Cuf Activated Carbon for PFAS Recovery

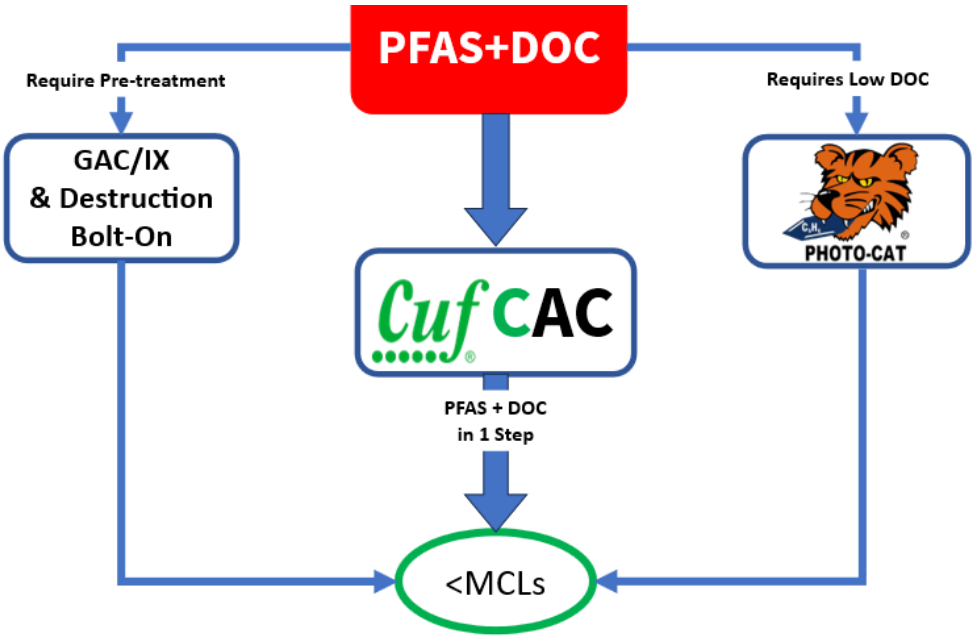
Better Water at Lower Cost

Since 1993 Purifics has led innovation in water purification with proven methods for the recovery and destruction of waterborne contaminants. Since 2005 Purifics focus expanded to include **"Forever Chemicals"** also known as **PFAS**. Purifics R&D and Applications Engineering experience has developed methods to recover (*Cuf*) andéor destroy (*Photo-Cat*) PFAS in surface and groundwater with all its associated background challenges.

The PFAS Challenge

PFAS are toxic, long-lasting compounds now regulated at very low levels (<2 ppt). Traditional methods, like GAC, IX, and Modified Clay Absorbent, face challenges in waters with high DOC/NOM. They often need pre-treatment, frequent media changes, create liquid and solid waste, and are expensive to operate.

PFAS Reduction Methods

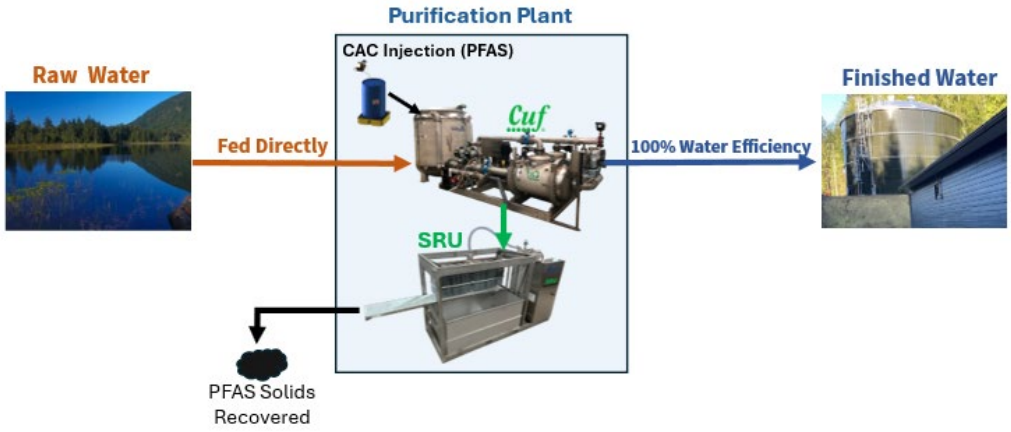


Cuf Capabilities:

The *Cuf* ® process removes multiple water contaminants, including PFAS, in a single, fully automated operation. *Cuf* ® platform functions as the entire plant, it simultaneously eliminates metals, bacteria, DOC, THM & HAA precursors, color, taste, and odor without requiring pre-treatment, polishing, or concentrate handling. Certified to NSF/ANSI/CAN 61-372, *Cuf* ® delivers 100% water efficiency with ZLD at a low operational cost.

Rev: 19-08-2025

Cuf is PFAS ready:



Cuf ® Activated Carbon (**CAC**) is a high-efficiency enhancement that strengthens PFAS removal in both surface water and groundwater. This optional feature complements the core capabilities of the *Cuf* ® system and can be integrated at any stage, whether during the initial installation or as a future upgrade.

This flexibility is critical, as PFAS contamination may emerge in applications where it was not previously present. The **CAC** upgrade provides a simple, low-cost solution: with the simple **addition of a pump** for precise **CAC** injection, the system is **immediately** ready to deliver PFAS removal.

Cuf ®Activated Carbon (CAC) Advantage

Colloidal Activated Carbon (**CAC**), combined with *Cuf* ® turbulent mixing (Concentrated Sweep Floc Coagulation) and precise control, enables rapid kinetics and sustained performance.

Through precise injection, mixing, holding, and **recovery of CAC**, the *Cuf* ® process provides a consistent, sustainable, and low-cost PFAS recovery solution. Unlike conventional technologies, *Cuf* ® with **CAC** requires no pre-treatment, backwash, tankage, or media bed maintenance.

Why CAC is Different from GAC & PAC:

- **Particle size & surface area**: CAC has exponentially higher surface area than GAC and PAC.
- **Rapid Kinetics**: PFAS is removed and discharged as a solid within 4 minutes.
- **No media beds**: Eliminates channeling, bed fluffing, and backwashing.
- **Cost efficiency**: Controlled dwell time ensures optimal adsorption and lower overall carbon costs.
- **Safety**: CAC is supplied as a liquid suspension, avoiding dust hazards associated with GAC/PAC.

Activated Carbon	Nominal Diameter Ratio	Surface Area/Mass (m^2/g)	Surface Area Ratio
GAC	**3,000**	**0.0083**	**1**
PAC	**100**	**0.218**	**12,000**
CAC	**1**	**24**	**8,000,000**

Proven Performance

- Successful applications have demonstrated sustained PFAS removal to **<1.8 ppt**, even in high-DOC surface waters.
- Validated across **municipal, industrial, and remedial installations**.
- Over **30 years of track record** in development and regulatory compliance.
- Consistent removal due to steady state “feed and bleed” operation, unlike conventional beds that decline over time.

Solids Recovery

The ***Cuf*** process integrates a proprietary and proven Solids Recovery Unit (***SRU***) that captures colloidal material as a solid in real time, creating a reliable, chemical-free and low-volume waste stream. This capability has been successfully applied for 15+ years across multiple installations consistently meeting regulatory compliance.

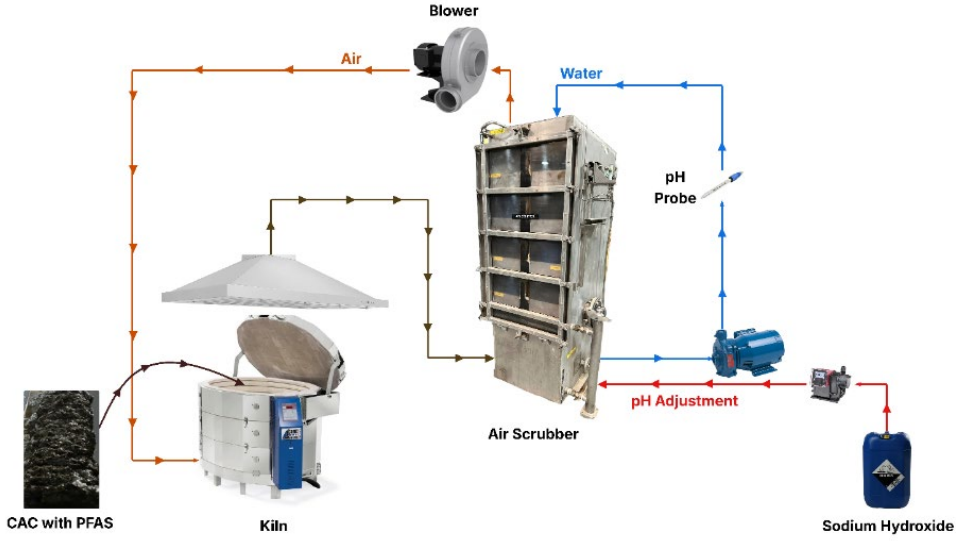
What About Disposal?

Once PFAS has been captured on Activated Carbon, IX Media or Accumulated Solid Waste the question remains what to do with PFAS contaminated solids and their legacy liability. With the appropriate capture technology, such as ***SRU***, that minimizes mass and eliminates liquids, the following options are available;

- PFAS Disposal at EPA Approved Landfill
- PFAS Off Site Incineration or Regeneration
- PFAS Consumption in Cement Kilns
- PFAS Onsite Destruction (POD)

PFAS On-Site Destruction (POD)

Purifics is advancing a PFAS On-Site Destruction (POD) process designed to permanently eliminate PFAS solids recovered by ***Cuf*** ®. The process destroys PFAS at temperatures exceeding 850°C, typically operating around 1100°C, using simple, electrically driven kiln technology. Its closed-loop design incorporates scrubbing to neutralize HF gas emissions, ensuring safe and environmentally responsible operation.



Rev: 19-08-2025

The system is fully automated, with precise control over temperature, dwell time, and pH, and is built on commercially proven, scalable technology. The result is permanent PFAS elimination with no long-term liability. Purifics also has experience in custom designed furncaces to burn ceramics of Brominated compound as illustrated at elevated temperatures.

This POD process is commercially available at the industrial scale. A 25-year-old plant of this typical process has been designed by Purifics as shown below.

- **Closed Loop Plant**
- **No Air Emission**
- **No Water Emission**
- **No Generated Waste**
- **No Onsite Operator**

Reference Documents

- Case Histories (Clifton, Hardin and Clermont)
- On-Site Pilot Verification
- Pilot Repot
- ***Cuf*** ® process