PFAS and Private Wells

What is PFAS?

Per- and polyfluoroalkyl substances (PFAS) are types of chemicals that repel both oil and water, making them a heavily used chemical in consumer items such as non-stick coatings, carpet, clothing, furniture fabrics, food packaging, chrome plating, and firefighting foams starting in the 1940s. Two of the most commonly known and potentially harmful long-chained PFAS substances, known as perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), were phased out of production in the United States (US) by 2017, however, China is still known to produce PFOS, and PFAS products are still found in many goods sold and used throughout the US.

Where is it found?

PFAS chemicals have been found in air, soil, and water around the world. In Iowa, PFAS has been found in the bordering rivers, the Mississippi and Missouri, but, also in some inland streams. Not only is surface water affected, but well testing in Iowa has shown the PFAS chemicals are present in some aquifers across the state, with detections in wells as deep as 300 feet.

Why is this a concern?

If you own a private well, it is possible that your water contains PFAS. In April 2024, the United States Environmental Protection Agency (EPA) set maximum contaminant levels (MCLs) for 6 PFAS compounds (see table below). These levels will be enforceable for public water supplies – meaning mandatory testing and mitigation will be required. However, these MCLs are not enforceable for private water supplies – people using private wells, because neither the Federal or State government have rules that regulate private water supplies. Therefore, it is the homeowner's responsibility to ensure they are regularly testing their water to ensure it is safe to drink.

What are the health effects from PFAS?

Scientific literature has suggested that exposure to PFAS may result in health effects such as developmental defects in fetuses and infants, and certain types of cancer. These substances accumulate in human tissue and blood after exposure and have a long half-life in the body.

What are the levels of PFAS that cause concern for drinking water?

The first health advisory for PFAS was set in 2016, when the EPA set the Lifetime Health Advisory (HA) for PFOA and PFOS to a combined 70 nanograms per liter (70 ng/L). In June 2022, the EPA updated the HA level to 0.004 parts per trillion (0.004 ppt or ng/L) for PFOA and 0.02 parts per trillion (0.02 ppt or ng/L) for PFOS. In addition, HA levels were assigned to HFPO-DA (Gen X) (10ppt or ng/L) and PFBS (2,000 ppt or ng/L). The final MCLs were set in April 2024, and are listed in the table below (EPA, 2024):

Table 1. EPA Final Primary Drinking Water Regulations for PFAS Compounds – Set in April 2024

PFAS Compound	EPA Maximum Contaminant Limit (MCL)
PFOA	4.0 ppt or ng/L
PFOS	4.0 ppt or ng/L
PFHxs	10 ppt or ng/L
PFNA	10 ppt or ng/L
HFPO-DA (Gen X)	10 ppt or ng/L
Mixtures containing two or more of PFHxS, PFNA, HFPO-DA, and PFBS	1 (unitless) Hazard Index (see below)

For information on how to calculate the hazard index, please review this EPA Hazard Index Fact Sheet. (https://www.epa.gov/system/files/documents/2024-04/pfas-npdwr_fact-sheet_hazard-index_4.8.24.pdf)

How can I get my well tested?

Private well owners may be eligible to receive free PFAS testing through the Private Well Grants (PWG) program by contacting your local county health department. If approved, the county health department will come to your home, obtain the water samples, and send them to the State Hygienic Laboratory to be analyzed for 25 PFAS compounds using EPA Method 533. It may take several weeks for the analysis to be completed. When the county receives the laboratory report, they will contact you and give you the results.

If the county determines funding is not available through PWG, it is recommended that individuals contact Iowa certified laboratories that can test for PFAS using EPA Method 533, the same method used to test public water supplies and private wells in Iowa. As of October 13, 2022, those five labs are the State Hygienic Laboratory, Eurofins - South Bend, Eurofins – Lancaster, SGS Accutest, and Pace Analytical.

What if my well contains PFAS?

If testing reveals that your private well is at or above the MCLs listed in Table 1 (see page 1), it is recommended that you consider using an alternative water source or install a home treatment system, especially for more sensitive users such as pregnant women, nursing mothers, and infants and children. If you have specific health concerns, consult with your doctor.

Treatment Options?

Home treatment systems for PFAS can be point-of-source (where water enters the home) or point-of-use (kitchen tap, etc.). The EPA recommends three treatment technologies for removing PFAS from drinking water: granular activated carbon (GAC), anion exchange treatments or resins (AER), and reverse osmosis (RO). Please contact a local water treatment company for up-to-date pricing and information on these treatment systems. Some systems, such as RO, can be purchased at your local hardware store. Please follow the manufacturers instructions and recommendations for system maintenance.

More Information and Resources

PFAS Home - EPA

- https://www.epa.gov/pfas

PFAS Explained

- https://www.epa.gov/pfas/pfas-explained

Final PFAS National Primary Drinking Water Regulations

- https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas

Understanding the Final PFAS National Primary Drinking Water Regulation Hazard Index Maximum Contaminant Level

- https://www.epa.gov/system/files/documents/2024-04/pfas-npdwr_fact-sheet_hazard-index_4.8.24.pdf

Iowa DNR PFAS Website

- https://www.iowadnr.gov/Environmental-Protection/PFAS