Maryland
Department of
the Environment

Per- and Polyfluoroalkyl Substances (PFAS) in Private Drinking Water

Background on PFAS:

The purpose of this document is to provide private well owners information and guidance on Per- and Polyfluoroalkyl Substances (PFAS) that may be present in some private wells. PFAS are a group of human-made chemicals, including perfluorooctanoic acid (PFOA), perfluoroctane sulfonate (PFOS), perfluorohexanesulfonic acid (PFHxS), hexafluoropropylene oxide dimer acid (HFPO-DA or GenX), and over 7,000 other compounds. Throughout the nation, PFAS have been detected in drinking water, groundwater, surface water, soils, and other environmental media. Since the 1940's, PFAS have been present in a variety of industrial and commercial applications and products because of their ability to resist heat, oil, and water.

Due to the rapidly evolving PFAS science, Maryland Department of the Environment (MDE), in partnership with the Maryland Department of Health (MDH), may update this guidance on PFAS compounds as new information becomes available on health effects, sampling, analysis, treatment techniques, and any changes in federal or state guidance or policy. For more information on PFAS, please visit MDE's PFAS webpage at: mde.maryland.gov/PublicHealth/Pages/PFAS-Landing-Page.aspx

Should I be concerned about PFAS?

The U.S. Environmental Protection Agency (EPA) and U.S. Centers for Disease Control and Prevention Agency for Toxic Substances and Disease Registry (ATSDR) continue to investigate the human health impacts of chronic exposure to two particular PFAS (PFOA and PFOS). Studies have suggested that chronic exposure to these two PFAS may be linked to: increased cholesterol levels, increased risk of high blood pressure or pre-eclampsia in pregnant women, changes in liver enzymes, decreased vaccine response, and small decreases in infant birth weights. Additionally, the EPA has classified PFOA and PFOS as having potential carcinogenic effects in humans. More information on the human health effects and routes of exposure to these compounds can be found through the following links:

CDC: wwwn.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=1117&tid=237
ATSDR: atsdr.cdc.gov/pfas/health-effects/exposure.html
EPA: epa.gov/pfas/basic-information-pfas

In 2016, the EPA published a drinking water health advisory level (HAL) of 70 parts per trillion (ppt) for PFOA and PFOS. The EPA states that this health advisory is calculated "to provide Americans, including the most sensitive populations, with a margin of protection from a lifetime of exposure to PFOA and PFOS from drinking water." Recently, EPA released an updated draft health assessment for PFOA and PFOS in anticipation of scientific peer review of the assessment by the EPA's Scientific Advisory Board

(SAB). Draft health assessments can be found through this link: https://sab.epa.gov/ords/sab/f?p=100:19:7777001557924:::19:P19_ID:963#doc

This updated health assessment could result in changes to the EPA HALs for these compounds in late 2022.

In addition to the EPA's HAL, MDH published its Public Health Advisory (PHA) for PFHxS in November 2021 at a level of 140 ppt. MDH's PHA for PFHxS can be found through the following link: https://mde.maryland.gov/programs/Water/water_supply/Documents/PFAS_MDH_PFHxS_Advisory%20Fact_Sheet.pdf

While toxicity assessments for other PFAS is currently very limited, MDE actively monitors federal PFAS work – including toxicity assessments – and may adjust this factsheet as needed.

How can PFAS get into my drinking water?

PFAS can contaminate groundwater sources near areas where PFAS are manufactured, used, disposed of, or accidentally spilled. PFAS may also enter groundwater through: land application of fertilizers containing PFAS, certain firefighting foam usage, accidental releases, and other releases from industrial plants. Typically, PFAS groundwater contamination is associated with a specific source or facility (e.g., manufacturing facility or firefighting training areas).

How do I test my well water for PFAS?

As a private well owner, you want to know if your water is safe for your family. It is recommended that private well owners get their well water tested at least once a year to ensure that their water is safe to drink. General sampling and maintenance recommendations for private drinking water wells can be accessed on MDE's Be Well Wise webpage.

A list of labs capable of testing for PFAS in drinking water can be found on MDE's Water Supply Program webpage (PFAS—Information on the Maryland Department of the Environment's efforts to address per- and polyfluoroalkyl substances (PFAS) in Maryland's Drinking Water Sources). Currently, there are only a limited number of certified laboratories capable of testing for PFAS in drinking water.

How can I remove PFAS from my water?

The National Groundwater Association (NGWA) indicates that there are certain treatment technologies that may be effective in the removal of PFAS from your private water supply. Some technologies treat

the water as it enters your home (i.e., point-of-entry treatment), while others treat your water right before it is used from a tap for drinking or cooking (i.e., point-of-use treatment). Treatment technologies that may be effective in removing PFAS include: Granular Activated Carbon, Ion-Exchange Resins, and Reverse Osmosis. Whatever type of treatment is installed, it is important to properly install, test, maintain and dispose of the filters.

NGWA recommends testing your drinking water if you are concerned about PFAS potentially being present in your private well. It is also a good practice to test the water after treatment has been installed to verify that the treatment system is effective.

Important Note: Boiling water will not remove these chemicals from water but will actually increase their concentration due to evaporation.

For additional information on treatment options, please contact MDE at 410-537-3599 or your local health department.

Where can I find more information?

More information and resources can be found at:

MDE's PFAS Home Page: mde.maryland.gov/PublicHealth/Pages/PFAS-Landing-Page.aspx

MDE's Be Well Wise Webpage: https://mde.state.md.us/programs/Water/Water_Supply/Pages/Be_Well_Wise.aspx

MDH's Public Health Advisory for PFHxS: https://mde.maryland.gov/programs/Water/water_supply/Documents/PFAS_MDH_PFHxS_Advisory%20Fact_Sheet.pdf

EPA's 2016 Health Advisory Level for PFOA and PFOS: epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos

EPA Draft Documents Submitted to Scientific Advisory Board: https://sab.epa.gov/ords/sab/f?p=100:19:7777001557924:::19:P19_ID:963#doc

Additional EPA PFAS Initiatives: epa.gov/pfas

National Governors Association PFAS Page: nga.org/webinars/epa-pfas-standard-setting-process/