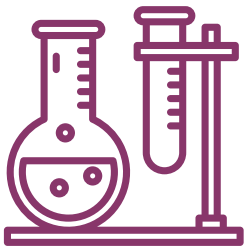
PFAS – THE PROBLEM THAT WON'T GO AWAY...

ROLLOVER ICONS FOR MORE INFORMATION

WASSER 3.0

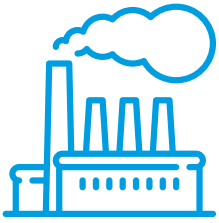
What are PFAS?

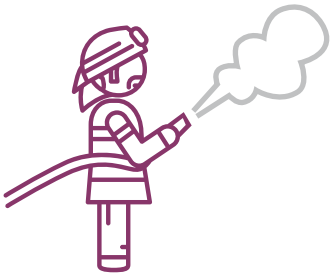
PFAS (Per/Polyfluoroalkyl Substances) are a group of man-made chemicals that includes PFOA, PFOS, GenX, and many others that have been manufactured and used in a variety of industries around the globe since the 1940s.[1]



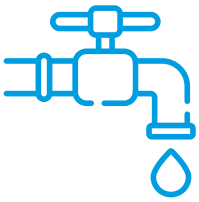
PFAS and human health

PFAS enter the environment through production or waste streams.[1]





Due to their widespread use and their prevalence in the environment many people throughout the world have been exposed to PFAS, with drinking water as one of the most common routes through which exposure occurs.[2]



Where are PFAS found?

PFAS chemicals are found in a wide array of consumer and industrial products and have been highly utilized in various industries due to their unique properties.[3]

They can be found in commonly used products such as:

Firefighting foams

Nonstick cookware

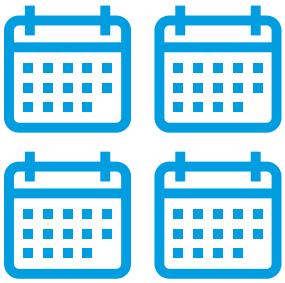
Markers

Cleaning products

Food packaging

Why are PFAS important in industrial and commercial products?

PFAS are considered important in industrial and commercial products due to their extremely stable chemical structure and unique chemical properties, making them long-lived substances (hence the nickname 'Forever Chemicals').[5]



What is the issue with PFAS?

The very characteristics that have made them attractive for use in an array of products, are the ones that have led to their wide-spread contamination of the environment and humans.[5]

How are humans exposed to PFAS?

Human exposure occurs when PFAS enter into the water supply, and they do not break down. They are then ingested either directly, or through the contamination of the water used in agricultural or manufacturing processes. Humans are also exposed through food packaging, household and personal care products. Many people throughout the world have been exposed and have one or more specific PFAS in their blood, especially PFOA and PFOS.

Exposure examples include:

Contaminated soil or water

Commercial products

Industrial uses

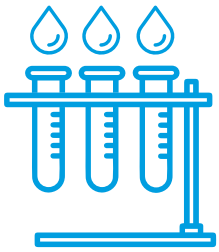
Drinking water

Eating tainted meat and seafood

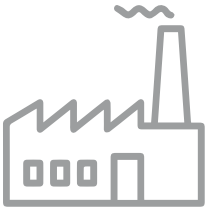
How are PFAS monitored and analyzed?

Researchers measure PFAS in air, drinking water, soils, etc., to understand how and to what degree humans might be exposed. They are seen and can be measured at low ng/L (or parts per trillion) level. [7,8,9]

The development and validation of laboratory methods to detect and quantify selected PFAS includes:



Water



Stack Emissions

Soils and Biota

Sources:

1. EPA: Basic Information on PFAS. https://www.epa.gov/pfas/basic-information-pfas. Accessed June 2019

2. NRDC: Scientific and Policy Assessment for Addressing Per- and Polyfluoroalkyl Substances (PFAS) in Drinking Water. https://www.nrdc.org/sites/default/files/assessment-for-addressing-pfas-chemicals-in-michigan-drinking-water.pdf. Accessed June 2019 AND Aquatek: PFA's PFOA's and PFOS's. What are they? https://www.aquatekpro.com/pfa-pfoa-pfos.html. Accessed June 2019

3. EPA: Research on Per- and Polyfluoroalkyl Substances (PFAS). https://www.epa.gov/chemical-research/research-and-polyfluoroalkyl-substances-pfas. Accessed June 2019

4. ATSDR: PFAS Blood Testing. https://www.atsdr.cdc.gov/pfas/pfas-blood-testing.html. Accessed June 2019

5. Food and Water Watch: These Chemicals Are Forever: Water Contamination from PFOA, PFOS, and other PFAS. https://www.foodandwaterwatch.org/insight/these-chemicals-are-forever-water-contamination-pfoa-pfos-and-other-pfas. Accessed June 2019 AND ATSDR: PFAS Blood Testing. https://www.atsdr.cdc.gov/pfas/pfas-blood-testing.html. Accessed June 2019 AND LiceScience: What Are PFAS. https://www.livescience.com/65364-pfas.html. Accessed June 2019

6. EPA: Basic Information on PFAS. https://www.epa.gov/pfas/basic-information-pfas. Accessed June 2019

7. EPA: Research on Per- and Polyfluoroalkyl Substances (PFAS). https://www.epa.gov/chemical-research/research-and-polyfluoroalkyl-substances-pfas. Accessed June 2019

8. United Nations Environment Programme: PFAS analysis in water for the Global Monitoring Plan of the Stockholm Convention. https://unitar.org/cwm/sites/unitar.org.cwm/files/uploads/wd.5_guidance_on_pfas_in_water.pdf. Accessed June 2021

9. Strozynska Monika, Schuhen Katrin, Extraction and derivatization for perfluorocarboxylic acids in liquid and solid matrices: a review. Anal Sci Adv. 2020;1-11. https://doi.org/10.1002/ansa.202000089