



PFAS and Backyard Gardening

Facts and Tips for Home Gardeners in Areas with Known or Suspected PFAS Contamination

What are PFAS?

Per- and polyfluoroalkyl substances, or **PFAS**, are a large group of human-made chemicals that have been used in industry and consumer products worldwide since the 1950s. If environmental contamination occurs near your home, PFAS may end up in groundwater and in your municipal or private well water. This guide will help home gardeners learn about how they can protect their health by minimizing the levels of PFAS in their garden soil and crops.

How can PFAS get into my garden plants?

PFAS can get into your garden plants if they are grown in soil or water containing PFAS. Usually, this happens when PFAS-contaminated water is applied to the plants. When this happens, PFAS can be transferred from the water through the soil, where they may be taken up by the plant's roots.

What is known about PFAS in garden plants?

A lot is still unknown about PFAS uptake in plants and research is ongoing. The amount of PFAS that builds up depends on a variety of factors, including the type of plant, the type of PFAS chemical, the type of soil, and the PFAS concentration in the soil or water. Early research has shown that:

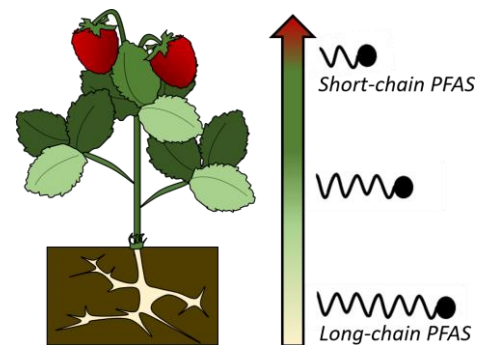
- Longer-chain PFAS tend to stay in the roots, while shorter-chain PFAS tend to travel to other parts of the plant, such as the leaves and fruit.^{2,4}
- The higher the PFAS levels are in the water used to grow plants, the higher the PFAS levels may be in the plants.²

In general, eating garden plants containing small amounts of PFAS is a minor source of PFAS exposure compared to drinking water contaminated with high levels of PFAS on a regular basis. Drinking water has been established as the major exposure source in contaminated communities.⁵

PFAS can affect health.¹

Exposure to unsafe levels of PFAS may result in health effects including:

- ▶ Increased cholesterol.
- ▶ Decreased antibody response.
- ▶ Decreased fertility in women.



PFAS build-up in plants.

Not all PFAS are the same!³

PFAS come in all sizes, which are determined by how many carbon atoms are linked together in a chain. This is known as the "chain length." The longer the chain length, the larger the PFAS compound. Research shows that PFAS with shorter chain lengths tend to leave the human body faster than those with longer chain lengths.



How do I know if PFAS may be in my municipal or private well water?

If you do not live near a site of environmental contamination, it is unlikely that PFAS are a problem in your water. To learn more, visit the [NM Environmental Health website](#).



Private well owners

The only way to know whether PFAS are a concern in your water is to have a sample tested at a [certified laboratory](#). This could cost several hundred dollars.



Public water supply users









Connect with your [local environment department](#) to learn about what they may be doing to minimize PFAS.

Could I water my plants if the water has PFAS?

Use water with PFAS levels **below** EPA recommended groundwater standards for watering fruit and vegetable gardens. Visit the [EPA website](#) to learn more about recommended groundwater standards.

What are other ways that I can safely garden?

PFAS are not the only contaminants that can be found in your soil. Soil may also contain metals, pesticides, and germs such as bacteria and parasites. Practicing these safe gardening habits can help lower exposure to all kinds of soil contaminants, including PFAS.⁶

-  Wash produce before eating to remove soil and dust particles.
-  Use more natural matter in your soil, which can lower a plant's ability to take up PFAS and other chemicals. Natural matter includes composts and manure.
-  Use raised garden beds with clean soil. Clean soil could be store-bought soil, topsoil, or clean fill from certified soil sources.
-  Wear gloves and wash hands after gardening and before eating.
-  Avoid eating food, drinking, or smoking when working with garden soil to prevent the potential transfer of contaminated soil to your mouth.
-  Take care not to track dirt from the garden into the house.
-  Peel root crops and remove outer leaves of leafy vegetables.
-  Teach children to wash fruits, vegetables, and their hands before eating.

References

1. ATSDR. Perfluoroalkyls - ToxFAQs. <https://www.atsdr.cdc.gov/toxfaqs/tfacts200.pdf>. Published March 2018.
2. Ghisi R, Vamerli T, Manzetti S. [Accumulation of perfluorinated alkyl substances \(PFAS\) in agricultural plants: A review](#). *Environ Res*. 2019;169:326-341.
3. ITRC. [PFAS—Per- and Polyfluoroalkyl Substances: Human and Ecological Health Effects of Select PFAS](#). Published May 2021.
4. ITRC. [PFAS—Per- and Polyfluoroalkyl Substances: Additional Information](#). Published May 2021.
5. De Silva AO, Armitage JM, Bruton TA, Dassuncao C, Heiger-Bernays, W, Hu XC, Kärrman A, Kelly B, Ng C, Robuck A, Sun, M, Webster, TF, Sunderland EM. [PFAS Exposure Pathways for Humans and Wildlife: A Synthesis of Current Knowledge and Key Gaps in Understanding](#). *Environ Toxicol Chem*, 2021;40:631-657.
6. EPA. [Brownfields and Urban Agriculture: Interim Guidelines for Safe Gardening Practices](#). Published 2011.