

REPORT

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Huber Heights, Ohio:

Ohio Water Plant Finds Effective Alternative To Chlorine Gas

Two successful pilot studies prompt Ohio EPA to approve Constant Chlor® calcium hypochlorite system for Huber Heights.

For many years, Huber Heights, Ohio, had searched for an effective and affordable way to eliminate gaseous chlorine (Cl_2) use at its 4.46 MGD Needmore Road Water Treatment Plant. Earlier this year the plant's gas chlorination equipment and pressurized gas cylinders were finally removed from the site. In their place, but encompassing a much smaller footprint, now sits the innovative dry calcium hypochlorite makeup and delivery system that made this change possible.

Background

Drinking water to Huber Heights and Miami County customers is supplied from two water treatment plants, the Needmore Road Water Treatment Plant and the 7 MGD Rip Rap Road Water Treatment Plant.

"When the new Rip Rap Road plant came on line in 2006, we set up our Needmore plant to serve as our back-up facility," says former Huber Heights Engineer and now Assistant City Manager, Scott Falkowski. "The plant typically runs two times a week for a couple of hours, to keep its clear wells and equipment turned over. Last year, one of our wells went down and we had to run the old plant full time for a while, so it's still very important for us to maintain its



Plant Operator Jeffrey Van Meter at the Huber Heights, Ohio, water treatment plant adds calcium hypochlorite briquettes to the plant's new Constant Chlor™ feed system.

full operability."

As the old plant remained active, it still retained a lot of the old ways of doing things, including chlorination. The continued operation of the

gas chlorination system at the Huber Heights plant proved troubling, according to Pam Whited, Project Manager for United Water Environmental Services, the private firm

contracted to operate and manage the city-owned Division of Water and Wastewater under a long-term public-private partnership with Huber Heights.

"We and the city wanted to get away from using chlorine gas at the plant, primarily for health and public safety reasons," she says. "But it was difficult to find a viable, cost effective alternative. We looked closely at sodium hypochlorite, but ultimately realized it wasn't going to work."

One challenge to using NaOCl, according to Whited, would be its relatively short storage life. "Because we operate the plant only two hours a day, two days a week, any sodium hypochlorite stored there would lose much of its strength before we could use it."

Sodium hypochlorite can begin to show degradation

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Chlorination: Eliminating gas chlorine use for good. **2**

Constant Chlor® Robust, dependable chlorination with MC-Series feeders. **3**

Recap: Let's recap the advantages of switching to Constant Chlor®. **4**

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in less than 30 days of delivery and loses strength faster at higher temperatures.

“Plus, the plant did not have the necessary containment systems to legally store bulk sodium hypochlorite on site, and the cost would be phenomenal to build the required containment there,” Whited says.

Plant operators were also anxious to eliminate the use of chlorine gas at the site.

“We always had to have two people to change out the tanks – one to change the cylinders and one to stand outside and be ready in case something happened,” Plant Operator Jeffrey Van Meter says. “Also, we had to rebuild the gas equipment each year ourselves. We couldn’t contract out the work because no one else would take the liability.”

Pilot Study

In a bit of fortuitous timing, Environmental Services learned that Arch Chemicals, Inc., a Lonza company, was planning to conduct a pilot study of its Constant Chlor[®] dry calcium hypochlorite briquettes and engineered feed system in Ohio. The system is approved in most states, including Wisconsin and Illinois, but had not yet been approved in Ohio.

“We had the opportunity to use the calcium hypochlorite system during the pilot study to see if it would work for us, and indeed it does,” Whited says. “The first pilot started in early 2012, and the state EPA ultimately required that Arch conduct two studies.”

“It was a worthwhile risk to participate in the study because the risk of staying with gas was far greater,” says Assistant City Manager Falkowski.



The Constant Chlor[™] MC4-50 arrives pre-plumbed and skid mounted for ease of installation.



After Huber Heights' Needmore Road Water Treatment Plant was placed on back-up duty, the continued operation of the plant's gas chlorination system proved troubling. But finding an alternative chlorination also proved challenging.

“Our personnel having to work with it every day, and residents living nearby – it just was not something we wanted to keep dealing with.”

Ohio EPA Approval

Huber Heights received notification from the Ohio EPA in February that the use of the Constant Chlor[™] system was approved for its site.

“The city was ecstatic, and we were too, to be able to be a part of this program,” Whited says. “It ultimately solved a long-standing concern for everybody.”

Plant operator Van Meter says the Constant Chlor[™] system has performed very well and the plant has experienced no operating

problems with the feed system. Only minimal treatment feed pump adjustment has been required “The new calcium hypochlorite system works great, says Van Meter. “It has performed exactly as the Arch people said it would.”

In addition to the new cal hypo feed system, a small, wall-mounted reverse osmosis unit was installed to remove hardness from the water serving the new feed system. “The water we feed to it is finished water, but it is very hard, like 348 mg/l hardness,” says Van Meter. “The RO unit helps prevent scale build-up.”

For the pilot studies, Van Meter was responsible for tracking chlorine residuals leaving the plant and solution strengths produced by the feed system. “I find I actually hold better chlorine residuals (1.3 ppm free chlorine leaving the plant) with this new cal hypo system than I did with gas, which really surprised me at first.”

The Huber Heights plant has installed the Constant Chlor[™] MC-50 as its primary calcium hypochlorite feed system and a MC4-150 Lite as the plant's back-up system. The MC4-50 unit is designed to supply up to 50 pounds of AvCl/day and uses a patented spray technology to produce fresh liquid chlorine solution as needed (see system profile, page 3). Van Meter says a 50-pound pail of briquettes lasts the plant about one month.

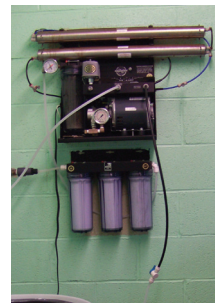
Eliminating Gas Chlorine Use

“The chemical (calcium hypochlorite) is more expensive than chlorine gas, but eliminating the gas will certainly make things safer for operators and the community,” Whited says. “Plus, although the Ohio EPA is not requiring it, the agency is actively looking for ways to get all areas to eliminate chlorine gas. Participating in the successful pilot studies gave us the opportunity to make that happen and the agency is aware that the city made this effort to get

this new system on site.”

Tough regulatory requirements and greater need for process optimization and safety are now pressuring water plant management in the U.S. to reconsider their facilities' chlorination strategies.

Many utilities are searching for an alternative to gas or liquid bleach to further enhance the efficiency, reliability, operational safety and performance of their plants. Because of this, the Constant Chlor[™] calcium hypochlorite system is becoming the alternative chlorination option of choice for a growing number of local water utilities. ■



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