PFAS WATER TREATMENT

Protect what matters with intelligent system & process design

What is PFAS and why should I care?

Perfluoroalkyl substances, commonly referred to as PFAS, are a group of long-chain synthetic molecules first used in the 1940s as a non-stick polymer for cookware, and are now used in many other products produced today. These chemicals are extremely bio-persistent and likely carcinogenic, with many studies linking the chemicals and their derivatives to a variety of cancers and developmental diseases.[1]

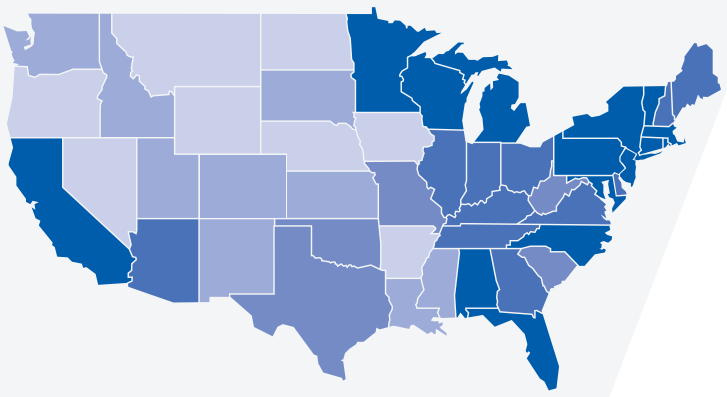
98%

PFAS can be found in the blood of more than 98% of Americans.[2]

Besides cancer and birth defects, PFAS has been linked to hormone disruption, changes to the immune system, high cholesterol, and thyroid disease.[1]

Does this impact my community?

Simply, yes. Although some communities show higher levels of contamination due to industrial discharge sites, all communities are potentially affected due to the widespread use of these chemicals. States such as California, Minnesota, Pennsylvania, Michigan, and Florida have been found to have the highest concentrations and are experiencing the largest public outcry.[3]



A very small amount can be dangerous

1 part per trillion (ppt) is equivalent to 1 grain of sand in an Olympic size swimming pool. Less than 7 ppt is considered hazardous to human health.[4] According to a 2004 study, DuPont dumped more than 1.7 million pounds of PFAS between 1951 & 2003.[5]

Are there regulations on PFAS?

On February 14th, 2019, the EPA announced the plan to release new regulations by end of the year.[6] Nineteen individual states have taken actions into their own hands, regulating the discharge of PFAS by textile and chemical companies as well as drinking water standards for utilities.[7] Often, these regulations are stricter than the current EPA guidelines. However, testing principles, clinical trials, and ultimately the regulations remain far behind the development of new dangerous derivatives, leaving opportunity for the spread of further public threats.

Regulations are Coming Soon!

Following a court ruling in which DuPont settled for $235M, the community of Parkersburg, WV conducted the largest human toxicology study ever recorded, gathering blood from ~70,000 people who used drinking water from the 6 affected water districts.[8]

What is the best solution to rid drinking water of PFAS?

Economical factors and technology performance are the two drivers in selecting the appropriate solution for removing PFAS from drinking water. Exhaustive analysis has been performed by states and municipalities as concern has increased.

	MF/UF + Closed Circuit Reverse Osmosis	MF/UF + Traditional Reverse Osmosis	Granular Activated Carbon	Ion Exchange
PFAS Removal Selectivity	Consistent, broad removal of all PFAS compounds	Consistent, broad removal of all PFAS compounds	Variable reduction of only certain PFAS compounds	Variable reduction of only certain PFAS compounds
Life Cycle Cost	Highly efficient process with low operating expense	Efficient process with low to medium operating expense	High operating costs associated with material and disposal	Efficient process with low to medium operating expense
Final Disposal of PFAS Waste	Highly concentrated stream that can be disposed of via GAC	Larger volumes of carbon required due to lower RO recovery	Complete removal and replacement of large volumes of carbon on a regular basis	Waste management of both the resin and the brine can be time-consuming & costly

Combining micro (or ultra) filtration modules with closed circuit reverse osmosis provides the broadest removal of all PFAS varieties and is the most economical choice.

*Detailed sources can be provided upon request.