Article

Fast-Tracking Water Treatment Innovative Solutions for the PFAS Challenge

PFAS water contamination is not a future concern. It's a pressing challenge for municipal and industrial companies treating our drinking and wastewater systems today.

In 2023, the U.S. Geological Survey published a report stating that at least 45% of the nation's tap water is estimated to have one or more types of PFAS.

In 2024, a study by an Australian university found that much of our global source water exceeds PFAS safe drinking limits, including in Australia. That source water feeds water treatment plants that aren't always equipped to remove the chemicals.

PFAS chemicals, notoriously persistent in the environment, require responsive strategies for detection, quantification, and removal to safeguard our drinking water and ensure responsible treatment of wastewater. As public knowledge spreads, treatment efforts and technologies have ramped up across the globe to remediate PFAS under accelerated timelines.

DELIVERING A MOBILE SOLUTION — FAST

In June 2024, Sydney Water detected above-safe levels of PFAS on the outlet of their Cascade Water Filtration Plant. The plant supplies water to about 41,000 homes in Leura, Katoomba, Catalina, Blackheath, and Mt. Victoria in Australia.

Early water quality results showed elevated PFAS levels in Medlow Dam, which supplies the Cascade Water Filtration Plant. This prompted the temporary shutdown of the Medlow Dam and Greaves Creek Dam as a precautionary measure.

Sydney Water quickly engaged Montrose Environmental Group to install a mobile solution for the immediate treatment of drinking water while it considered longer-term upgrades to the Cascade Water Filtration Plant.

By November of the same year, Montrose had designed and installed a mobile $3.4 million PFAS treatment system specifically for the plant. By January 2025, it was operational.

"Our new system, which combines Granular Activated Carbon (GAC) and ion exchange resin, not only produces PFAS-free water, but also operates with a much smaller footprint and generates less waste," says Dave Kempisty, VP of Technology for Research and Development. "It treats about six million liters of water per day, and testing has confirmed PFAS levels in the treated water are now below detection."

This is the key to remediating PFAS-contaminated water: the treatment technology must work effectively in the moment while also being flexible enough to meet future contamination scenarios and evolving regulations.

"From a PFAS perspective, the market is shifting from let's think in terms of how we're going to comply with regulations, to the fact that we need to deliver clean water to the consumer. And companies need to prepare for this inevitable change," says Jorge Caspary, Senior Principal at Montrose Environmental Group and former Director at Florida Department of Environmental Protection.

FUTURE-FOCUSED REMEDIATION

Indeed, Montrose's technology is innovative and designed with future adaptability in mind. As installed today at the Cascade Water Filtration Plant, it meets and exceeds current PFAS standards. With a regenerable upgrade, the system can be adapted to comply with more stringent future regulations, offering a path to future-proof performance.

A crucial aspect of the cleanup effort is demonstrating that the technology is effective.

"We're seeing more and more interest in making sure water is clean, whether it's drinking water or wastewater," states JP Verheul, Technical Solutions Team Lead, PFAS & Ultratrace.

"Our labs work with new technologies that offer opportunities for bench studies and pilot studies, and proof of concept to make sure that these new treatment technologies are effective.

"Where we see the biggest improvements in technological resources is in the world of emerging contaminants, and in some cases, the technology can bring about outcomes beyond regulatory requirements. PFAS is a great example of this.

"A lot of work in the drinking water space, especially with larger commercial providers in the US, involves deploying treatment technology vessels and continually evaluating their efficacy. This includes being able to predict when those technologies that involve media that trap the PFAS have reached their saturation point."

PROGRESS WITH ENVIRONMENTAL STEWARDSHIP

Montrose continues to explore other environmental concerns, such as groundwater contamination and remediation. We already work with large industrial companies to help identify and manage water impacted by their operations, such as groundwater runoff and stormwater.

This is a critical area of work given that, as shown in the Sydney Water example, the PFAS contamination originated from outside the treatment plant. In some regions, groundwater serves as a source of drinking water, but they present a complex challenge because the origin of contamination within these plumes is not always clear.

"The interlinks between groundwater and surface water discharges are inevitably going to be regulated in the future, and the EPA has recently indicated moves in this direction," says Jorge.

"Some states are already regulating surface water. Population growth will add pressure to natural resources, exacerbating the issue," he adds.

As public pressure grows, the response at Cascade Water Filtration Plant proves that with the right expertise and technology, even urgent PFAS challenges can be solved — quickly and effectively. As regulations evolve and new contaminants emerge, the need for adaptable, forward-thinking solutions has never been greater.

Now is the time to act — not react. Whether you're in utilities, industry, or policy, the path forward is clear: embrace innovation, prioritize public health, and future-proof our water systems.