BioLargo's Sustainable PFAS Treatment Technology

The least solid waste possible, with the greatest removal rates

Summary:

- Water treatment operations, remediation organizations, and industrial facilities are in **dire need** of effective, affordable, and practical tools to remove per- and polyfluoroalkyl substances (PFAS) from water to meet increasingly stringent EPA standards.
- **Currently available tools have two big problems**: they struggle to meet these new standards, and they usually generate huge volumes of PFAS-laden solid waste as a result of treatment.
- Upcoming CERCLA (hazardous waste) regulations will **dramatically amplify the problem**: solid waste generated from PFAS treatment will suddenly need to be handled as hazardous waste, increasing costs and red tape.
- BioLargo's PFAS treatment technology, the Aqueous Electrostatic Concentrator (AEC), takes a **novel approach to removing PFAS from water**. It uses an electrostatic field to force PFAS to migrate through water onto proprietary membranes, where they can be easily collected later.


E.P.A. to Designate PFAS, or 'Forever Chemicals,' as Hazardous

A proposed rule would require companies to report spills of two toxic chemicals that have been linked to cancer.

- It **overcomes the main two problems with other PFAS treatment techs**: 1) it's highly effective at removing all types of PFAS to meet or exceed the EPA's extraordinary new standards, and 2) it generates thousands of times less PFAS-laden solid waste compared to the competition, thereby vastly lessening the "hazardous waste problem".
- We have a "**membrane exchange program**", whereby BioLargo takes on the burden of handling the PFAS-laden waste for the customer, simplifying their treatment operations. We handle destruction and/or disposal of that waste.
- The AEC is ideal for treating surface and groundwater (as with **our first customer, a large industrial site in the Midwest**), wastewater, and drinking water.
- The **system is scalable and modular** – units can be built to treat smaller remediation projects or full-scale drinking water plants.
- Our **initial pipeline of PFAS** treatment project opportunities is significant.

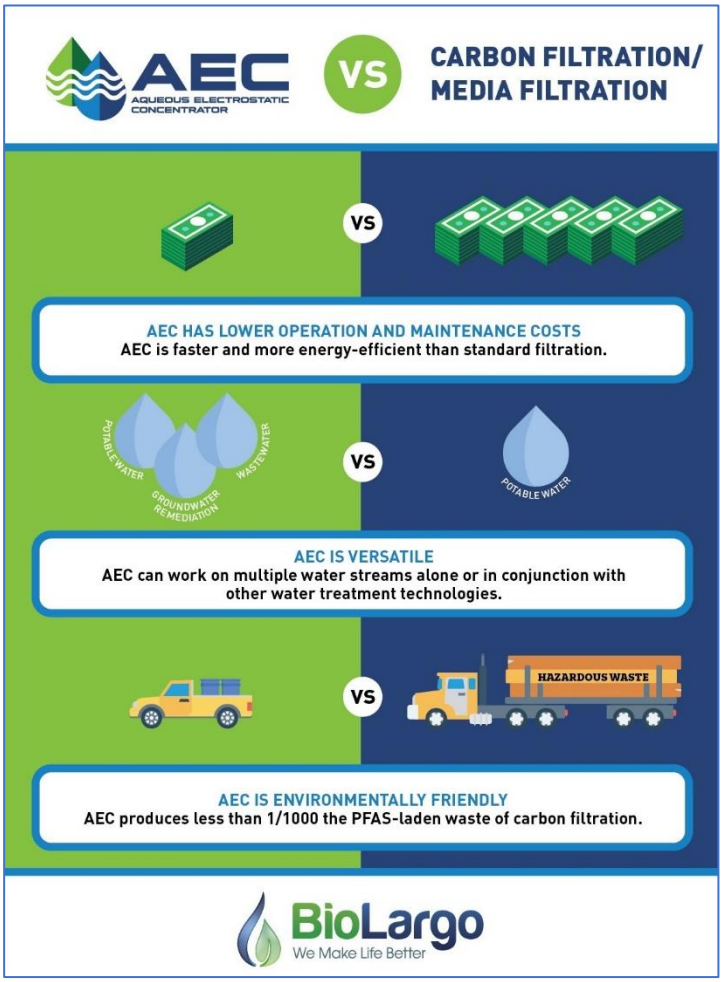
Background on PFAS:

Once a golden child of applied chemistry used in everything from non-stick pans to medicines, PFAS is a group of chemicals now known to be linked to a wide range of serious health effects including cancers, thyroid dysfunction, hormone disorders, and many more. PFAS are extremely widespread in groundwater and well water across the US and globally and have been detected in the blood of 99% of Americans tested. PFAS don't break down easily in nature, leading them to bio-accumulate in people and other organisms, causing small quantities

to have outsized effects in the long term. They also are highly resistant to removal by traditional water treatment technologies, necessitating industry to seek and develop novel technologies that can effectively and affordably remove PFAS from water sources.

Meet the BioLargo Aqueous Electrostatic Concentrator:

The Aqueous Electrostatic Concentrator (AEC), our solution for the bourgeoning water treatment market for per- and polyfluoroalkyl substances (PFAS). This emerging market for technologies that remove insidious fluorinated "forever chemicals" is expected to grow dramatically over the coming years, and there are few technologically and economically feasible solutions for it. Our technology is positioned to be the sustainable, affordable, effective, low-waste solution for the market, offering better cradle-to-grave dynamics for PFAS water treatment.



How it works:

The AEC uses electrostatic fields to force PFAS to migrate toward their corresponding charge, where they are "caught" by our proprietary membrane system. The AEC works against all types of PFAS: long-chain, short chain, and can reduce them to below the EPA's stringent new standards. Once the membrane is saturated, we take it away and give the customer a new one.

About BioLargo, Inc.

BioLargo is in the business of creating new cleantech technologies to solve tough problems. We invent, develop, then commercialize disruptive technologies to tackle global challenges in clean air, water, environmental engineering, long duration energy storage, and advanced antimicrobial medical device platforms. Our model is to invent, grow, partner, sell or spin out through semi-independent subsidiary business units.

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