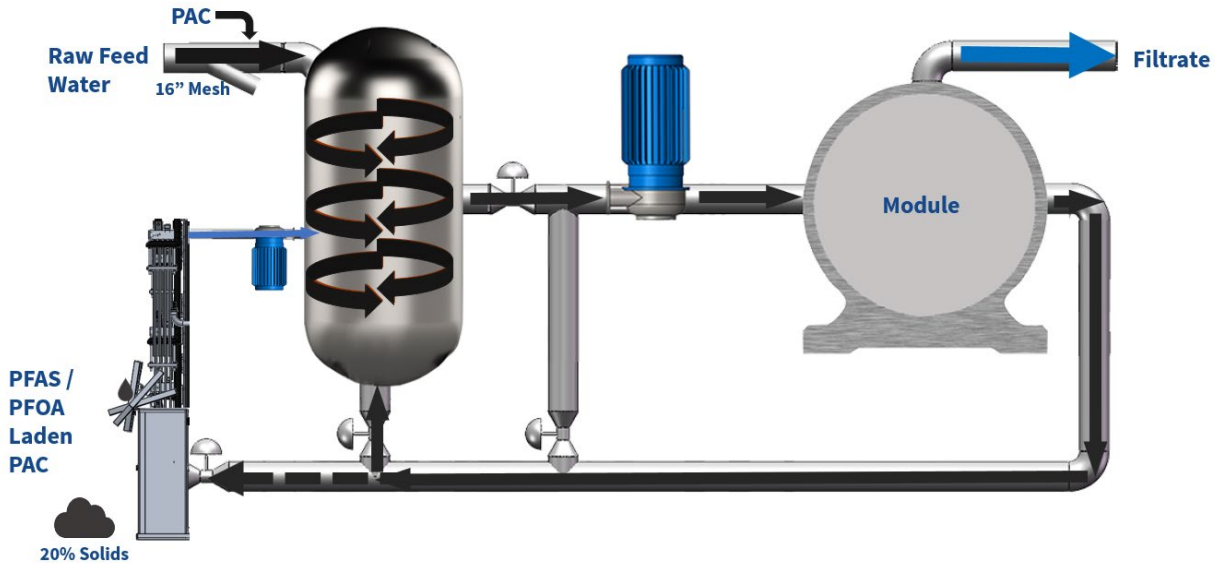
Per- and polyfluoroalkyl substances (PFAS) are a diverse group of chemical compounds that are resistant to heat, water and oil. For decades, they have been used in hundreds of industrial applications and consumer products such as carpeting, apparels, upholstery, food paper wrappings, fire-fighting foams and metal plating. The widespread use of PFAS/PFOA compounds have led to its appearance in many ground and surface waters.

Cuf® PFAS & PFOA Removal Process

Purifics' *Cuf*® (Continuous Ultra-Filtration) process is a disruptive game changer and challenges conventional engineering, cost structures and performance criteria. *Cuf*® does much more than just filter – it is the ideal solution for PFAS/PFOA removal and recovery for municipal and industrial applications. *Cuf*® removes contaminants of concern from water and fluid applications and concentrates them into low volume solid waste.

As shown below, low concentrations of powdered active carbon (PAC) are dosed into the *Cuf*® system, while a very small blowdown flow of concentrated PFAS-PFOA laden PAC is discharged. The *Cuf*® process concentrates the PAC over 100 fold. The increase in PAC concentration, coupled with the turbulent mixing Ultra-Coagulation process in the *Cuf*®, generates greater removal efficiency of PFAS & PFOA with increased loading efficiency onto the PAC. This reduces PAC costs and disposal requirements.



Unlike carbon beds that have deteriorating performance between carbon changeout, the *Cuf*®'s 'feed and bleed' operation generates a steady state operation providing consistent removal rates and effective use of the adsorption capacity of the PAC. The *DeWRS*® (DeWatering Recovery System) concentrates the PAC into a low volume (up to 20%) solid waste (chemical & labor free), to provide a true ZLD (Zero Liquid Discharge) solution.

The *Cuf*®'s continuous ultra filtration recovers 100% of the PAC material. Its' proprietary Dynamic Shock process self-cleans the *Cuf*® membrane in a continuous online operation. The shock is generated and travels through the water, the membrane and the module to drive the PAC off the membrane surface. This allows the process to operate with extremely high concentrations of PAC to increase removal efficiency. The specific type of PAC used in the *Cuf*® can be tailored towards the specific PFAS/PFOA compounds to be removed.

Another key advantage of the *Cuf*® process is simultaneous removal of other contaminants of concern, eliminating the need for other unit operations (i.e. the *Cuf*® is the plant). Other contaminants of concern could be heavy metals, Color, DOC, Pathogens (>4 log), Radium, Turbidity, Oil and Grease, H_2S, Phosphorous and THM & HAA Precursors. All of this is performed in a single *Cuf*® platform which eliminates conventional pre auxiliary and post treatments.

Pilot Verification Systems: *Cuf*® & *DeWRS*®