Pennsylvania Department of Health

PFAS and Private Well Water

WHAT ARE PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)?

Per- and polyfluoroalkyl substances (PFAS), also called "forever chemicals," represent a group of human-made chemicals that exist in the environment and the human body for a long time. They are called "forever chemicals" because some PFAS take a very long time to break down in the environment and human body. There are thousands of chemicals that belong to the PFAS chemical family. Even though some specific PFAS like perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) are no longer produced in the U.S., many others are still in use. This is because they have unique and valuable properties that resist oil, stains, and heat, making them useful in a wide range of consumer products and industrial applications. These include non-stick cookware, food packaging, textiles, firefighting foams, and many more. Due to their widespread use, people can be exposed to PFAS in many ways, including drinking water that may have become contaminated.

CAN PFAS CONTAMINATE PRIVATE WELL WATER?

Yes. Private wells can be contaminated with PFAS from many sources, such as airports or properties that used PFAS-containing firefighting foam, landfills (active or abandoned), farmland that historically applied municipal waste or biosolids to land as fertilizer, leaking septic tanks, and others.

HOW CAN I HAVE MY WELL WATER TESTED?

Private wells are not a regulated source of drinking water. It is the private well owner's responsibility to test the water.

- Pennsylvania Department of Environmental Protection (PA DEP) offers information on well water testing for homeowners and state certified laboratories that analyze water samples.
- Penn State Extension offers information and resources on well water testing, accredited labs, and costs.
    - The Pennsylvania Department of Health (PA DOH) offers limited free private well testing for Pennsylvania residents through Penn State Extension's Drinking Water Program thanks to funding provided by the Centers for Disease Control and Prevention (CDC)'s Environmental Health Capacity program, in addition to the support of other outside funding sources. For information on Penn State Extension's well water testing programs, how to collect and submit a water sample, and how to interpret water test results, please visit their website. You may also call 814-863-0841 or email aaslab@psu.edu with your contact information.
- Properties in a Hazardous Sites Cleanup Act (HSCA) area of investigation, near a military base that is investigating potential PFAS groundwater or private well contamination, or other type of site, may be contacted by state or federal agencies (example: the PA DEP) and/or their subcontractors, to test the water and determine if there is contamination in your area and the extent of the contamination.
- PA DOH has created a guide to help individuals understand and interpret their water test results.

HOW CAN I BE EXPOSED TO PFAS IN PRIVATE WELL WATER?

You can be exposed by drinking water or eating food prepared with water that has been contaminated with PFAS. Bathing is not a significant source of exposure to PFAS from contaminated water; however, care should be taken while children bathe to discourage or prevent them from drinking bath water.

WHAT ARE THE HEALTH EFFECTS ASSOCIATED WITH PFAS EXPOSURE?

Exposure to PFAS has been linked to a range of adverse health effects, especially with long-term exposure. Due to the amount of PFAS in the environment and their use in many consumer products, it is estimated that over 97% of Americans have PFAS in their blood, even if their water does not come from a PFAS-contaminated private well.

Epidemiologic studies suggest associations between increased exposure to specific PFAS and certain health effects. Examples include:

- Cancer: increased risk of kidney and testicular cancer
- Developmental and reproductive effects: low birth weight, reduced fertility
- Changes in liver enzymes; increases in cholesterol levels
- Immune system impacts: reduced response to vaccines, especially in children; immune suppression

The risk of experiencing health effects associated with PFAS exposure depends on an individual's exposure factors (How much? How often? How long?), pre-existing health conditions or sensitivity to certain chemicals, and other determinants of health (examples: access to health care, safe drinking water). If you are concerned about PFAS exposures, talk to your health care provider. The Agency for Toxic Substances and Disease Registry (ATSDR) developed a guide for clinicians.

HOW CAN I REDUCE MY EXPOSURE TO PFAS IN WELL WATER?

- Do not use untreated well water for drinking, cooking or food prep, making infant formula, or brushing teeth if PFAS levels are high. Use bottled water or water from a municipal supply if possible. It is generally safe to shower because the amount of PFAS that can enter the body through the skin is minimal.
- Install an effective PFAS removal system for your well water.
- If you garden, avoid irrigating with PFAS contaminated water because PFAS can accumulate in soil and crops.

WHAT WATER TREATMENT SYSTEMS ARE AVAILABLE?

Treatment systems can be installed for specific needs of a household and are often referred to as point of use (POU) or point of entry (POE). When the primary concern is drinking contaminated water or using water for cooking, a POU system installed at a kitchen faucet may be adequate. For whole-home protection, a POE treatment system is available. The United States Environmental Protection Agency (U.S. EPA) has a fact sheet available describing ways to reduce PFAS in your drinking water with a home filter.

Types of treatment for PFAS-contaminated water include:

- Reverse Osmosis
  - $350 to $950 and average lifespan of 10 to 15 years. Annual maintenance cost of $100 to $200.
- Granular Activated Carbon (GAC)
  - $300 to $1,000 and average lifespan of 6 to 12 months. Annual maintenance cost of 10 cents to $1.00 per 1,000 gallons of water produced.
- Ion Exchange Resin
  - $500 to $6,000 and average lifespan of 10 to 15 years. Annual maintenance cost of $100 to $200.

Depending on the level of contamination, more than one type of filtration may be needed (example: GAC + Ion Exchange) and filters may need to be changed more frequently. Be sure to look for systems that have been **certified for removal of PFAS** by reputable organizations such as the National Sanitation Foundation (NSF) and the American National Standards Institute (ANSI).

ADDITIONAL RESOURCES

ATSDR | PFAS https://www.atsdr.cdc.gov/pfas/index.html
ATSDR | Clinician Info PFAS https://www.atsdr.cdc.gov/media/pdfs/2024/07/ATSDR-PFAS-Information-for-Clinicians.pdf
PA DEP | Private Well Water Testing https://www.pa.gov/agencies/dep/residents/my-water/private-wells/water-testing
PA DOH | PFAS https://www.pa.gov/agencies/health/programs/environmental-health/pfas
PA DOH | Well Water https://www.pa.gov/agencies/health/programs/environmental-health/well-water
U.S. EPA | Water Filter Fact Sheet: https://www.epa.gov/system/files/documents/2024-04/water-filter-fact-sheet.pdf

For health-related questions about PFAS, contact us at dehe@pa.gov or 717-787-3350.