

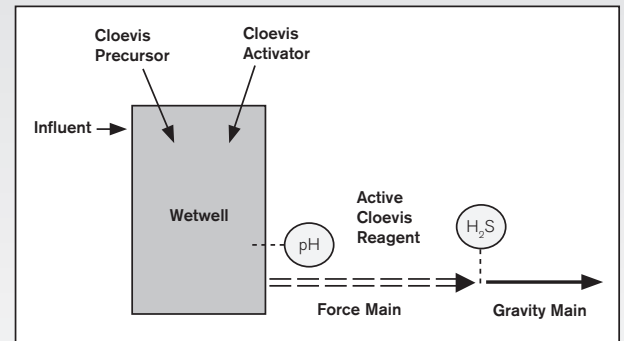


CLOEVIS BIOFILM REMOVAL SERVICE

Clovis Biofilm Removal Service (Clovis BRS) is an innovative technology offering that removes the biofilms that adhere to the inner surfaces of wastewater forcemain walls, including the underlying Sulfate Reducing Bacteria (SRB) that produce hydrogen sulfide. As a result, gaseous hydrogen sulfide (H_2S) production is eliminated. The treatment requires an initial conditioning period when the biofilm that harbors the SRB's is removed, followed by maintenance treatments that are repeated as monitored lines show signs of SRB reformation.

The Clovis technology, delivered as a turn-key, fixed-cost, full-service program, provides the following benefits relative to conventional sulfide control treatments:

- Avoidance or minimization of onsite chemical storage
- Independence from sulfide loading, retention time or oxygen uptake
- No labor/maintenance requirement
- Removal of sulfide odors for up to three weeks after treatment cycle
- Elimination of methane production within the treated segment
- No downstream adverse impacts due to residual treatment chemicals
- Effective cost similar to caustic shocking and less than nitrate or iron salts

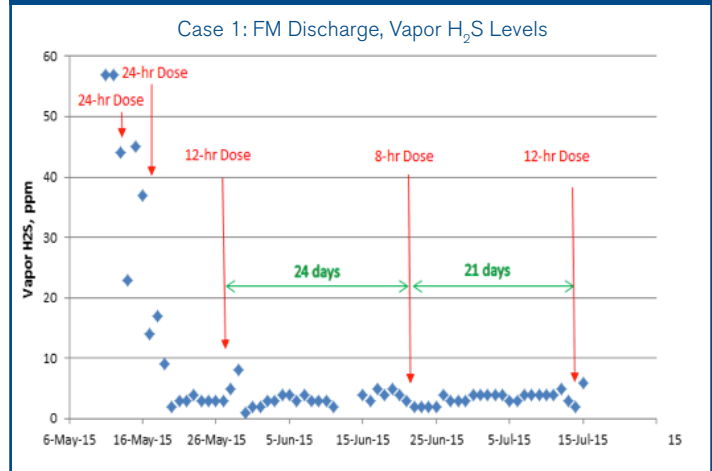


Background

The Clovis technology was developed by researchers at the University of Queensland in Australia to control sulfide generation within municipal wastewater collection systems. The technology has been studied in both controlled laboratory tests and real-world field tests and has been reported in peer-reviewed literature.

USP Technologies, working closely with the University of Queensland, has received an exclusive license to use the Clovis technology. This has led to further refinement of the technology through field tests in the U.S. which have consistently shown it to provide high sulfide removal across a wide range of forcemain situations, including: short to long retention times; small to large wastewater flows; and forcemains heretofore treated with nitrate, iron salts or no treatment at all.

Profile showing initial cleaning and ongoing maintenance treatments.



Biofilm Removal Service Offering

After an initial process assessment has been conducted and it is verified that Cloevis BRS is a best-fit technology solution, USP Technologies will develop a tailored treatment approach to meet the specified control objectives. Cloevis BRS is provided as a monthly service that includes all associated delivery equipment, chemicals, labor and monitoring reports.

Three different delivery options are available depending on site requirements:

1. Fully mobile systems where no on-site facilities are required except for an injection point dose line. This is beneficial for sensitive areas as there are no chemicals or equipment stored on-site.
2. On-site storage and dosing facilities where chemical precursors are delivered and fully used during each treatment. This is beneficial as treatments are supervised and monitored. In addition, no chemicals are stored or left on-site.
3. Conventional on-site facilities that include non-hazardous chemical storage. This option is ideal for larger lines or secure facilities where non-hazardous chemical storage on-site is not an issue. This limits deliveries and service can be managed remotely.

To verify performance, H₂S levels are monitored continuously with the use of OdaLog H₂S dataloggers, and treatments are reapplied when sulfides begin to reappear in the transmission line. Service and compliance reports summarizing program activities are provided at regular intervals to keep customers informed of ongoing program performance.

With Cloevis Biofilm Removal Service, USP Technologies is extending low-profile community sulfide control to protect upstream infrastructure while removing loading into larger interceptor systems. Let us show you how this innovative, new no-capital/no-labor tool can help solve hydrogen sulfide issues within your collection system forcemains and improve your bottom line.

About USP Technologies

USP Technologies is the leading supplier of peroxygen-based technologies and services for environmental applications. We have been serving the water, wastewater and remediation markets for over 20 years and have offices and field service locations throughout North America. Our consultative approach to problem solving includes application assessment, technology selection and development of a tailored treatment approach. Our full service programs successfully integrate storage and dosing equipment systems, chemical supply, inventory and logistics management, and ongoing field and technical support. This approach provides cost-effective, "hands-off" solutions to our customers. USP Technologies also can provide access to experienced application partners for a turn-key program encompassing engineering, site characterization and technology selection, program implementation, execution and report generation.

Getting Started

We look forward to supporting your treatment needs, whatever the scale of your requirements. To obtain a streamlined treatment solution tailored to your specific project, give us a call at (877) 346-4262.

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