CASE STUDY

CETCO'S FLUORO-SORB® ADSORBENT SUCCESSFULLY TREATS PFAS CONTAMINATION

An Australian industrial facility had stormwater sumps that contained wastewater contaminated with hydrocarbons and PFAS requiring treatment to regulatory limits prior to discharge. As the sumps approach designated maximum levels, the contents are pumped to storage tanks onsite before being processed through a multi-stage treatment system that includes PFAS removal. After treatment, the water is transferred to clean storage tanks for sample analysis to verify that levels of PFAS and hydrocarbons are below required limits before discharge.

Due to the presence of heat transfer fluid in the wastewater storage tanks that was adversely affecting the existing PFAS treatment system, CETCO was contracted to install a temporary treatment system for removal of hydrocarbons, heat transfer fluid, and PFAS. CETCO's process successfully treated the wastewater in all tanks with tests verifying hydrocarbons and heat transfer fluids were removed during the process. One tank was then selected to treat the contents for PFAS removal using CETCO's FLUORO-SORB® 200 Adsorbent.

PROJECT DETAILS

LOCATION

Australia

CETCO PRODUCTS

FLUORO-SORB® 200 Adsorbent

CLIENT:

Australian Industrial Facility

ADSORPTION OF PFAS ON FLUORO-SORB® ADSORBENT

PFAS REMOVAL SYSTEM SET-UP:

CETCO deployed a FLUORO-SORB® 200 canister system, eliminating the use of bulk treatment vessels and associated operational requirements. The treatment system was composed of a series of vessel filter units with pretreatment consisting of 5 µm and 2 µm solids filters, followed by two vessels in series with FLUORO-SORB® Adsorbent canisters. Each of these vessels contained sixteen 160 mm diameter x 1 m canisters filled with the media. CETCO's canister system design is radial flow, with water passing from the outside of the canister to the inner core, which then flows to discharge from the bottom of the vessels. Figure 1 shows an individual FLUORO-SORB® Adsorbent canister, Figure 2 is a representation of vessel internals, and Figure 3 shows the temporary treatment package on location.

FIGURE 1

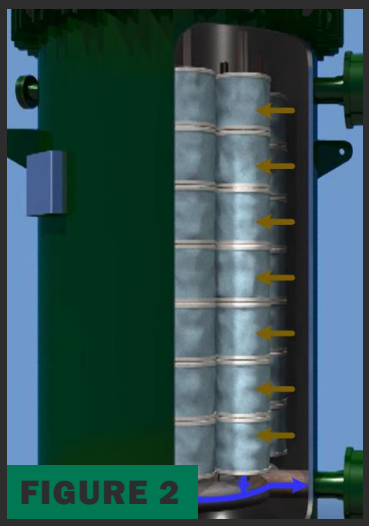

FIGURE 2

FIGURE 3

Contaminated water was pumped from the selected storage tank through the 5 µm and 2 µm filters, followed by flow through the two vessels in series containing the FLUORO-SORB® Adsorbent canisters, with discharge to another storage tank for testing. PFAS samples were collected from the initial water storage tank after the hydrocarbon and heat transfer fluid removal to determine the influent PFAS levels and at the outlet of CETCO's treatment system to determine process effectiveness for PFAS removal. The water from the storage tank was treated at a rate of 33.5 GPM (127 LPM) with an Empty Bed Contact Time (EBCT) of 3.5 minutes.

RESULTS:

Samples collected from CETCO's treatment system effluent demonstrated 99+% reduction for all PFAS tested, with all tested components being non-detect (ND). Data is contained in Table 1 and shown in Figure 4.

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ADSORPTION OF PFAS ON FLUORO-SORB® ADSORBENT

TABLE 1: INFLUENT PFAS AND POST-TREATMENT PFAS CONCENTRATIONS

PFAS	UNTREATED (ng/L)	TREATED WITH FLUORO-SORB® ADSORBENT (ng/L)*
PFBS	< 0.5	< 0.5
PFPeS	< 0.5	< 0.5
PFHxS	< 0.5	< 0.5
PFHpS	< 0.5	< 0.5
PFOS	< 0.2	< 0.2
PFBA	181.0	< 2.0
PFPeA	525.0	< 0.5
PFHxA	270.0	< 0.5
PFHpA	77.1	< 0.5
PFOA	13.8	< 0.5
PFNA	< 0.5	< 0.5
PFDA	< 0.5	< 0.5
6:2 FTS	130.0	< 1.0
8:2 FTS	< 1.0	< 1.0

** Tested components all below laboratory detection limits*

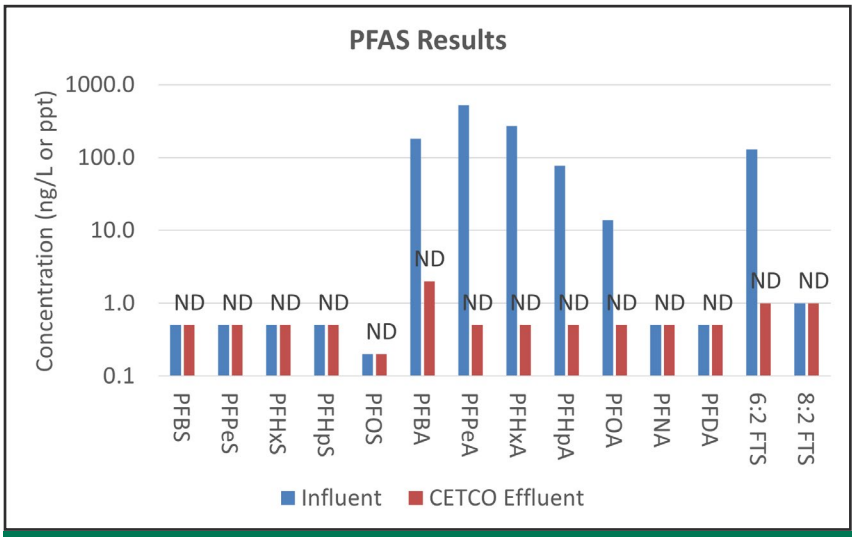

FIGURE 4

CONCLUSION:

Typical treatment systems rely on bulk media adsorbents in this type of application. CETCO was able to deploy its unique radial flow canister system containing FLUORO-SORB® Adsorbent, which provides for a relatively small equipment footprint and low EBCT. CETCO treated the PFAS contaminated wastewater, with analyses indicating 99+% removal efficiency, demonstrating that FLUORO-SORB® Adsorbent in a canister system is an effective PFAS treatment method.

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