AVANTech's PFAS Powdered Ion Exchange (APPIX) Removing PFAS from Leachate and AFFF Concentrate

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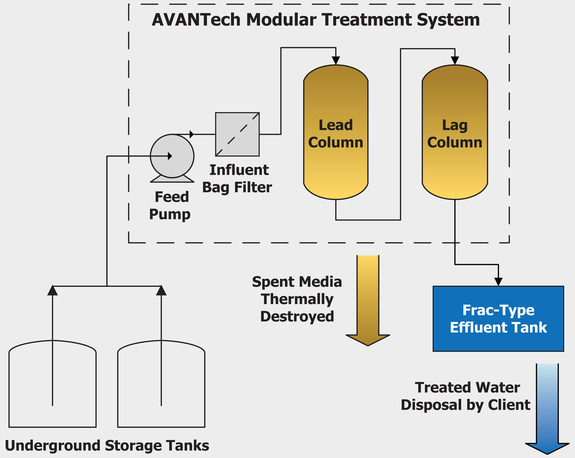
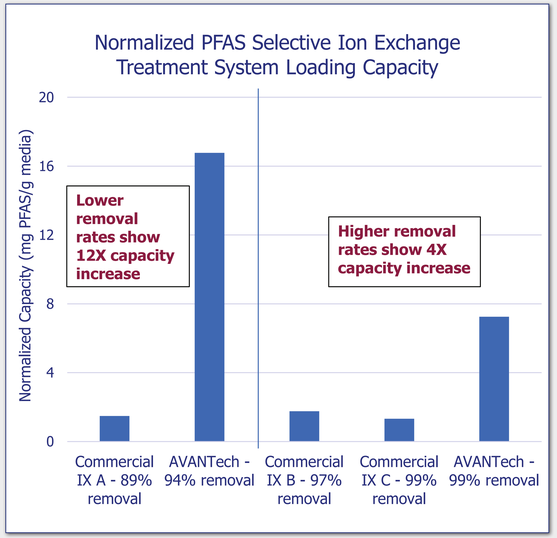
AVANTech PFAS Remediation Experience



- ✓ AVANTech has provided temporary and permanent PFAS remedial solutions for potable and non-potable applications.
- ✓ AVANTech has direct 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)

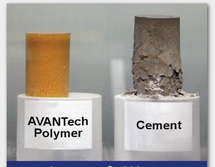
- ✓ Normalized comparative laboratory data shows the AVANTech powder treatment system has an estimated PFAS capacity increase of 4 to 12 times compared to IX beads.



- ✓ 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.

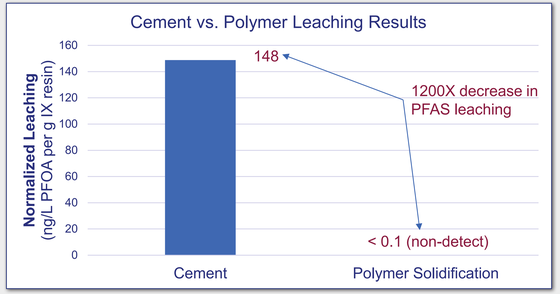
AVANTech Advanced PFAS Polymerization (AP2)

- ✓ 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 adsorbents
  - Avoids future liabilities for landfill leaching and incineration



1-month Water Immersion Test

Solidified Ion Exchange Vessel



APPIX Leachate Treatment

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

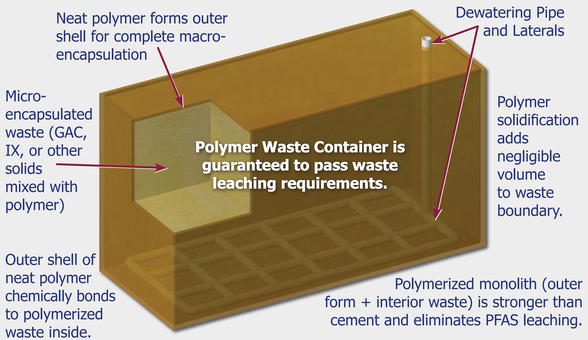
APPIX Media Dosing	APPIX Removal	Powder Activated Carbon Removal
400 mg/L	89%	16%
1,000 mg/L	94%	21%
4,000 mg/L	98%	not tested

Concentrated Leachate Sample

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 fouling
  - Meets low PFAS effluent requirements
  - Traps PFAS onto IX powder preventing leaching back into landfill

AVANTech's Advanced Polymer Solidification Waste Container



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