

H₂S Removal

A Case Study of Avoiding WWTP Cut-off Through Solving H₂S Odor Problems

Hydrogen sulfide (H₂S) is a colorless gas with a strong rotten egg odor formed when sulfate-reducing bacteria break down organic material in a low-oxygen environment. This process can occur in landfills containing gypsum board and during septic conditions at wastewater treatment plants (WWTPs). If not managed properly, the gas can be very corrosive, flammable, and toxic.

In April 2015, WCA Waste Corporation (WCA) approached Clear Creek Environmental Solutions's landfill division dba Leachate Management Specialists, LLC (LMS) with a high priority dilemma. WCA's Yarnell Landfill, a construction and demolition (C&D) facility near Knoxville, Tennessee, had been disposing of its leachate through a direct discharge permit with a local WWTP; however, recent H₂S odors caused the WWTP to restrict the landfill's volume and threaten complete cut-off if the problem wasn't resolved.

LMS quickly coordinated a bench scale test to determine potential H₂S treatment solutions. Aeration and hydrogen peroxide were identified as successful options, and a pilot test was completed on-site to verify the findings. It was concluded that a combination of aeration and chemical oxidation using hydrogen peroxide was the best solution for the facility.



During final design of the treatment system, LMS and WCA personnel worked closely with the WWTP to update them on the plans and to agree on permit conditions. By June 2016, the treatment system was installed and testing was underway. LMS and WCA invited the WWTP managers to the landfill to present the new system and observe full-scale operation. After a successful trial period, the WWTP approved the new permit and direct discharge was reestablished.

Clear Creek Environmental Solutions is a consulting and engineering firm dedicated to finding the most effective and innovative solutions for industrial wastewater management and site remediation. We specialize in Natural Systems including Phyto-Utilization™, Phyto-Cell™, WAIV™, and constructed wetlands. Visit our website and contact us today to see how we can improve your facility operations.