ENVIROGEN TECHNOLOGIES

A Lifecycle Performance Company

Case Study

MANUFACTURING FACILITY WASTEWATER TREATMENT PILOT STUDY

Challenge

Envirogen Technologies was contacted by an international food and supplement ingredient manufacturer in Southern California to help solve a wastewater discharge problem they were facing. The facility was operating in violation of their local discharge limits and needed a wastewater treatment system to bring them in compliance with their permit. The company's wastewater contained elevated levels of Copper and Zinc and could possibly have higher concentrations of other metals depending on what products they were producing. Before contacting Envirogen, the customer had also been in contact with several other water treatment firms; however, none of the other firms were able to design a solution to this client's discharge problems in an efficient and economical manner.

Solution

After the initial discussions regarding the facility's production activities, Envirogen reviewed existing laboratory analytical data on the wastewater, and performed a thorough evaluation of the plant's operations, water usage, and current wastewater disposal processes. As part of the initial assessment, samples of the waste stream were collected for further analysis and bench testing at Envirogen's certified laboratory in Memphis, TN.

Bench testing entailed evaluating several processes including coarse filtration, ion exchange treatment, and membrane filtration using several different pore size membranes. Following the initial evaluation and bench testing, Envirogen's engineers and process experts designed a pilot treatment system that proved extremely effective in the laboratory setting. Envirogen presented the results of the bench testing and preliminary design to the client for consideration of implementing a full-scale pilot system. The proposed pilot system was fabricated at our Memphis Service Center, installed at the customer's site by Envirogen's local team, and operated on site by Envirogen for several weeks to evaluate efficiency and functionality of the treatment process with a portion of the facility's wastewater. The designed system consisted of staged prefiltration tanks (to reduce the heavy solids loading) and a specifically designed reverse osmosis (RO) system to remove the residual contaminants.

Results

After 4 weeks of operation, Envirogen was clearly able to demonstrate a reduction in the elevated levels of contaminants, and the wastewater discharging to the local municipal sewer system was within the allowable limits of the discharge permit. Envirogen's treatment system proved to be cost efficient and effective in treating this client's wastewater. The staged filtration steps combined with RO technology allow for operational flexibility, depending on influent solids concentrations, and provide a robust filtration barrier for removing a variety of metals from the wastewater.

Currently Envirogen is working with the customer on implementation of a full-scale system to be completed by the end of 2021.

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