PFAS REMOVAL FROM LANDFILL LEACHATE

A confidential landfill operator in North America encountered a problem when their leachate, sent to a local Publicly Owned Treatment Works (POTW) for processing, was no longer acceptable without pre-treatment for PFAS to meet state-specific Maximum Contaminant Levels (MCLs). Despite having a treatment system that includes a Membrane Bioreactor (MBR) and ultrafiltration, PFAS persisted in the waste stream under their initial treatment regimen. Testing Granular Activated Carbon (GAC) polishing proved ineffective due to low PFAS adsorption capacity, high Chemical Oxygen Demand (COD) levels, and competitive adsorption, necessitating frequent and costly media replacements. Exploration of novel surface modified clay adsorbent, FLUORO-SORB® 200 Adsorbent, to reduce PFAS concentrations in landfill leachate showed FLUORO-SORB 200 Adsorbent a strong option due to its cost-effectiveness and PFAS removal efficiency.

PROJECT DETAILS

Landfill Leachate

LOCATION

North America

PRODUCTS USED

FLUORO-SORB® 200 Adsorbent

CHALLENGE:

The landfill operator faced the challenge of identifying a cost-effective method to remove PFAS exceeding 10,000 ng/L in total from their leachate in order to comply with state-specific MCLs. Conventional treatment methods, like GAC, proved ineffective, and frequent media replacements were prohibitively expensive.

SOLUTION:

Operations investigated available adsorptive media and initiated a comprehensive pilot study employing FLUORO-SORB 200 Adsorbent. This proprietary, NSF/ANSI/CAN Standard 61 Certified adsorption medium is proven to efficiently treat various PFAS compounds. Featuring a variety of adsorption mechanisms, FLUORO-SORB 200 Adsorbent effectively resists competitive adsorption from co-contaminants, thus enhancing its efficiency and effectiveness.

RESULT:

The pilot study employing FLUORO-SORB 200 Adsorbent proved successful by substantially decreasing the PFAS concentrations in the landfill leachate. Conducted over 1.5 years, the study confirmed the media lifespan rendered this PFAS removal technique economically feasible. Consequently, a permanent, full-scale system capable of processing 300,000 gallons per day was implemented for the landfill operator.

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