HOW PFAS ARE CHANGING WATER TREATMENT

By Corey MacPhee, General Manager, Hankscraft Runxin

The water treatment industry is facing one of its most complex challenges yet with PFAS, commonly known as forever chemicals. While technologies exist to remove these contaminants from drinking water, removal is only part of the solution. The larger question is what happens after they have been captured.

PFAS were developed to solve everyday problems. We wanted nonstick cookware, waterproof clothing, stain-resistant fabrics, and products that performed better and lasted longer. These chemicals delivered on those promises. What researchers did not fully understand at the time was that many PFAS compounds persist in the environment and the human body, which is why they are now known as forever chemicals.

Today, water treatment systems can effectively capture PFAS. The challenge begins after they have been removed. Once these chemicals are concentrated in filtration media, how should they be managed? Can they be destroyed, or are they simply being transferred from one place to another through landfilling or incineration?

Finding answers will require continued research, technological innovation, and a clear understanding of the evolving regulatory landscape. As scientists develop new treatment and destruction methods, government standards will continue to influence how manufacturers design new technologies and how the water treatment industry responds to this growing challenge.

HOW ARE GOVERNMENT AGENCIES RESPONDING TO PFAS?

As researchers continue to learn more about the health and environmental impacts of PFAS, government agencies have responded by introducing stricter regulations. In the United States, the EPA has established drinking water standards for several PFAS compounds, requiring water systems to reduce concentrations to levels considered protective of public health.

For the water treatment industry, those regulations have raised the bar. Manufacturers are developing technologies that can consistently meet these new standards while remaining practical and cost-effective for water systems. At the same time, engineers are working through a much bigger challenge. Removing PFAS from water is only one piece of the puzzle. Treatment systems also need to address what happens after the contaminants are captured, along with energy demands, operating costs, and long-term reliability. The goal is to create solutions that perform well from start to finish rather than solving one problem while creating another.

WHY IS TREATING PFAS COMPLICATED?

Water treatment has always involved balancing complex water chemistry, evolving treatment technologies, and thousands of potential contaminants. There is rarely a single solution that works for every application because every water source presents its own challenges.

PFAS make that work even more difficult. Their strong carbon-fluorine bonds make them extremely stable, so treatment methods that work well for many other contaminants have little effect. Technologies such as ion exchange and activated carbon can capture PFAS, but they do not destroy them. Eventually, the filtration media become saturated and must be regenerated, replaced, or disposed of.

That is what makes PFAS such a difficult problem. Removing them from water is only the first step. The industry must also find safe, effective ways to manage the contaminants after they have been captured, which continues to drive research and innovation.

HOW PFAS CONTAMINATION VARIES BY LOCATION

PFAS contamination can vary significantly, even within the same community. Take Madison, Wisconsin, for example. The city relies on numerous municipal wells, and each has its own water chemistry. Some wells on the east side have higher PFAS concentrations, while others contain more sodium or naturally occurring hardness.

That variation means there is no one-size-fits-all treatment solution. Even in a city of roughly 250,000 residents, different neighborhoods face different water quality challenges. One area may require PFAS treatment, while another may need to address hardness or chlorine. Understanding the local water supply through routine testing is the first step toward selecting the right treatment approach.

Water quality challenges continue to evolve as new contaminants are identified and regulatory standards become more stringent. Whether water comes from a municipal system or a private well, local testing provides the information needed to make informed treatment decisions.

WHAT SOLUTIONS EXIST FOR PFAS IN WATER TREATMENT?

Hankscraft has been working with local U.S. companies to tackle emerging water quality issues, including PFAS. We still have strong relationships with our overseas partners, but we also saw an opportunity to work more closely with domestic manufacturers that are developing the next generation of water treatment technologies.

One of those partnerships is with ResinTech in New Jersey. They have done tremendous work developing advanced ion exchange resins, activated carbons, and other treatment media. Bringing those technologies into our product line has allowed us to address contaminants such as nitrates, arsenic, and PFAS that require more advanced treatment.

Do these systems cost more? Absolutely. There is no way around it. But they also solve problems that the industry could not effectively address just a few years ago. For us, the investment has always been about delivering better solutions, not simply lower costs.

Looking back, the pressure to solve these new water quality challenges pushed us to think differently. It led us to build new partnerships, adopt better technologies, and ultimately offer stronger solutions for our customers.

ADVANCING PFAS RESEARCH

Staying ahead of emerging contaminants means staying connected to the organizations and researchers leading the conversation.

We work closely with industry partners, manufacturers, and research organizations to better understand evolving regulations, treatment technologies, and the science behind PFAS. Those relationships help us make informed decisions about the components, materials, and technologies we incorporate into our systems.

Collaboration also drives innovation. As researchers learn more about PFAS treatment and destruction, manufacturers can improve existing technologies and develop solutions that address the industry's most pressing challenges.

PFAS and other forever chemicals present a complex problem, but the industry is making progress. Every new discovery brings us closer to treatment solutions that are more effective and more efficient. PFAS and other forever chemicals are complex challenges, yet they are challenges we can solve.

Planning a new product or manufacturing transfer? Contact Hankscraft to discuss how early manufacturing involvement can help you avoid costly redesigns, production delays, and unexpected recapitalization costs.

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