

Guide to Addressing PFAS in Drinking Water

This paper discusses how to manage PFAS in drinking water and provides guidance for certified point of use water treatment devices for PFOA and PFOS reduction.

Introduction: Per and polyfluoroalkyl substances (PFAS) are a broad class of man-made chemicals that have been used widely in industry and consumer products since the 1940s. PFAS can repel oil and water and resist heat. They are therefore useful ingredients in products such as aqueous film firefighting foam, waterproof apparel, stain-resistant materials, nonstick cookware, etc. Because of their broad use, PFAS have been detected at low concentrations in water, soil, and air, as well as plant and animal products across the world. Typical concentrations are low in the parts per trillion (ppt) or ng/L ranges. However, some communities may have higher PFAS concentrations especially if they are near potential sources such as airports and military bases, manufacturing facilities that produce PFAS or use PFAS in their processing, unlined landfills, and farms amended with industrially impacted biosolids with high PFAS.

Contaminated drinking water can be a human exposure pathway to PFAS. In April 2024, the United States Environmental Protection Agency (US EPA) finalized drinking water standards for six PFAS in drinking water. The final maximum contaminant levels (MCLs) are shown in Table 1.

Chemical	Final MCL (enforceable levels)
Perfluorooctanoic acid (PFOA)	4.0 parts per trillion (also expressed as ng/L)
Perfluorooctane sulfonic acid (PFOS)	4.0 ppt
Perfluorohexane sulfonic acid (PFHxS)	10 ppt
Perfluorononanoic acid (PFNA)	10 ppt
Hexafluoropropylene oxide dimer acid (HFPO-DA) (commonly referred to as a GenX chemicals)	10 ppt
Mixtures containing two or more PFHxS, PFNA, HFPO-DA and perfluorobutane sulfonic acid (PFBS)	1 (unitless) Hazard Index

Table 1: US EPA drinking water maximum contaminant levels (MCL) for PFAS

How to find out if PFAS is in your drinking water

If your drinking water is supplied by the city or municipality, you can contact the drinking water provider to inquire about PFAS in your water. Good news for Kutztown Borough residents as testing began in 2023 and results show that PFAS amounts are below the MCLs. Results can be found on the Borough's website, www.KutztownBorough.org/Departments/Water, sidebar 2023 Drinking Water Quality Report. 2024 test results to be posted soon.

If you get your water from a private water system such as a well, spring, or cistern it is your responsibility to ensure your drinking water is safe. Below are some steps for assessing PFAS in your drinking water:

Step 1: Identify if there are potential PFAS sources nearby

Private water sources that are adjacent to potential PFAS sources mentioned above may be at risk of PFAS contamination.

Step 2: Consider testing your drinking water source

The Pennsylvania Department of Environmental Protection (PA DEP) has state-accredited labs for PFAS testing in potable water that are available by visiting and searching through the PA DEP Accredited Environmental Laboratories Database. Instructions for using the laboratory database can be found on the website.

Step 3: Compare your test results with drinking water standards

Recently finalized federal MCLs for the six PFAS (Table 1) can be used as a reference point when reviewing your test results. Contact a local Penn State Extension Educator to help interpret test results.

Home water treatment to reduce levels of PFAS in drinking water

If levels of PFAS in your drinking water are of concern, both point of entry (POE) and point of use (POU) drinking water treatment devices are available. POE water treatment systems devices are installed to treat the water entering the house or building to treat water distributed throughout the entire house. POU treatment systems on the other hand treat the water only at a specific use location in the house, typically the primary area used for drinking and cooking such as the kitchen faucet.

Water treatment devices for PFAS may use activated carbon, reverse osmosis, or ion exchange systems to purify water. Activated carbon systems rely on the carbon media to trap PFAS as water flows through the cartridge. Reverse osmosis (RO) process forces water through an extremely thin membrane barrier under pressure allowing water to pass through while trapping impurities, while ion-exchange uses tiny beads also known as resins, which attract and trap impurities from water.

Certification of water treatment devices for PFAS removal

The National Sanitation Foundation (NSF) International and Water Quality Association (WQA) are independent third-party testing agencies that test and certify POE and POU devices that claim to remove PFOA and PFOS. When purchasing products for PFOA and PFOS removal, look for the following certification information on the vendor website or treatment device packaging:

- NSF/ American National Standards Institute (NSF/ANSI) Standard 53: Drinking Water Treatment Units – Health Effects with the claim of "PFOA Reduction" and "PFOS Reduction"
- NSF/ANSI Standard 58: Reverse Osmosis Drinking Water Treatment Systems with the claim of "PFOA Reduction" and "PFOS Reduction"

Such certifications mean the device has been tested using a rigorous standardized process and was successful at reducing PFOA and PFOS in drinking water. Current NSF/ANSI treatment standards test that a product lowers PFOA and PFOS reduction to a combined concentration of 20 ng/L. While these certifications are currently only available for PFOA and PFOS reduction, certified filters have been shown to also lower the amount of other PFAS that may be found in drinking water. Current certification standards do not indicate if the treatment device will lower concentrations down to the current US EPA MCLs (Table 1).

NSF and WQA-certified POU water treatment devices for PFAS removal

Follow these steps to check if a treatment device you already use or are looking to purchase is NSF-certified for PFOA/PFOS:

1. Visit NSF: Search for NSF Certified Drinking Water Treatment Units
2. Type the manufacturer to search by manufacturer OR
3. In the "Product Standard" box select "Drinking Water Treatment Units—Health Effects (NSF/ANSI 53)" or "Reverse Osmosis Drinking Water Treatment Systems" (NSF/ANSI 58) for the full list of certified systems

Follow these steps to check if a treatment device is WQA-certified for PFOA/PFOS:

1. Visit Water Quality Association: Find WQA Certified Products
2. Type the manufacturer, brand or model and click search OR
3. In the "Product Category" box select the type of treatment you are looking for e.g., filters or reverse osmosis (RO) OR
4. In the "Common Contaminant" box select the contaminant of interest e.g., PFOS or PFOA

All POU devices require periodic maintenance. Follow the manufacturer's operation and maintenance guide as well as component replacement schedules to ensure that the devices continue to work as expected over time.

Additional Resources

- Understanding PFAS - What They Are, Their Impact, and What We Can Do
- Testing and Treating PFAS Chemicals in Pennsylvania Water Well
- PFAS in Pennsylvania

Please note: This paper was summarized by Kathleen M. Kelly, PhD, Kutztown Environmental Advisory Committee as an information paper for residents of the Borough of Kutztown, PA.

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