Electrochemical Treatment Destroys PFAS, Creating Clean Water

University of Massachusetts Amherst

In a world where clean water is becoming increasingly scarce, a silent threat lurks in rivers, lakes, and even our drinking water. “Forever chemicals”, the substances that don’t break down in the environment, threaten the world’s water supplies. Also known as PFAS, or per- and polyfluoroalkyl substances, they are found in everything from non-stick cookware to firefighting foam. PFAS have infiltrated our ecosystems and our bodies, posing serious health risks,

including cancer, decreased fertility, reduced vaccine response, high cholesterol, and developmental delays in children.

Enter scientists from the University of Massachusetts Amherst (UMass Amherst), past PhD Candidate Julie Bliss Mullen and Emeritus Professor David Reckhow, who in 2016 developed an electrochemical water treatment technology which breaks the strong carbon-fluorine bonds that make PFAS so persistent. Their PFAS destruction product, today known as Octa™ System, destroys PFAS contaminants on site, forever.

"The technology backbone is electrochemical advanced oxidation," Mullen explained. "We process PFAS contaminated waters through a bank of electrified reactors and destroy PFAS for industrial clients, destroying PFAS 'forever chemicals' forever."

Mullen and Reckhow years back knew they had revolutionary technology on their hands and looked to the UMass Amherst IALS Venture Development program and the UMass Technology Transfer Office for guidance. With the TTO's help, Mullen founded the startup, Aclarity, in 2017 which is revolutionizing water treatment by destroying dangerous contaminants like PFAS at an industrial scale. The Octa System's innovative low-energy electrochemical process doesn't just remove PFAS; it destroys them, ensuring they can't harm our environment or our health.

By partnering with treatment facilities, manufacturers, and landfills, Aclarity is tackling some of the most challenging water contamination issues. "Aclarity's Octa is their full-scale permanent PFAS destruction product, which stems directly from Mullen and Reckhow's research on campus. We're proud to see their lab concept fully commercialized,

making a positive impact for future generations," says Burnley Jaklevic, UMass Amherst's Director, Technology Transfer Office.

Aclarity has garnered significant support and recognition, having raised $20M in Venture Capital funding and securing millions from state and federal funding. In 2024, Aclarity was recognized by TIME Magazine's top 100 GreenTech companies globally and Norrsken top 100 most promising impact startups that will change the world.

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