



# HYDROGEN SULFIDE REDUCTION - BARRINGTON, RI

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Cellinite BioTabs™ has been proven to be the easiest and most cost-effective product for corrosion and odor control. Tony Silva, Department of Public Works, Barrington Rhode Island, approached Cellinite Technologies to take part in a four product investigation to find the most effective treatment for reducing Hydrogen Sulfide from their forced main entering the East Providence Wastewater Treatment Facility. Barrington has three lift stations, which pumps wastewater to the facility through a 24-inch force main 3.5 miles from the station. The facility experienced high levels of Hydrogen Sulfide resulting in the formation of corrosive acids. The acids corroded the last 200 + feet of pipe leading to the plant, resulting in catastrophic failure. Measured atmospheric sample levels were reported between 200 to 400+ parts per million.

Barrington understood how important it was to reduce the Hydrogen Sulfide levels since the forced main was designed to endure many years of service. Since the problem occurred in-route to the wastewater treatment facility, Barrington realized they needed to treat the wastewater at the lift stations so the hazardous hydrogen sulfide levels would not occur while in the pipe. The pump stations are located in residential areas approximately 100 feet from housing, so Barrington had to take into consideration a variety of factors: vandalism, security, aesthetics, noise, power and water consumption, equipment, chemical costs, construction and product delivery.

Under these considerations, Barrington investigated three other systems to reduce hydrogen sulfide: Bioxide, Bacta-Pur, and Potassium Permanganate in liquid form and "Control Release" solid-form sticks (CR). These factors eliminated all but Potassium Permanganate CR and Cellinite BioTabs™; both are solid products that do not require power, carry water, construction, dosing equipment, etc.

Barrington's testing of the two products resulted

in positive and similar results. The lift stations were treated with 9 lbs. of Cellinite BioTabs™ per day at three locations within the system. The wastewater was tested for aqueous hydrogen sulfide levels and for atmospheric sulfuric acid at the end of the forced main. Overall, the testing showed a 93.8% reduction of dissolved hydrogen sulfide and a 95.6% reduction of atmospheric sulfuric acid at the end of the forced main. These results were logged after four days of treatment. This was followed by two days of no treatment (weekend) and three days of a reduced dosage of Cellinite BioTabs™ (3 lbs. per day). During the reduced treatment, the hydrogen sulfide and sulfuric acid levels steadily increased to the previously untreated levels. On the fourth day, the recommended dosage was reinstated and the hydrogen sulfide levels dropped 82.4% and the sulfuric acid levels dropped 33.3% after one day of treatment. These results verified the reduction was in fact due to the addition of the Cellinite BioTabs™. Seeing these results allowed Barrington to easily adjust daily dosing of the Cellinite BioTabs™ so they can achieve the



Due to residence in close proximity, a quiet and aesthetic treatment was sought out



**Continued use of BioTabs reduced grease cap to little “grease balls”**

most efficient treatment of the wastewater while controlling their costs.

In addition to the reduction of hydrogen sulfide and sulfuric acid levels Barrington experienced a significant reduction in the solid grease and grease cap at their lift station. Before using the Cellinite BioTabs™ the grease cap was a few inches thick. After two weeks of testing, the operators at the pump station noticed the grease layer looking softer, like marshmallows. After continued use the grease overall was reduced by 95% to 99% and what was left of the grease cap was “little grease balls”.

Of the products considered and tested, Cellinite BioTabs™ were chosen for the estimated annual cost and for ease of handling. To apply Potassium Permanganate (CR) the product had to be lowered into the wet well using a netted bag; whereas the Cellinite BioTabs™ were easily dropped into the wastewater. The Cellinite BioTabs™ are solid tablets requiring only gloves for handling; any broken pieces can be easily swept into the wet well. Other products,

although solid, require proper dust masks, eye protection and gloves; when broken some products can leave a hazardous dust; and when wet or moistened will stain anything the product comes in contact with. No additional equipment is needed to apply the Cellinite BioTabs™. Barrington estimated that their “annual chemical costs” were to be the Potassium Permanganate (CR) at \$31,000 and the Cellinite BioTabs™ at \$20,000.

“We are very pleased with the [Cellinite] BioTabs™,” said Silva. “I must say, being in the wastewater business for 28 years I have seen and tried many products that promised to be the solution for my problems. When I heard how simple the [Cellinite] BioTabs™ were I thought this was another product with false hopes. I cannot tell you how pleased I am that the [Cellinite] BioTabs™ are all that are said to be.”

Barrington continues to use 3.5 lbs of Cellinite BioTabs™ per day at only one lift station located the farthest down the forced main and they are keeping their hydrogen sulfide levels between 0 and 20 parts per million. In addition to controlling the hydrogen sulfide levels they continue to eliminate grease concentration and a significant odor reduction is also evident.

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