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CASE STUDY:

City of Pooler wastewater treatment plant

Pooler is a beautiful community just west of Savannah. Famous for the Mighty Eighth Air Force Museum, and known for its Southern hospitality, this growing community of more than 21,000 residents takes pride in Pooler's old mansions, tree-shaded cobblestone streets and restored historic areas like the City Market.

Pooler city manager Robert Byrd said the City of Pooler's population has quadrupled in the last two decades. "For 30 years, our wastewater treatment plant was on the outskirts of our city," said Byrd. "The city has expanded toward the treatment plant."

The problem: Odor

With peoples' proximity to the wastewater treatment plant comes the potential for exposure to odors. Controlling wastewater odors is one of the most challenging aspects of its treatment. In general, bad smells from treatment plants cause complaints from nearby communities and parks. Odors also wear on plant workers, decreasing their job satisfaction and lowering retention rates. Left uncontrolled, odor issues can bring negative attention and damage the reputation of wastewater plants.

Common lingering odors like rotten eggs, ammonia, garlic or earthly smells are caused by hydrogen sulfide (H_2S), amines, sulfur dioxide, skatoles, indoles and mercaptans. Because of the diverse range of smells and odor sources, a variety of control methods are often needed for complete odor removal. Although not all wastewater treatment odors are the same, the odorous gases emitted from the wastewater treatment plant at the City of Pooler are typi-

cal of those across the country. “H2S and mercaptans are the two main culprits,” said Brian McLaughlin, director of sales at Ecosorb, a company that specializes in developing natural solutions to control industrial odors. “There is ammonia in some places due to sludge drying. Generally, these are the same odors found at 90% of the municipal wastewater plants in the U.S.”

As Byrd said, the City of Pooler expanded toward the wastewater treatment plant. “At that point,” Byrd said, “the odor became very noticeable.”

Time for action: Enter Ecosorb

A nearby company that specializes in environmental and industrial cleaning services made Byrd aware of Ecosorb and brokered an introduction. Representatives

from Ecosorb then met with Byrd and the City of Pooler wastewater treatment plant team.

Ecosorb made a presentation to the City of Pooler. According to McLaughlin, the City of Pooler liked what they saw in Ecosorb's technology, particularly the value. "We have relatively low capital costs compared to some of the other types of technology," he said.

According to Byrd, the City of Pooler was eager for the Ecosorb solution to be implemented. But there was much to do, most of it being up to Ecosorb.

"The first thing for us was to evaluate what's going on," said Dr. Laura Haupert, Chief Scientific Officer at Ecosorb. "We have to know the sources of the odor because, for our chemistry to work, we have to identify the source to come in contact with the odor molecules. We went onsite and pulled gas samples to analyze. We pulled from five different sources: the collection pond, digestor, sludge roll-off at the belt press building, the grit chamber platform and the headworks. With these five locations, we found four compounds were the bulk of the odor-causing offenders."

A solution for Pooler

Although four compounds were causing odors from five locations at the City of Pooler wastewater treatment plant, Ecosorb sought to simplify the solution. "At some sites, we use more than one formulation," said Haupert. "At one site, we used five different formulations because of the odors and what was going on there. At Pooler, the formulation we used could eliminate all those odors — Ecosorb 806.

Pooler's odor-causing gases are what you would expect from wastewater treatment plants."

Now that Ecosorb had determined the most effective chemistry formulation for the City of Pooler wastewater treatment plant, it was time to decide on the appropriate equipment to use to disperse it properly. Ecosorb used a vapor phase delivery system to disperse the Ecosorb 806 product effectively. The vapor phase delivery system at Pooler consists of a 130 CFM unit, two 450 CFM units and a 2,400 CFM unit. "The equipment produces vapor, and we put ducting around the source of the odor," Haupert said.

Vaporization versus atomization

Unlike atomization, no added water is used in vaporization, only the undiluted Ecosorb chemistry — in this case, Ecosorb 806. Through Ecosorb's handcrafted vapor phase technology, the pure Ecosorb product is pumped through a perforated pipe distribution system, creating a dry vapor to eliminate airborne odors. Because no water is used, vaporization allows for cost savings, water conservation and a more eco-friendly delivery method.

"Nozzles create issues," McLaughlin said. "There are maintenance and consumption issues with nozzles. Whereas, with vapor phase delivery, you don't have that because you just put

in ducting and vaporization ports, which don't plug and don't have to be maintained. In addition, you don't get breaks in the vapor line. You don't have high pressure pumps to fail."

McLaughlin said the vapor phase delivery technology works by using speed. Regardless of the system size, the equipment runs at the same speed. "It's the velocity," he said. "The area is full of 'odor molecules.' When a micron size of Ecosorb 806 comes through, if it's going slow, it hits a few of those odor molecules and that's about it. If the Ecosorb 806 is going fast, it bursts through and hits many of the odor molecules. It creates more collisions, and every collision absorbs odor. The more molecules of odor-causing gas the Ecosorb hits, the more it grabs. Enhancing the speed ensures contact. We create more collisions, which enhances the contact, which enhances the system's efficiency. Size is another thing that enhances efficiency — the smaller we can get the Ecosorb, the more efficient it is because it works by means of surface area. The activity is coming from the surface area of the droplet. The smaller the droplet size, the more surface area per volume."

Benefits of vaporization

- Smaller droplets, more absorption, better odor control.
- No added water required.
- Reduced costs.
- Flexible and efficient.
- No mixing or dilution.
- No nozzle maintenance in the distribution system.
- Product will not freeze in the distribution system.

Results

"We tried other options, and when [Ecosorb] was brought to my attention, we set up a meeting. When I saw it, how it worked, we went full throttle to get it done," said Byrd. And regarding the installation and implementation, Byrd said: "It was seamless. It went perfectly out of the chute. Once Ecosorb got the air samples back, they were able

to do their part and say, 'This is what we had to do to knock this smell down.' And it went seamlessly. We didn't have any issues."

The Ecosorb solution doesn't just mask odors, it goes to the source. It focuses on causes rather than symptoms.

The City of Pooler is in the process of expanding its wastewater treatment plant. "We designed it so that new Ecosorb technology will be implemented at construction," Byrd said. "We'll go from 3.2 million gallons a day to 6.4 million gallons a day. The Ecosorb system will be engineered into our plants."

Byrd said about the Ecosorb system: "If you don't smell anything, you know it's working. Before Ecosorb, I had people complaining about how it smells. But we haven't had anybody complain. The smell is gone. If no one is complaining, it's doing its job. I've been very impressed with it."

Products used:

- Ecosorb 806
- 130 CFM vapor phase unit
- 450 CFM vapor phase unit
- 450 CFM vapor phase unit
- 2,400 CFM vapor phase unit

Learn more about custom odor solutions for your industry.

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