



Treatment of Landfill Leachate

Objective

Landfill leachate laden with significant levels of hydrogen sulfide and other odorous compounds is consistently pumped from the Prince William County, Virginia landfill to the local sewage authority. The odor from the untreated leachate was responsible for significant complaints from citizens and personnel at the receiving wastewater treatment facility. The landfill was notified to cease and desist discharge until a suitable treatment for the leachate discharge could be found.

Treatment Design

It was determined that the Ultra-S3 System would eliminate the chemicals causing odor within the leachate.

Leachate was pumped via sump pumps located within landfill cells into a 5,000 gallon retention tank. Ultra-S3 treatment chemicals were metered into the leachate within the influent line prior to entering the retention tank. Flow from the landfill was approximately 100 GPM.

Results

Once Ultra-S3 treatment was initiated odors were immediately eliminated from the influent stream. Hydrogen sulfide levels were reduced from 50 mg/L within the influent (which is enough to cause over 600 ppm in the air) to non detect levels within a minimum amount of retention time. This study indicates that hydrogen sulfide can be treated to acceptable levels immediately upon contact. Complaints of odors were eliminated by the citizenry and personnel at the wastewater plant while the system was operational.

Of interest, after running the system for ten days the system was shut down for a brief period of time and complaints immediately began to come in to the landfill. Once the Ultra-S3 process was restarted odors dissipated and complaints ceased.

Conclusion

Ultra-S3 was successful in reducing hydrogen sulfide concentration to non-detectable levels from a concentration greater than 50 mg/L. It also removed the significant odor problem associated with the high H₂S levels. Ultra-S3 works very well on landfill leachate odors problems. It is also noteworthy that Ultra-S3 treatment will eliminate additional recalcitrant hazardous chemicals from leachate such as benzene, trichloroethylene (TCE), perchloroethylene (PCE), pesticides and many others.



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