



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

Information for STEEP Private Well Study Volunteers

Why is STEEP studying well water?

In some areas on Cape Cod, PFASs—also called PFCs or highly fluorinated chemicals—have been found in drinking water. These compounds have potentially adverse health impacts. STEEP is testing 250 private wells across Cape Cod over the next five years. Our study will provide Cape Cod residents with a better understanding of the extent of PFAS exposure and contamination.

What are we testing for?

We will collect three sample bottles of water from your home. Your well water will be tested for:

1. **PFASs.** PFASs are a class of chemicals found in household products and firefighting foam. People can be exposed to PFASs from drinking contaminated water, eating PFAS-tainted food, and coming into contact with consumer products treated with PFAS chemicals, such as water-resistant clothing or stain-resistant furniture. Potential sources of PFAS contamination in Cape Cod groundwater include runoff from landfills and wastewater from homes and businesses, in addition to household products and firefighting foam.
2. **Nitrate.** Nitrate naturally occurs in groundwater at low levels that do not cause health problems. High levels of nitrate in drinking water can be harmful to infants, pregnant and nursing women, and older adults. On Cape Cod, septic systems are the main source of nitrate pollution in groundwater. Other sources of nitrate include fertilizers, stormwater runoff, and airborne pollution.
3. **Boron.** Boron is a chemical element found in nature. Boron naturally occurs in Cape Cod groundwater at low levels. Boron is used in some soaps and detergents and is often present in household wastewater. It can also be found at high levels in seawater. Higher boron levels in well water may indicate impacts from septic systems, wastewater, or saltwater intrusion.

Where will the water samples be analyzed?

PFASs and boron will be analyzed at a research laboratory at Harvard University. Nitrate will be analyzed at the Barnstable County Health and Environment's Water Quality Laboratory.

When will you receive your results?

We will email you the results of your nitrate analysis within one month of when we collect your water sample. You will receive an electronic report with all of your water test results within six months of when we collect your samples. You can also request a printed copy of your report. This report will show how your results compare to any existing drinking water guidelines and to the other participants in our study. You will also receive a summary of our overall findings, as well as tips for reducing your exposure to these chemicals.

We will share summaries of our findings with Cape residents in reports and public meetings, but your name, address, and specific results will always be kept confidential.

How will you know if you have too much of these substances in your well water?

The first step is to have your water tested. The U.S. Environmental Protection Agency (EPA) has established federal drinking water guidelines and standards for nitrate, boron, and two of the PFASs (PFOS and PFOA) that we are testing for in this study. For other PFASs, EPA has not established drinking water guidelines.

PFAS: To date, the EPA has set a Health Advisory Level for only two PFAS chemicals in drinking water—PFOA and PFOS. This Health Advisory Level recommends that the amount of PFOA and PFOS, or a combination of both PFOA and PFOS, in drinking water should not be higher than 70 nanograms per liter or parts per trillion. The Massachusetts Department of Environmental Protection has established a drinking water guideline of 70 nanograms per liter for the total amount of PFOA, PFOS, and three other PFAS chemicals.

Nitrate: The EPA has established a federal standard, or Maximum Contaminant Level, for nitrate in drinking water at 10 milligrams per liter, or parts per million. On Cape Cod, background levels of nitrate are typically below 0.2 milligrams per liter, and levels above 0.5 milligrams per liter are an indication of human impact.

Boron: The EPA has established a Health Advisory Level of 5,000 micrograms per liter for adults and 2,000 micrograms per liter for children.

For more information:

Visit our website: <http://web.uri.edu/steep/wellwater>

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