



PFAS FAQs

1. What is PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a family of human-made organic chemicals incorporating fluorine that are found in a wide range of consumer products and industrial materials. Since the 1940's, PFAS compounds have been used in a variety of applications including stain and water-resistant fabrics, carpeting, cleaning products, paints, cookware with non-stick surfaces such as Teflon, food processing and packaging, and fire-fighting foams used at airfields, oil refineries and similar facilities.

While the science surrounding potential health effects of PFAS continues to develop, current evidence suggests that the bioaccumulation of certain PFAS types may cause serious health conditions. Adverse health effects identified by the Environmental Protection Agency (EPA) include "...developmental effects to fetuses during pregnancy or to breastfed infants (e.g., low birth weight, accelerated puberty, skeletal variations), cancer (e.g., testicular, kidney), liver effects (e.g., tissue damage), immune effects (e.g., antibody production and immunity), thyroid effects and other effects (e.g., cholesterol changes)."

2. Are there PFAS in wastewater?

PFAS compound are used in many consumer products, and therefore are present in discharges to the sewer system. The extent of PFAS compounds discharged to the sewers since the 1940's is unknown as Pima County did not assume operation of the regional sewer system from the City of Tucson until 1979 and widespread testing for PFAS compounds did not begin until 2016 corresponding with the EPA's issuance of a health advisory limit for PFAS in drinking water. EPA's advisory level is based on assessment of the latest peer-reviewed science to provide information so that water managers can take appropriate actions to protect the public. A health advisory limit is not a drinking water standard.

Wastewater treatment does not significantly remove PFAS chemicals. However, all analyses performed on effluent from Pima County water reclamation facilities since 2016 have repeatedly shown PFAS to be either not-detected or below EPA's Health Advisory Limit for Drinking Water, established at the time, of 70 ng/L for the combined concentrations of PFOA and PFOS, the most prolific forms of PFAS. Thus, our local wastewater concentrations of PFAS are relatively low.

3. Have PFAS been detected in local groundwater?

PFAS are water soluble and can be carried into the groundwater when discharged at the surface. Both Tucson Water and Marana Water have observed PFAS in groundwater within their service areas. PFAS in groundwater on the north side is not necessarily derived from effluent discharge. There are likely other sources than effluent or multiple sources of these contaminants in the area. Nearby gravel pits, landfills, and industrial activity are all possibilities. PFAS levels observed in groundwater are more concentrated than effluent levels, so they are likely indicative of a source from industrial discharge to the environment.

Nationwide, most contamination sites have been associated with locations where PFAS compounds were manufactured, and there are no such sites in Arizona. Additional high contamination areas are near military bases, airports, or fire training academies where Aqueous Film Forming Foams, or AFFF, were used.

4. Are there EPA regulations for PFAS?

Currently there are no EPA regulations or approved methods for analyzing PFAS in wastewater and solids, complicating both research and regulations protective of public health. EPA and water managers rely solely on the identified health advisory levels for the combined concentrations of PFOA and PFOS, which has not been adopted as a formal standard.

Health advisory levels have progressively lowered as more research and data becomes available. The health advisory limits established in 2009 were 400 ng/L for PFOA and 200 ng/L for PFOS. These limits were reduced in 2016 to 70 ng/L for the combined levels of PFOA and PFOS.

On June 15, 2022, EPA released significantly reduced lifetime drinking water health advisory levels under its Safe Drinking Water Act authority. The health advisories are intended to remain in place until EPA's forthcoming PFAS National Primary Drinking Water Regulation goes into effect. These interim advisory levels of 0.004 ng/L for PFOA and 0.02 ng/L for PFOS.

5. Are there PFAS in biosolids?

Because PFAS are present in treated wastewater, these compounds are also present in domestic biosolids produced at all local wastewater treatment facilities, although at very low levels. It is only at industrial locations where PFAS compounds were manufactured and discharged to sewers where high concentrations of PFAS in biosolids have been observed. These elevated concentrations are isolated instances around the country.

Pima County RWRD, in conjunction with the University of Arizona and Jacobs Engineering, performed an extensive Biosolids PFAS Study to track the migration of PFAS on agricultural lands receiving biosolids. This study included the analysis of various PFAS compounds in over 100 samples consisting of biosolids, soil, and groundwater.

The RWRD report, *PFAS in Biosolids: A Southern Arizona Case Study* assessed regional long-term biosolids land application sites indicating that biosolids produced and land applied in Pima County pose minimal risks to ground water contamination, accumulation in soils, or impacts to adjacent properties. The limited solubility of PFAS entering soils via land application, coupled with the low mobility of unsaturated soil condition of the arid southwest, effectively sequesters these compounds within the upper soil surface layers, and even in these upper layers the measured concentrations are low.

6. What is Pima County doing to minimize PFAS in our community?

Point source control has repeatedly been shown to be the most effective strategy for minimizing PFAS contamination, and Pima County Regional Wastewater Reclamation Department (RWRD) is actively taking measures to minimize PFAS discharges into the sewer system.

- In 2020, RWRD amended Pima County Code to prohibit the discharge of AFFF that contains any PFAS or similar chemicals into the sewer system. RWRD's Industrial Wastewater Control section works with industrial waste dischargers to ensure that PFAS containing process chemicals are not released into the sewer system.
- Any possible use of AFFF or chemicals containing PFAS would need to be contained and disposed of in a manner excluding sewage disposal by the industry using them.

A National Collaborative PFAS project is currently underway and lead by RWRD and the University of Arizona. This effort involves over 40 participating agencies and comprises 11 potential sample sites from the Pacific Northwest, Northeast, Midwest, Central, Southwest, and Southeast regions representing the most comprehensive survey in the U.S.

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