Better Water at Lower Cost

Purifics has led innovation in water purification with proven methods to Filter, Destroy or Recovery waterborne contaminants. These advanced technologies offer Enviormental and Economic Advantage. In 2005 Purifics became involved in **"Forever Chemicals"** which are identified today as **PFAS**.

Purifics Technology, backed by its Applications Engineering Experience is used to Filter, Recover and Destroy **PFAS** in surface or groundwater with all its associated background challenges while achieving Superior Enviormental and Econmical Advantage.

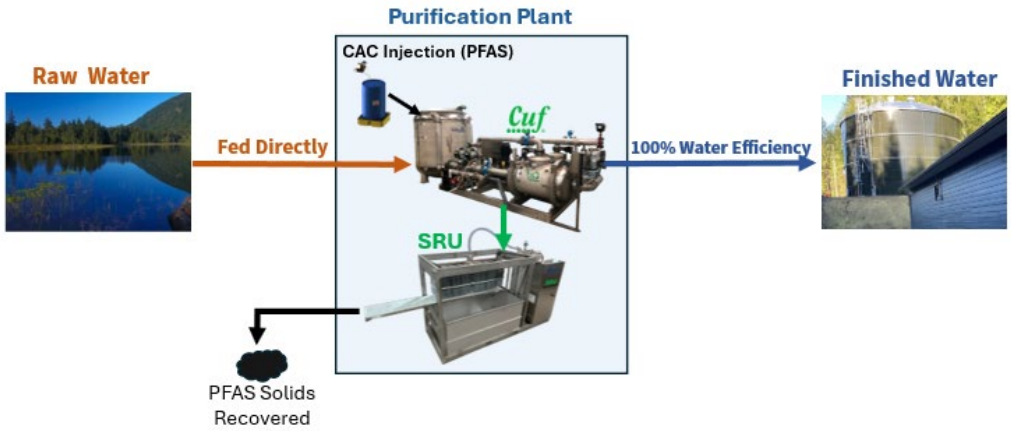
The PFAS Challenge

PFAS is regulated and detectable to low levels (<2 ppt). Traditional end of pipe or bolt on technologies, (GAC, IX, Modified Absorbent, Foam Fracitantion, Photaloysis, SCWO, etc) face operational challenges in water. This can include, poor kinetics, issues with DOC/NOM, pre-treatment, pathogens, media changes, creating liquid & solid waste, high cost, fouling, packing, time, complexity, etc.

Cuf Capability:

Cuf ® removes multiple contaminants from water in real time, in a single, fully automated process that does it all. This includes, PFAS removal, The *Cuf* ® platform functions as the entire plant, it simultaneously removes metals, pathogens, DOC, THM & HAA precursors, toxins, color, taste, and odor without pre-treatment, polishing, or concentrate handling. NSF/ANSI/CAN 61-372, Certified, *Cuf* ® delivers 100% water efficiency with ZLD at a low operational cost.

Cuf is PFAS ready:



Cuf ® Activated Carbon (**CAC**) is a high-efficiency enhancement that enables PFAS removal in surface and groundwater. This optional feature compliments the core capabilities of the Cuf® system and can be integrated at the time of installation or as a future upgrade.

This flexibility is critical, as PFAS contamination may emerge in future where it is not currently present or regulated. The **CAC** upgrade provides a simple, low-cost solution: with the simple **addition of a pump** for precise **CAC** injection, the Cuf system is **immediately** able to deliver PFAS removal without the need for external bolt on technology or column testing.

Cuf ®Activated Carbon (CAC) Advantage

Colloidal Activated Carbon (**CAC**), combined with Cuf's® turbulent mixing (Concentrated Sweep Floc Coagulation) and Purifics expertise in fine colloid particle recovery (Dynamic Shock), enables rapid kinetics, precise control and sustained performance. Performance data has shown all PFAS compounds removed below detection limits. The Cuf process eliminates the need for expensive column testing.

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

Why CAC is Different from GAC & PAC:

- **Cost Efficiency**
- **Safety**
- **Kinetics**

Activated Carbon	Nominal Diameter Ratio	Nominal Surface Area Ratio
GAC	**3,000**	**1**
PAC	**100**	**12,000**
CAC	**1**	**8,000,000**

GAC

PAC

CAC

Proven Performance

- Demonstrated sustained PFAS removal to **<1.8 ppt**, in high-TOC surface waters.
- Validated across **municipal, industrial, and remedial installations**.
- **30 year track record** of Regulatory Compliance.
- Consistent removal due to steady state "feed and bleed" operation.
- Multi-Contaminant Removal

Parameter	Units	Raw Water	*Cuf* + CAC
TOC	ppm	2.77 - 3.67	< 0.72
TTHM	ppb	NA	1.3
HAA	ppb	NA	1
Geosmin	ppt	2.77	< 0.38
PFOS	ppt	14	< 1.8
PFOA	ppt	8	< 1.8
PFBA	ppt	12	< 1.8
PFPeA	ppt	2.2	< 1.8
PFBS	ppt	4.7	< 1.8
PFHxS	ppt	1.9	< 1.8
PFHpA	ppt	2.2	< 1.8
PFHxA	ppt	3.2	< 1.8
Total	ppt	48.2	ND

Hardin County, TN Data

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 over a decade across multiple installations consistently meeting regulatory compliance.

What About Disposal?

Once PFAS has been captured on Colloidal Activated Carbon 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 Approved Landfill
- PFAS Off Site Incineration or Regeneration
- PFAS Onsite Destruction (POD)

PFAS On-Site Destruction (POD)

Purifics is advancing a PFAS On-Site Destruction (POD) process to permanently eliminate PFAS contaminated solids recovered by *Cuf*®. The process destroys PFAS at temperatures exceeding 850°C, using simple, electrically driven furnace technology. This closed-loop process neutralizes HF gas emissions, ensuring safe, closed loop, environmentally

responsible operation. The End Product is recovered nutrients and an extremely small amount of Sodium Fluoride (a salt) which is the same component found in toothpaste or added to your drinking water.

The POD system is fully automated, with precise control over temperature, dwell time, pH, and is built on commercially proven, scalable technology. The result is permanent PFAS elimination and liability.

POD (Purifics On-Site Destruction)

Purifics builds PODs for industrial customers that are custom designed furncaces to burn ceramics of compounds as illustrated at elevated temperatures above 500C.

This POD process is commercially available at the industrial scale. A 25-year-old plant of this process designed by Purifics is 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 Reports
- *Cuf* ® Process