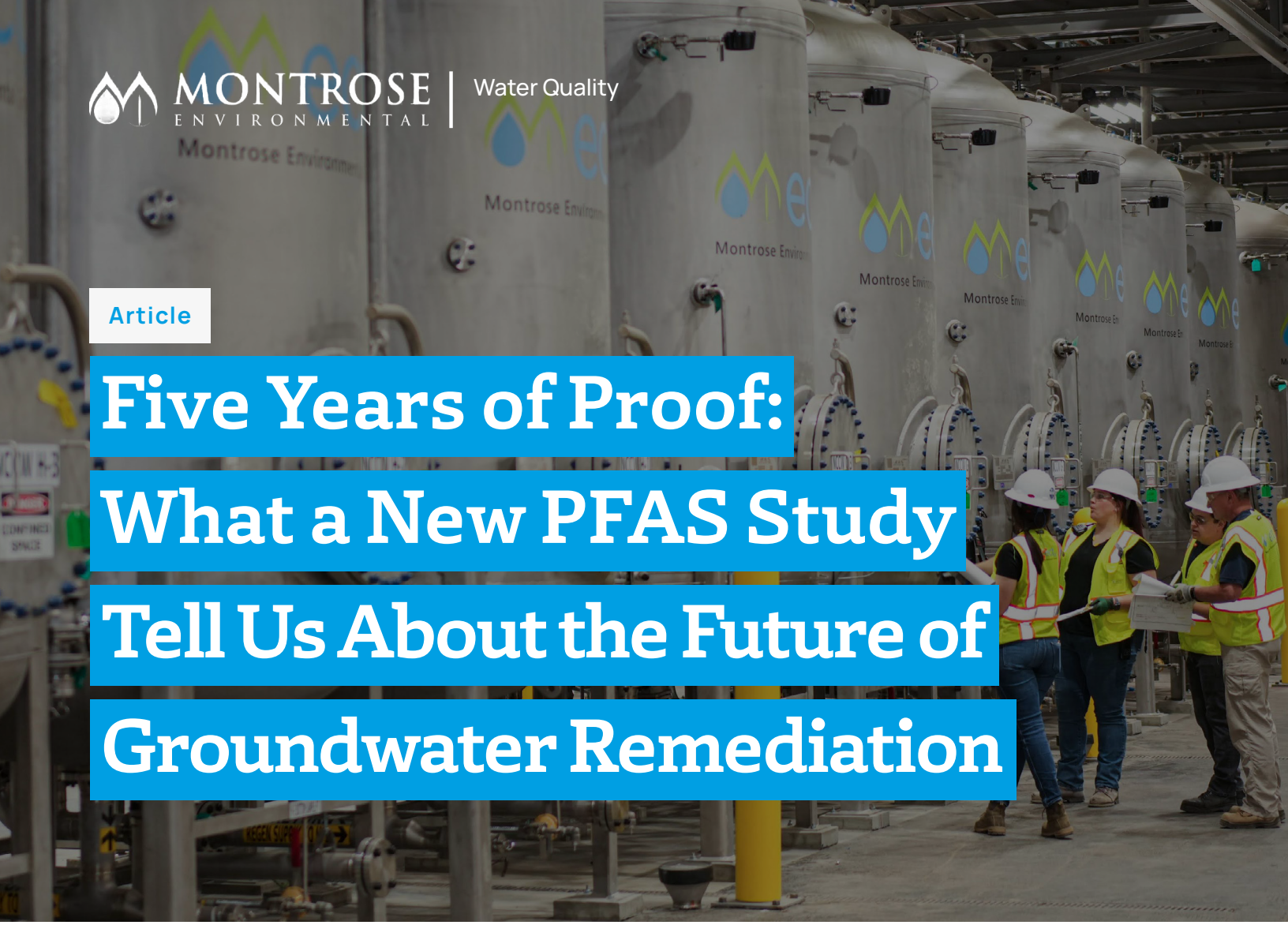

MONTROSE ENVIRONMENTAL | Water Quality

Article

Five Years of Proof: What a New PFAS Study Tell Us About the Future of Groundwater Remediation

PFAS contamination is no longer a fringe issue. It's in our drinking water, soil, food—and even in our rainwater. As regulatory limits tighten and the science evolves, industrial manufacturers are grappling with a big question: how do we sustainably treat PFAS-impacted groundwater, *long term?*

A recently published study in the Australian Water Association's Water e-Journal offers some clarity. Conducted by our team at ECT2, this five-year case study looks at the use of regenerable ion exchange (RIEX) resin at full scale—offering a rare long-term view into what really works, and what others can take away.

If you don't have time to read all 19 pages, here are the takeaways we think are most helpful.

Regenerable ion exchange (RIEX) resin is an innovative water treatment technology designed specifically to tackle PFAS contamination in water. Unlike traditional single-use adsorbents that require frequent replacement and disposal, RIEX is engineered for long-term efficiency by allowing repeated regeneration without performance degradation.

This technology works by selectively capturing PFAS compounds while maintaining its effectiveness over multiple cycles. One of its standout advantages is its adaptability—RIEX can be regenerated more frequently to meet stricter treatment standards or target emerging PFAS compounds without major system modifications. This results in significant cost savings, reduced waste, and minimized environmental impact, making it a sustainable and reliable solution for PFAS remediation.

REGENERATION ISN'T JUST VIABLE—IT'S DURABLE

At a site in northern Australia, patented regenerable ion exchange (RIEX) RIEX resin has been in continuous use since 2019. RIEX resin is a regenerable ion exchange media specifically designed to remove PFAS from groundwater while maintaining long-term efficiency. Over 1.8 billion liters of groundwater have been treated, removing more than 22 kg of PFAS—without any drop in performance or signs of media degradation or breakdown. The resin has been regenerated more than 26 times over five years, and there's been no build-up of residual PFAS ("PFAS heel") and no need to replace the media. That's a big win for consistency, reliability, and long-term cost control.

WHEN REGULATIONS SHIFT, THIS SYSTEM DOESN'T FLINCH

One of the most valuable things about RIEX is its built-in flexibility. If treatment goals become more stringent—or if new PFAS compounds are added to regulatory targets—the system can simply regenerate more frequently. That means no need for new hardware or major retrofits. That also means an avoidance of purchasing new media – a significant cost savings! This kind of adaptability is going to matter more as shorter-chain compounds like PFHxA and PFBA start making their way into local discharge limits.

A SMARTER BALANCE OF COST AND SUSTAINABILITY

Let's talk economics. Yes, regenerable systems require upfront investment. But when that cost is shared across multiple sites in a "hub and spoke" model, as it was in this case, the payback period drops to just over five years. What's more, reusing media means you're not shipping off thousands of kilos of spent resin to landfills or incinerators. That's a smarter move environmentally—and it helps reduce future liability in a regulatory environment that's only getting stricter.

RESIN INNOVATION KEEPS THE DOOR OPEN FOR MORE

One of the more exciting threads in this study is the continued progress in resin science. New resin media are continuously being developed. The latest media are showing 2.7x to 4x higher PFAS capacity compared to current products. That opens the door to longer runtimes, fewer regenerations, and lower operational costs. And that's where things get interesting—because if your resin can go farther and regenerate cleaner, the business case for RIEX gets even stronger.

FUTURE-PROOFING PFAS TREATMENT

This study gives us more than just performance metrics. It shows that PFAS treatment doesn't have to be high-cost, high-waste, reactive and unsustainable. With the right system design and resin chemistry, long-term performance, flexibility, and sustainability can actually work together. Whether you're working on site design, advising clients, or evaluating long-term options, it's worth a closer look. The full study is published in the August 2024 issue of the Water e-Journal.

Looking for a smarter, more sustainable way to tackle PFAS contamination? The results speak for themselves—five years of continuous performance, zero media breakdown, and built-in flexibility to meet evolving regulations.

MEET OUR PFAS EXPERT

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Dave is a licensed engineer with over 20 years of experience in the water treatment and environmental remediation space. His current role at ECT2 focuses on the use of novel technologies for the removal of emerging contaminants such as PFAS, 1,4 dioxane, and carcinogenic volatile organics from the environment. Before this, he spent 22 years in the United States Air Force as an environmental engineer, occupational health consultant, and assistant professor. As editor of two books on per- and polyfluoroalkyl substances and author of over 20 peer-reviewed papers and presentations on a variety of environmental topics, Dave provides a well-balanced perspective on today's environmental issues.