# **AVANTech's PFAS Powdered Ion Exchange (APPIX) Removing PFAS from Leachate and AFFF Concentrate** Tracy Barker, Michael Reed, Frank Cerio, Jaclyn Looper – AVANTech, LLC





- AVANTech has provided temporary and permanent PFAS remedia solutions for potable and non-potable applications.
- AVANTech has diect experience in every lifecycle phase, ranging from design, bench studies, scaling up, full-scale solutions, and long-term management.
- ✓ US Air Force Base had ~30,000 gallons of PFAS contaminated water in two underground storage tanks, mainly from Firefighting Foam.
- Turnkey modular treatment system and AVANTech operation was required to remove PFOS and PFOA to <70 ng/L.
- AVANTech's ion exchange (IX) media was successfully used to accomplish removal of PFAS contaminants (>99% removal).

## **AVANTech PFAS Powdered Ion Exchange (APPIX)**

 Normalized comparative laboratory data shows the AVANTech powder treatment system has an estimated PFAS capacity increase of 4 to 12 times.



- Powder shows highest capacity, but typically requires alternate equipment from standard IX.
- Lower media usage would result in client cost savings on absorbent, transportation, disposal, and shutdown time.
- Powder gives the lowest capital cost option from minimal equipment requirements.

### **AVANTech Advanced PFAS Polymerization (AP2)**

- Polymer Technology Benefits:
- US Nuclear Regulatory Commission approved polymer for radioactive waste solidification (>10 US + international applications)
- Waste volume reduction and minimized landfill leaching
- Highest level of immobilization through extensive TCLP testing
- Used for PFAS contaminated IX resin, carbon, or other absorbents
- Avoids future liabilities for landfill leaching and incineration









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#### **APPIX Leachate Treatment**

**Concentrated Leachate PFAS Removal with Powder IX** (87,000 ng/L PFAS starting concentration)

Powder Media Dosing	AVANTech's APPIX	Powder Activated Carbon
400 mg/L	89%	16%
1,000 mg/L	94%	21%
4,000 mg/L	98%	not tested



A two-stage system with 400 mg/L powder dosing could expect 99% PFAS removal at extremely low capital costs and simple installation process.

Powder IX System Benefits:

- Lowest capital cost option
- Avoid frequent media changeouts from high fouling
- Meets low PFAS effluent requirements
- Traps PFAS onto IX powder preventing leaching back into landfill

#### **AVANTech's Advanced Polymer Solidification Waste Container**

**Dewatering Pipe** Neat polymer forms outer and Laterals shell for complete macroencapsulation Micro-Polymer encapsulated solidification waste (GAC, adds **Polymer Waste Container is** IX, or other negligible guaranteed to pass waste solids volume leaching requirements. mixed with to waste polymer) boundary. Outer shell of neat polymer Polymerized monolith (outer chemically bonds form + interior waste) is stronger than to polymerized cement and eliminates PFAS leaching. waste inside.

Polymer Solidification Waste Containers can be configured into any shape for most efficient disposal: cylindrical, rectangular, different WxHxL dimensions.