NORCHEM

General Education

WHAT ARE PFAS?

- Per- and polyfluoroalkyl substances, or PFAS, are a family of approximately 5,000 man-made organic chemicals.
- PFAS are used in non-stick cookware like pans, fabric stain-protective coatings, fast food wrappers, microwave popcorn bags, personal care products, and firefighting foams.
- The carbon-fluorine bonds of PFAS means these are resistant to degradation in the environment; can persist for decades in water and air; and accumulate in our bodies over time.

HOW ARE PEOPLE EXPOSED TO PFAS?

- Drinking water is the main pathway.
- PFAS enter drinking water through firefighting foam used at military bases and commercial airports; industrial sites; and run-off or leaching from contaminated solids from wastewater treatment plants.
- PFAS are present in our food supply due to leaching from packaging, fish ingesting contaminated water, and irrigating vegetables with contaminated water.
- Workers involved in making or processing PFAS and PFAS-containing materials may be exposed by inhaling them or absorbing them through their skin.
- People, particularly infants and toddlers, may ingest PFAS from hand-to-mouth transfer from surfaces treated with PFAS-containing stain protectants such as carpet.

MEDICAL HARM ASSOCIATED WITH PFAS

- Kidney cancer and testicular cancer
- Impaired liver function
- Impaired fertility
- Impaired fetal development
- Chronic intestinal inflammation
- Disruption of critical thyroid hormones
- Weakened immune system
- High cholesterol
- Elevated blood pressure during pregnancy

NORCHEM FAQ's

Answers provided by

CHAD FOLKERTS

VP of Field Operations & Design Engineering

Are any of your customers requesting assistance from you in removing PFAS compounds (or PFAS "precursors") from their wastewater? If so, what are you recommending that they do?

"We are recommending to first do a base line test to see what the actual levels are in the waste stream. Based on some current PFAS limits imposed in a few cities, the compliance limits will vary across the US. Knowing what the baseline PFAS levels are will help determine what may be required to remove the PFAS prior to discharge. Once we have base line data, we can help develop a solution to remove and dispose of the PFAS."

What do you see at the preferred technologies for removing PFAS? Reverse osmosis? Ultrafiltration? Nanofiltration? Ion Exchange Granular Activated Carbon or others?

"We have done extensive testing with DAF, Ultrafiltration, RO, and Granular Activated Carbon (GAC), as well as a combination of these technologies, and found the best way remove PFAS is via Ultrafiltration followed by either RO or GAC systems."

What would you recommend to laundries as far disposing of PFAS substances once they're removed from wastewater? Special landfills for hazardous materials?

"PFAS will need to be managed as a hazardous waste once it is removed from the waste stream, which means laundries will no longer be able to easily dispose of sludge that has been removed from a DAF, Ultrafiltration, or RO system. The most common way to dispose of PFAS currently, is a hazardous waste landfill. Incineration processes are being evaluated to verify PFAS destruction. The disposal methods may be determined by type of waste generated, and geographic location. While there are limited methods to have PFAS disposed of, it is a very costly process. We are in the process of researching and developing different technologies to destroy PFAS on site to reduce or eliminate disposal cost for the laundry industry."

With the federal EPA and agencies in states such as California, Michigan and others tightening rules for PFAS in wastewater (possibly dropping this fall to 4 parts per quadrillion), what actions should laundries be looking at now to protect themselves from heightened regulations in the near term?

"Start looking at supply chains to reduce the amount of PFAS washed out of the textiles. Test effluent wastewater to understand current PFAS baseline levels. Start looking at treatment systems to remove or reduce the PFAS levels in the effluent waste stream. The type of technology and amount of treatment that will be required will be determined by the PFAS limits set by each POTW."