

## Advantages To Water Technologies

Hospital adopts a big change that capitalizes on environmental benefits and cost savings

By Nicole Bowman

**R**ichard Helvey, director of environmental services and patient transportation at Cape Coral Hospital, has always been an environmentally conscious purchaser and a manager who cares about protecting the health of his staff. So when he learned about aqueous ozone, a technology that would limit exposure to harmful chemicals and keep pollutants out of the precious Cape Coral waterways, he embarked on a year-long process of research and trial that ultimately led to its adoption across the entire health system.

Cape Coral Hospital is one of five Florida-based hospitals, along with an additional rehab center, that comprise Lee Memorial Health System. Cape Coral Hospital is an acute care facility with close to 300 beds and more than 1,200 employees, 81 of whom work in environmental services.

As a city, Cape Coral, which is known for its beautiful Gulf coast beaches, has seen unique growth as an influx of winter visitors come and go. In the winter months, the hospital, which sees a total of 55,000 patients annually, is extremely busy. But in the

off season, parts of the hospital may shut down from lack of traffic.

For decades, the environmental services department at Cape Coral Hospital tackled infections using a traditional arsenal of cleaning chemicals, which included a general-purpose cleaner, a hospital-grade disinfectant, glass cleaners, floor cleaners, carpet cleaners and specialty cleaners.

“It has always bothered me to watch people in my line of work who’ve spent their entire careers dealing with so many different chemicals,” says Helvey. “The long-range exposure



to those chemicals can have a serious health impact, including occupational asthma. I've always tried to seek out the most healthy and environmentally preferable options for my teams."

Healthcare workers had the highest prevalence of asthma among all major industry groups, including manufacturing, agriculture and mining, in an analysis of recent data from the U.S. Centers for Disease and Prevention's annual National Health Interview Survey (NHIS). According to the survey, workers in the healthcare industry were most likely to report current asthma, asthma attacks, and asthma-related visits to an emergency department.

For staff members that work in environmental services, facing the occupational hazards of the healthcare setting like latex gloves and formaldehyde, while also being in constant contact with cleaning chemicals, provides a double-risk factor for occupational asthma.

### Aqueous Ozone Facts

The drive to protect his team from occupational asthma by choosing healthier cleaning products is what motivated Helvey to research alternatives when he joined the Cape Coral team four years ago. That's also what led him to learn about aqueous ozone.

Aqueous ozone is the combination of plain tap water and ozone gas. Oxygen from the air is converted into ozone and mixed with regular, cold tap water to form aqueous ozone. When sprayed onto a surface, the ozone is attracted to soils, germs and other contaminants. Once attached to the soils, the ozone eliminates them and then converts back to oxygen and water.

More specifically, an electric corona discharge generator is used to split O<sub>2</sub> into free oxygen atoms (O<sub>1</sub>). The free oxygen atoms then link up with oxygen molecules to form ozone (O<sub>3</sub>) — similar to what happens in the earth's atmosphere during a lightning storm. Infuse that ozone into

water and it creates aqueous ozone, a powerful cleaning and deodorizing solution. In fact, aqueous ozone has been used for over 100 years to purify drinking water.

Different from traditional synthetic chemicals, aqueous ozone is residue free and doesn't contain harmful VOCs or fragrances that can negatively impact indoor air quality or the environment.

### First, A Pilot Program

Helvey worked with the hospital's infection prevention department to research aqueous ozone thoroughly before requesting a site visit and presentation from the manufacturer, CleanCore.

"Working with the infection prevention department is key to what we do," says Helvey. "They are our resource for what types of pathogens we are trying to eradicate and control, and our resource for finding the right approach."

The infection prevention department wanted specifications, testing and supporting data from the manufacturer to prove that the technology was effective against specific pathogens. And Helvey wanted to know who else was using it. CleanCore was able to provide reports to the infection prevention team and to put Helvey in touch with facility managers at other institutions who used the technology so that he could speak with them directly.

Next, CleanCore came to visit Cape Coral, meeting with members of Helvey's team and the infection prevention team. That meeting included a hands-on demonstration, a time for questions and some training.

After the meeting was over, Cape Coral initiated a pilot program for two of its general patient care areas. The program included the use of both of the dispensing systems available, a freestanding mobile generator ("caddy") and a wall-mounted unit, over the course of three months. Helvey and his team used the caddy for carpet and floor cleaning and the wall-mounted unit was stationed in a



DESIGN AND INNOVATION

## A PERFECT BALANCE

The **FIRST** and **ONLY** Green Seal certified floor pads.

Full Cycle® floor pads have met the specific Green Seal® criteria that show both environmental innovation and demonstrated performance equal to, and in some cases, superior to that of competitive products available in the market.

**Environmental Innovation and Proven Performance.**

Learn more at [www.AmericoFullCycle.com](http://www.AmericoFullCycle.com)



Full Cycle® products are certified by Green Seal® for Environmental Innovation based on faster biodegradation in landfill conditions and 100% recycled content/natural fiber. [GreenSeal.org/GS20](http://GreenSeal.org/GS20)



**americom**

6224 N. Main Street • Acworth, GA 30101  
770.974.7000 • 800.849.6287  
[www.AmericoMfg.com](http://www.AmericoMfg.com)



central supply area to fill spray bottles for surface cleaning.

“The first thing the staff noticed was that when they used aqueous ozone on surfaces, there was no streaking,” says Helvey. “That’s because with traditional cleaners, the water evaporates and the chemical stays behind, which results in streaking. It also means you have to go back and re-wipe. There was no streaking with aqueous ozone because, once the water evaporates, nothing is left behind.”

### Occupational hazards in healthcare — latex gloves, formaldehyde and cleaning chemicals — provide a double-risk factor for occupational asthma

Next, the cleaning staff noticed that the aqueous ozone was an excellent deodorizer. Rather than masking odors, the solution destroys the bacteria causing those odors.

“We all noted the scent after using it is the same smell you might detect after a thunderstorm — that smell you recognize is ozone,” says Helvey. “That concept really intrigued me because ozone is literally what disinfects our atmosphere, and you could actually smell that happening when you used it.”

After a successful pilot program, the environmental services department and infection prevention department at Cape Coral Hospital made the decision to switch all of their general-purpose cleaning over to aqueous ozone. In addition, all glass cleaning and carpet cleaning is performed using the technology.

“We have also discontinued our use

of restroom deodorizers,” says Helvey.

One chemical they kept on hand: disinfectants. This is because the technology does not create any hospital-grade disinfectants. All disinfecting of high-touch and vulnerable areas throughout the hospital and health system are still performed using regulated disinfectants appropriate for the healthcare setting.

Those changes at Cape Coral Hospital happened two years ago. Today, all of the five hospitals within the Lee

Memorial Health System have introduced aqueous ozone into their environmental services programs, following Cape Coral’s lead.

#### Changing Cleaning Processes

As is the case with most new cleaning processes, training was a key component of the health system’s success with aqueous ozone. In the beginning, Cape Coral had CleanCore come in to conduct trainings, including lessons on the science behind the technology and how to use the product properly.

“We never just give our staff a product,” says Helvey. “We really explain how and why it works. Training on the reasons why we do things is most important.”

With any new technology, training must be frequently repeated. However, aqueous ozone has the added

complexity of shorter-than-average shelf life. In fact, the cleaning solution created by aqueous ozone only lasts for a few hours. At Cape Coral Hospital, cleaning staff must replace the product after only four hours. This process needs to be incorporated in all trainings and reinforced among staff.

“To make it simple, we tell our staff to use what they make in the morning before lunch, and then make new product after lunch,” says Helvey.

The staff uses a line of house-keeping carts that dispense the right amount of solution to saturate micro-fiber floor mops. This system fits well with aqueous ozone because it eliminates the need for a bucket and eliminates user error by making sure the proper amount of solution is used.

In addition, the staff use pump spray bottles that they fill at centrally located wall-mounted units for surface cleaning. For carpet and restroom cleaning, staff use the mobile caddy where the solution is made as it is being used, which eliminates the need for keeping track of shelf life.

#### Making Progress

There’s a financial incentive to aqueous ozone that Helvey and his team are enjoying now that a few years have passed and they have moved beyond the initial investment in the equipment. Since implementing aqueous ozone at the hospital two years ago, they have saved over \$16,000 in chemical purchasing cost.

“Other than paying for water and sewage, I’m not spending any money to use this technology to clean,” says Helvey.

Additional benefits include reduced chemical inventory storage demands, reduced chemical packaging waste and reduced supply distribution labor. **FCI**

*NICOLE BOWMAN is a freelancer based in Sinking Spring, Pennsylvania.*