xylem



Turnkey PFAS solutions for water systems

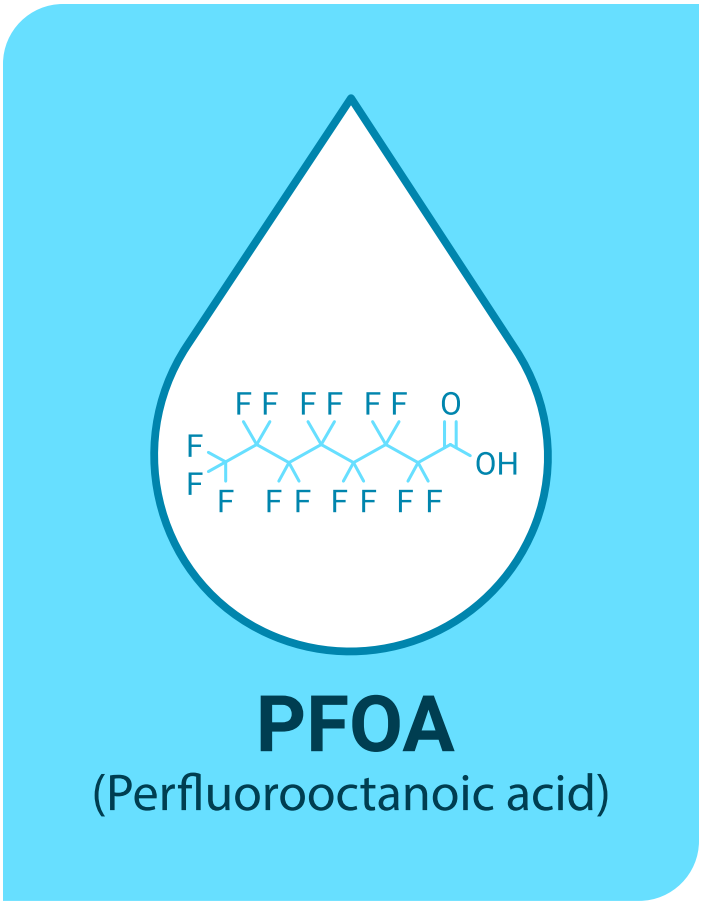
One trusted partner from discovery to non-detect with end-to-end solutions and services from Xylem

1. Understanding PFAS

What are PFAS?

Per- and Polyfluoroalkyl substances (PFAS) are a class of man-made chemicals used in a wide range of industrial processes and consumer products, including food packaging, stain-resistant fabrics, cosmetics, non-stick cookware, firefighting foams, electronics, ski wax and hundreds of other products and applications.

Their molecular structure, defined by strong carbon-fluorine bonds, makes them highly resistant to heat, chemicals, and degradation. These properties have driven widespread use across industries.



Why are PFAS a concern?

The same properties that make PFAS useful in manufacturing also make PFAS persistent in the environment. Often referred to as "forever chemicals," PFAS do not readily breakdown and accumulate over time in soil, groundwater, surface water, and the tissue of plants and animals, including humans.

As a result, contamination has been identified in drinking water sources worldwide, including municipal systems and private wells.

What are the health and environmental risks with PFAS?

Scientific research has established links between the ingestion of specific PFAS and an increased risk of adverse health effects, including:

- Increased risk of some cancers
- Liver damage
- Impacts to the body's reproductive, immune, and endocrine systems
- Developmental effects in children

Environmentally, PFAS can migrate through soil and groundwater, extending contamination beyond the original source and entering ecosystems and water supplies. (Citation)[1]

Who is impacted by PFAS?

Drinking water is the primary exposure pathway in heavily impacted areas, particularly in the U.S. Communities located near manufacturing facilities, military installations, landfills, and wastewater treatment plants face higher risk of PFAS exposure.

Recent nationwide monitoring underscores the scale of the issue. Under the EPA's Fifth Unregulated Contaminant Monitoring Rule (UCMR 5), thousands of additional sites have reported detectable PFAS levels—bringing the total number of known impacted locations to nearly 10,000. Current estimates indicate that up to 176 million people in the U.S. may be exposed to PFAS through drinking water. To view a regularly updated map of PFAS contamination in the United States visit EWG's interactive contamination map. (Citation)[2]



How are PFAS being regulated?

In response, regulators are establishing stricter standards to reduce exposure and protect public health.

In the U.S., the EPA's National Primary Drinking Water Regulation for PFAS sets enforceable limits for specific compounds. These requirements introduce new expectations for monitoring, reporting, and treatment—placing increased compliance and cost pressures on utilities.

At the same time, several states—including California, New York, Maine, and Minnesota—are advancing their own regulations and restrictions. Internationally, the European Union is evaluating broad PFAS controls under the REACH framework, which could significantly limit production and use.

How can PFAS be treated?

PFAS removal requires targeted treatment approaches. Granular activated carbon (GAC) and ion exchange resins are among the most widely used technologies, each with specific performance and operational considerations.

The most effective treatment incorporates targeted technologies, thoughtful system design, and long-term planning to ensure compliance while maintaining operational performance.

Xylem supports utilities and industrial manufacturers with proven treatment solutions designed to remove PFAS and help communities meet evolving regulatory requirements with confidence.

2. Proven solutions for PFAS mitigation

Xylem has been addressing PFAS and other emerging contaminants for more than two decades—supporting customers from pilot testing and emergency response through full-scale system design, integration, and ongoing operation.

Effective PFAS removal depends on selecting the right treatment approach for the specific application and water chemistry. While multiple technologies are available, GAC and ion exchange resin remain the most widely applied solutions. Xylem supports both approaches with integrated services that help utilities and industrial operators achieve target treatment levels, maintain compliance, and operate with confidence.

Granular activated carbon

Granular activated carbon is a proven, EPA-recognized best available technology for PFAS removal. PFAS and other contaminants stick to the surface of the GAC in a process called adsorption. High-quality GAC has a porous structure with microscopic fissures that provide an enormous surface area available to capture PFAS.

GAC is particularly effective for longer-chain PFAS and is commonly applied in municipal and industrial treatment systems.

Xylem offers a broad portfolio of activated carbons, including premium virgin and reactivated media derived from bituminous coal, coconut shell, and anthracite. Proprietary solutions such as AquaCarb® and VoCarb® are engineered to deliver consistent performance across a range of applications.

Xylem's approach extends beyond media supply:

- **Application-driven media selection** aligned to water chemistry and treatment goals
- **Certified laboratory testing** to validate performance and quality
- **Reliable supply and logistics** to support continuous operations
- **Field services**, including carbon change-out, vessel exchange, and system support

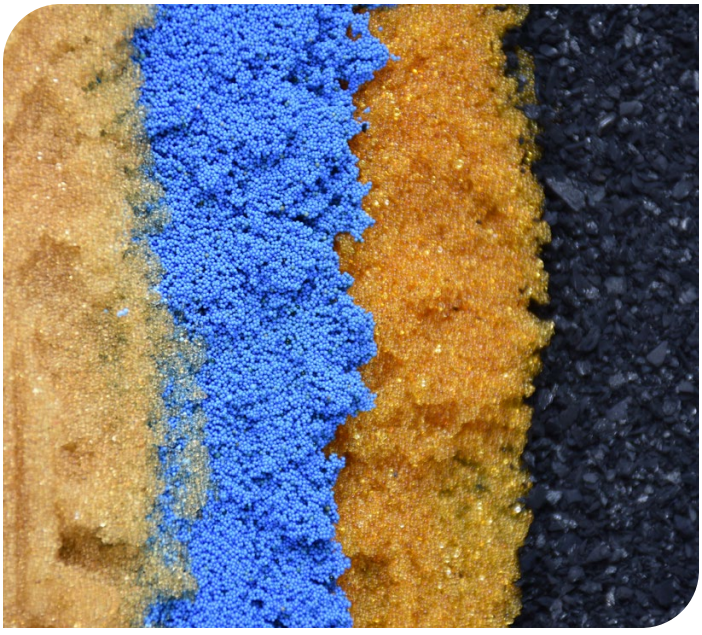
Ion exchange resin

Ion exchange resins are another EPA-recognized best available technology for PFAS removal. PFAS binds strongly to the resin surface, exchanging places with weakly bound anions. This is the primary removal mechanism, but some adsorption still occurs. This approach is effective for both short- and long-chain PFAS and is often selected where higher removal efficiency or a smaller system footprint is required.

Ion exchange is also widely used in drinking water and remediation applications for contaminants such as perchlorate and heavy metals.

Xylem's resin solutions are supported by a comprehensive quality and service framework:

- **ISO 9001:2015-certified processes** for resin production, testing, and handling
- **Batch-level performance verification**, with Certificates of Assurance for every shipment
- **Laboratory services** for water analysis, troubleshooting, and system optimization
- **Lifecycle support**, including resin exchange, maintenance, and compliant handling of spent media



Vessel systems

Vessel systems are the delivery platform that enables carbon and resin to perform effectively in real-world conditions. They are designed to provide a smooth, uniform flow that results in controlled contact time between contaminated water (or vapor) and treatment media, allowing PFAS to be removed before water is discharged or reused.

Xylem offers a wide range of vessel systems that can be deployed quickly and configured to meet specific site requirements. These systems are available as permanent solutions as well as for rent or temporary use, making them well suited for pilot testing, short-term compliance needs, emergency response, or bridging capacity during system upgrades.



Permanent vessel installation

Xylem's gravity contactor portfolio is supported by proven filtration engineering and lifecycle expertise:

- Compatible with GAC media
- NSF/ANSI/CAN 61 compliant materials and system design
- Configurable layouts to support retrofits, capacity expansions, or greenfield installations
- Low-profile configurations enabling deeper media beds and hydraulic flexibility
- Leopold underdrain systems are designed to support deep GAC beds and uniform backwash distributions
- Proven installations with media depths exceeding 10 feet



Leopold® gravity GAC contactor, designed to remove PFAS in applications with flow rates of 1 MGD (3.8 MLD) and greater

Gravity contactors

Gravity contactors provide an efficient treatment solution for medium- to high-flow PFAS applications. These large, open-top steel or concrete basins are typically designed for GAC and offer a cost-effective approach for long-term treatment where permanent infrastructure is required. Operating under gravity flow, they are well suited for municipal drinking water treatment and other high-capacity PFAS removal applications.

Xylem's Leopold® filtration systems have supported municipal drinking water treatment for more than a century, with over 10,000 global installations. This includes extensive application experience in GAC-based filtration systems, where long-term reliability and hydraulic performance are critical.

Advanced liquid-phase adsorption systems

Advanced liquid-phase adsorption systems provide flexible PFAS treatment using specialized media tailored to specific water conditions and contaminants. Depending on application requirements, these systems may utilize engineered activated carbons, ion exchange resins, or synthetic adsorbents to achieve targeted removal performance.

Xylem adsorption systems are designed to maximize contaminant transfer as water passes through one or more treatment vessels. Once media reaches its treatment capacity, it can be removed for regeneration or compliant disposal depending on the application.

Reverse osmosis

Reverse osmosis (RO) is a high-pressure membrane treatment technology capable of removing a wide range of dissolved contaminants, including PFAS. By forcing water through a semipermeable membrane, RO separates clean water from dissolved solids, salts, and PFAS compounds, producing a treated permeate stream while concentrating contaminants into a reject stream.

RO systems are highly effective for complex water chemistries and are often applied where high removal efficiency is required. According to the EPA, reverse osmosis can remove up to 99% of certain PFAS compounds.



3. An end-to-end approach to PFAS management

PFAS treatment is not one-size-fits-all. Treatment objectives depends on source water chemistry, target contaminants, regulatory requirements, operational constraints, and long-term cost considerations.

Xylem provides a single-source approach that supports customers from initial water assessment through pilot testing, system design, deployment, ongoing operational support, and destruction. Whether the need is permanent infrastructure, emergency response, mobile treatment, or rental systems, solutions are tailored to site-specific conditions and treatment goals.

Xylem's capabilities

Analyze
Water quality analysis and treatment evaluation

Test
Bench-scale testing and rapid small-scale column testing (RSSCT)

Validate
Pilot system design and field validation

Scale
Full-scale treatment system integration

Deploy
Mobile, rental, and emergency response solutions

Monitor
Long-term service, monitoring, and media management

Destroy
Access to a network of PFAS destruction technology partners

Bench-scale testing and modeling

Xylem offers bench-scale testing and advanced modeling capabilities. Customers can provide samples, and Xylem's lab will conduct rapid small-scale column testing (RSSCT) and numerical modeling. These testing approaches provide valuable performance data while reducing water volume, analytical requirements, and testing time.

Pilot testing

Pilot testing is the most effective way to validate PFAS treatment performance before committing to permanent infrastructure. Because water quality can vary over time, field piloting provides a more accurate understanding of how systems and media will perform under real operating conditions than is possible to determine in a lab setting.



Flexible piloting options for both pressure- and gravity-based applications, accommodating multiple medias and bed depths (up to 12 feet)

Flexible solutions backed by service expertise

PFAS treatment requirements can evolve quickly. Xylem supports customers with flexible deployment models that adapt to changing operational and regulatory needs.

Whether deploying a permanent treatment system, responding quickly with rental vessels, or scaling from pilot testing to full operation, Xylem supports customers with integrated engineering, rapid deployment, nationwide field service, and ongoing media and compliance management.

This end-to-end approach helps simplify PFAS treatment while supporting reliable, long-term system performance.

PFAS destruction

Xylem gives customers the option to destroy PFAS by leveraging a network of partners through Xylem Innovation Labs for either incineration or emerging PFAS destruction technologies.

4. Rapid PFAS response with mobile treatment systems

When PFAS contamination is identified, utilities often need to act quickly to maintain compliance and protect drinking water supplies. Xylem's MitiGATOR™ Mobile System is designed to help utilities rapidly deploy proven PFAS treatment with minimal site preparation or operational disruption.



Housed within a fully integrated 54-foot mobile trailer, the system includes filtration vessels, piping, instrumentation, and remote monitoring capabilities in a compact, ready-to-deploy solution. Depending on configuration and media selection, the system can treat up to 1,000 gallons per minute using granular activated carbon or ion exchange resin technologies.

The MitiGATOR™ system can be deployed directly at drinking water wells, municipal treatment sites, or surface water sources, providing temporary or emergency treatment while long-term infrastructure is evaluated or constructed.

Key capabilities include:

- Rapid deployment with minimal onsite assembly
- Flexible treatment using GAC or ion exchange media
- Remote monitoring for operational visibility and performance tracking
- Integration with permanent treatment infrastructure as needs evolve
- OSHA-trained field teams available for onsite operation and maintenance support

From emergency response through long-term treatment planning, Xylem helps utilities respond quickly, maintain compliance, and continue delivering safe, reliable water to the communities they serve.



5. Applications and markets Xylem serves

Municipal drinking water & wastewater utilities

Xylem helps municipal water and wastewater providers address PFAS contamination with flexible treatment solutions designed to meet evolving regulatory requirements and local water conditions. From initial water quality analysis and pilot testing through full-scale deployment and long-term operational support, we partner with utilities to deliver treatment strategies that balance performance, reliability, and cost.

Our portfolio includes granular activated carbon (GAC), ion exchange resin, advanced adsorption,and mobile treatment technologies available in both permanent and temporary configurations. Pilot testing and RSSCT help utilities identify the most effective treatment approach based on source water, wastewater, or residual stream chemistry and treatment goals before scaling to full operation.

To support urgent compliance needs, Xylem also offers rapid-response PFAS treatment solutions, including:

- Emergency mobile treatment systems
- Short-term rental units
- Long-term rental and lease-to-own options
- Permanent treatment system integration

Whether supporting drinking water systems, wastewater treatment facilities, large metropolitan systems or small rural communities, Xylem works directly with utilities and engineering partners to integrate PFAS treatment into existing infrastructure while optimizing footprint and long-term performance.

Airports and military installations

Airports and military bases are among the most impacted sites for PFAS contamination due to the historic use of PFAS containing firefighting foams. Xylem provides specialized PFAS treatment solutions for airports and military bases, addressing PFAS contamination from firefighting foams through both groundwater and soil remediation. Our technology-agnostic approach allows us to design treatment systems around site-specific conditions using carbon, resin, membrane treatment technologies. With permanent, mobile, and rental solutions available, Xylem can support both long-term remediation programs and urgent response needs across aviation, defense, and aerospace applications.



Construction and commercial dewatering

Construction and infrastructure projects increasingly require treatment of contaminated groundwater before discharge or reuse. Xylem provides mobile PFAS treatment systems designed for temporary, fast-moving, and project-based dewatering applications.

Our fleet of mobile treatment assets can be rapidly deployed to support planned construction activities or emergency response situations. Using proven carbon, resin, and advanced treatment technologies, Xylem helps contractors and site operators reduce PFAS concentrations and meet discharge requirements while maintaining project timelines.

Landfill leachate

Landfill leachate containing elevated PFAS concentrations requires specialized treatment. Xylem provides flexible treatment solutions for landfill operators using carbon, ion exchange resin, membrane, and mobile treatment technologies tailored to each site's unique leachate characteristics and regulatory requirements. With permanent, field-erected, and rapidly deployable mobile systems, Xylem helps customers manage leachate conditions, maintain compliance, and protect community groundwater.

Industrial water and wastewater

Industrial facilities face growing pressure to manage PFAS and other emerging contaminants in wastewater, process water, and groundwater remediation applications. Xylem helps industrial customers implement treatment solutions that support compliance, operational continuity, and long-term water management goals.

Our PFAS treatment portfolio includes ion exchange resins, activated carbon, membrane systems, advanced adsorption technologies, and mobile treatment solutions designed for a wide range of industrial applications and water chemistries.



6. Real-world PFAS treatment success stories

Kennebunk, Kennebunkport & Wells Water District protects community water supply from PFAS contamination

Challenge – Detectable PFOA and PFOS levels were identified in a drinking water well operated by the Kennebunk, Kennebunkport & Wells Water District (KKWWD) in Maine, threatening the region's public health and water supply.

Solution – Based on pilot testing, KKWWD selected Xylem's AquaCarb® coconut-based GAC system, delivering up to 160% longer media bed life versus coal-based alternatives and reducing lifecycle costs by approximately 40%.

Outcome – The system has treated more than 200 million gallons of water at non-detect PFAS levels, protecting a critical water source for the surrounding communities.



Read More

Stratmoor Hills Water District restores safe drinking water with advanced PFAS treatment

Challenge – PFAS contamination was identified in a seasonal drinking water well serving Stratmoor Hills, Colorado, requiring a rapid solution to meet new PFOA and PFOS regulatory requirements.

Solution – Stratmoor Hills Water District and Xylem designed and deployed a compact, scalable selective ion exchange treatment system tailored to the utility's water chemistry and operational needs.

Outcome – The system reduced PFAS concentrations to below detectable levels, restoring community confidence, and was followed by a permanent facility expansion capable of treating up to 1.1 million gallons per day.



Read More

Orange County Water District implements one of the nation's largest PFAS treatment programs

Challenge – Responding to changes in state PFAS regulations, Orange County Water District (OCWD) moved quickly to protect groundwater supplies for millions of Southern California residents.

Solution – Xylem partnered with OCWD to pilot and deploy 30 advanced liquid-phase adsorption vessel systems across multiple sites. By evaluating 14 treatment media, the pilot instilled confidence in achieving PFAS removal to state standards while optimizing media life.

Outcome – Together, the installations have the potential to treat up to 86 million gallons of water per day, helping protect drinking water for up to 2.5 million people.

Read More

Xylem |ˈzīləm|

1) the tissue in plants that brings water and nutrients upward from the roots.
2) a leading global water solutions company.

Xylem is the connective tissue and system in plants which cleanses and transports water from the root to where it is needed most to sustain life.

And this is the essence of Xylem as a company. We are committed to creating real results by partnering with the unsung heroes who make water work every day. We connect our diverse water expertise with breakthrough technologies, services and data-driven insights to empower the people, communities and industries to solve the most critical water challenges.

For more information on how Xylem can help you, visit xylem.com.

References:

1. U.S. Environmental Protection Agency. “Our Current Understanding of the Human Health and Environmental Risks of PFAS.” EPA.gov, https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas
2. Environmental Working Group. “Interactive Map: PFAS Contamination Crisis: New Data Show 9,728 Sites in 50 States.” EWG.org, https://www.ewg.org/interactive-maps/pfas_contamination/

All information presented herein is believed reliable and in accordance with accepted engineering practices. Xylem makes no warranties as to the completeness of this information. Users are responsible for evaluating individual product suitability for specific applications. Xylem assumes no liability whatsoever for any special, indirect or consequential damages arising from the sale, resale or misuse of its products. Subject to change without notice. © 2026 Xylem Inc. or its affiliates. All rights reserved. AquaCarb, VoCarb, Leopold, and MitiGATOR are trademarks of Xylem or one of its subsidiaries.

PES-PFAS101-BR-0726