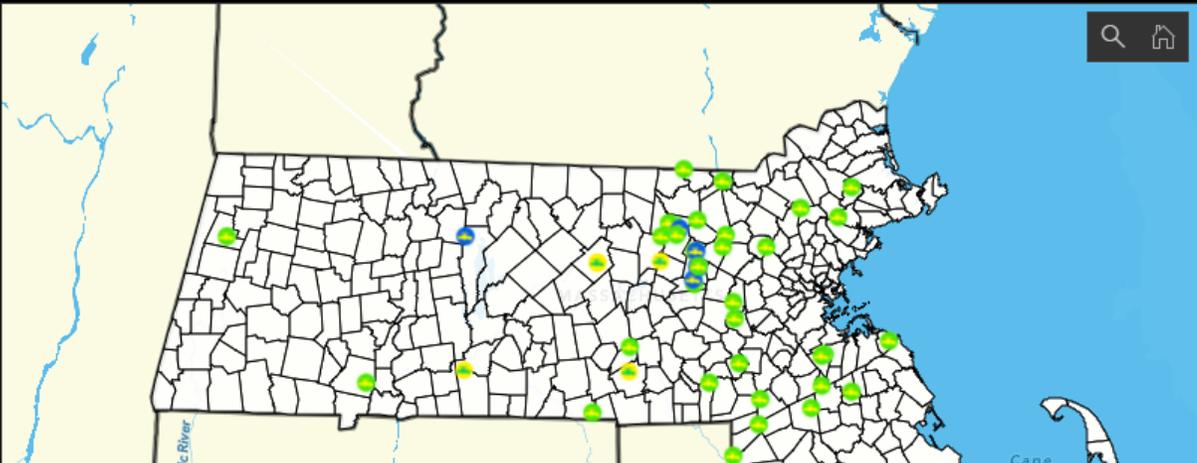
1 Introduction

2 Testing

3 Public Water Systems Free Testing

4 PFAS detections and responses by public water systems

Public Water System PFAS Detection and Response Actions
Public Water Systems (PWS) who detected PFAS6 over the Maximum Contaminant Level (MCL) in their finished water and their response actions



PWS detected PFAS6 above 20 ppt

- Abington/Rockland Joint Water Works
- Acton Water District
- Aquarion Water Company, Millbury
- Ayer DPW Water Division
- Ayer Road Properties, LLC
- Barnstable Fire District Water Department
- Bedford Water Dept
- Bellingham Water Dept

ASK • LEARN • ACT

To sign up for our private wells study:

Visit: web.uri.edu/stEEP/wellwater

Email: Alyson McCann (amccann@uri.edu)

Laurel Schaidler (schaidler@silentspring.org)

STEEP
Sources, Transport, Exposure & Effects of PFASs
UNIVERSITY OF RHODE ISLAND SUPERFUND RESEARCH PROGRAM

WHAT'S IN YOUR WELL WATER?

Find out! Volunteer for FREE private well testing.

Why study well water?
In some areas of Cape Cod, PFASs have been found in drinking water.

What are PFASs?
PFASs are chemicals found in household products and firefighting foam. They've been around for 60 years, but their harmful health effects have only drawn concern in the last 20 years.

How can PFASs get into my well water and what are the harmful effects?
They can seep into the ground and move through groundwater to your well. They suppress certain immune system functions, particularly in kids, impact metabolic and liver functions, and are linked to some cancers and adverse effects on pregnancy, such as low birth weight.

Who can participate and how much time will it take?
Private well owners who live in Barnstable County on Cape Cod are eligible to participate, and participation will take about three hours.

What's the purpose of this study?
To test 50 private wells on Cape Cod each year over the next 5 years. Wells will be chosen from areas in Barnstable County that may be impacted by PFASs. The benefit to Cape Cod residents is a better understanding of PFAS exposure and contamination.

Who is doing the study?
The STEEP project is part of a National Institutes of Health Superfund Research Project led by the University of Rhode Island, URI and Silent Spring Institute will collect well water samples and Harvard University will analyze them.

Will I receive the test results?
We will report individual results and interpret them for each participant. We will share summaries of our findings with Cape residents in reports and public meetings. Names and addresses of participants will be kept confidential.

For more info, or to apply, contact either:

Laurel Schaidler, Ph.D. Research Scientist Silent Spring Institute schaidler@silentspring.org (617) 332-4288 x224	Alyson McCann Water Quality Program Coordinator University of Rhode Island alyson@uri.edu (401) 874-5398
---	--

www.uri.edu/stEEP

THE UNIVERSITY OF RHODE ISLAND | HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH | SILENT SPRING INSTITUTE Researching the Environment and Women's Health

STEEP is funded by the Superfund Research Program, National Institute of Environmental Health Sciences under award number P42ES027736. This is URI research approved by URI's Institutional Review Board.

Visit the STEEP website for our past webinars:

PFAS in drinking water – February 3

PFAS health effects – March 11

PFAS in consumer products – April 14

<https://web.uri.edu/stEEP>