

Briefing: PCB Removal in Municipal Waste Water

Application

Chemical Free PCB Destruction in Municipal Waste Water

A municipality in New York State operates a Publicly Owned Treatment Works (POTW) that has PCB contaminated sewage from an industrial source.

Technical Challenge

PCB's entering the POTW are not treated by the existing process. The PCB's pass through the plant dissolved in the water or adsorb to the biomass that escape from the aerobic digester. A solution is required which will destroy the PCB's from the POTW effluent to below the detection level (65 ppt). The challenge is that when the dissolved phase is destroyed a portion of the adsorbed PCB will go back into solution to achieve equilibrium.

Pilot Program

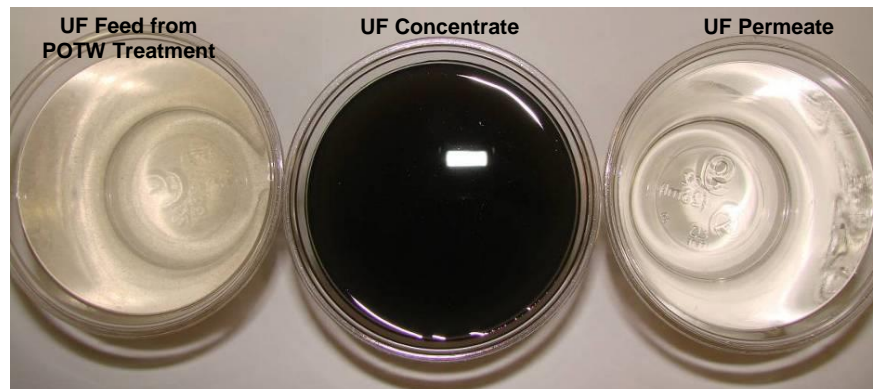
Three competing technologies were evaluated in a one month pilot program. Purifics *ics* (Integrated Complete Sustainable) System was the only destructive technology. The other two technology trains (polymeric UF and GAC) simply concentrated or transferred the PCB waste to another media.

POTW facility and the pre-packaged Purifics system



Solution

Purifics *ics* Solution employs *Cuf* (Ceramic Ultra Filtration) to remove the tiny bio-solids (VSS) that pass through the clarifier. Below is a picture of the POTW effluent, the *Cuf* concentrate and the *Cuf* permeate. The PCB's drop from nominally <2000 ppt down to <1000 ppt in the *Cuf*. The concentrated reject is about 2%, and is sent back to the POTW. There is no backwash or backpulse in this process. The dissolved PCB's in the permeate are then **destroyed** by Photo-Cat (chemical free AOP+) below the detection level (65 ppt). The entire process is chemical free.



Results

The Purifics solution was half the power and half the footprint of the alternative technologies. Additionally, Purifics *ics* Solution did not have the service issues of the polymeric UF (which did not meet the discharge spec), or the disposal issues with spent GAC supplied by the competing technologies. Unlike the polymeric system, the *Green Cuf* unit operated during upset conditions when clarifiers were brought on-line.

The quality of the treated water is exceptional for water reuse applications.

Pilot System



This *Green* technology requires **NO** process chemicals to concentrate or destroy the PCB. Photo-Cat **Does Not** require hazardous chemical oxidants like ozone or hydrogen peroxide and their associated handling, safety and residual issues. Purifics systems, with site specific and mobile permits, have been applied to PCB contamination in groundwater and industrial applications for 20 years. This proven process has broader applications in landfill leachate, dredging operations, oil field wastewater, and municipal wastewater for re-use.



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