

# Community College Combats Infection with Ultraviolet Upper Air Technology

By Dan Jones

**A**s the winter months approach each year, the threat of cold and flu lingers in the back of everyone's mind. Nowhere is this truer than at schools and universities, where thousands of students, faculty, and staff congregate, bringing their germs with them.

At Schenectady County Community College in New York, Director of Facilities Alan Yaune has been fighting the war against infectious diseases for the past seven years. A member of APPA, Yaune previously spent 13 years in a similar position at the University of Alaska.

It's a war that this veteran facility manager is well-armed to wage, bringing a host of infection-fighting technologies to the fore, and not just hand sanitizer (although there is certainly plenty of that on campus). "We have sprays over our bathroom door handles that periodically release germicide to eliminate the viruses and bacteria that people leave behind," explains Yaune.

Also in his infection-fighting arsenal is an electrostatic fogging machine that can decontaminate an entire room, even under the tables, during an outbreak. "All of our disinfecting agents are environmentally friendly," underscores Yaune, as he explains a pressure washer he uses to clean bathrooms weekly. In fact, his stockpile of disinfectant has even become a source for other local facility managers when they run out of sanitizing agents at their facilities.

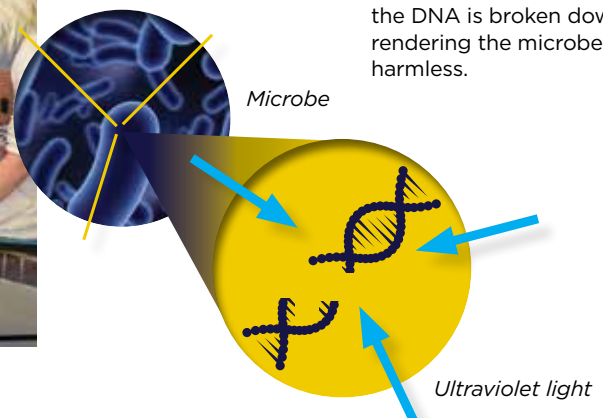
Recently, Yaune deployed the ultimate weapon in infection control—ultraviolet-C (UV-C) germicidal irradiation—which has fostered an affordable level of upper-air purification previously unattainable.

## WHY UV-C?

UV-C systems have been used to control airborne infectious diseases in schools and hospitals since

## HOW UV WORKS

The molecular structure of the DNA is broken down, rendering the microbe harmless.



An upper-air UV light fixture (above) disinfects the air in the student lounge at Schenectady County Community College.

the 1940s. Today, UV-C light is used in healthcare facilities to decontaminate surgical and patient areas and even to destroy the Ebola virus in as little as five minutes. Yaune's earliest memory of UV-C lighting was as a child visiting the pediatrician. "I remember the lights being mounted over my doctor's door to kill germs," he says.

Decades later, Yaune reacquainted himself with UV-C technology when he managed the construction of a water filtration plant in New York during the 1980s. "There were numerous options to disinfect the water," he recalls. "Chlorine was one, but it's a toxic chemical. Ozone was another, but it has a short life. We ended up choosing UV-C because it can deliver a continuously high kill rate for microorganisms."

With these experiences under his belt, Yaune knew that UV-C would be an effective tool for infection control at Schenectady County Community College, especially when he learned about upper-air germicidal UV-C light fixtures.

The wall-mounted fixtures create an irradiation zone within the upper region of most any space. Virtually all infectious agents carried upward by convection currents are killed by the ultraviolet irradiation. It's advisable to choose fixtures with higher irradiance levels, which allow greater UV-C coverage, enabling infection control specialists to treat more area with fewer fixtures, saving both cost and energy.

"UV-C's high infection kill rate makes it a no-brainer on a college campus like Schenectady, which is around 400,000 square feet and enrolls roughly 6,500 students," says Yaune.

Different UV-C systems exist for wall applications and HVAC/R applications. In this case, the college wanted the ability to provide on-the-spot infection control with specific stand-alone installations of the UV-C upper-air fixtures.

So convinced was Yaune of UV-C's hygienic value that he managed to diversify payment for the units. "It really wasn't a hard sell to persuade administration to pay for UV-C once they understood the indoor air quality benefits it could yield," he says.

## DROPPING THE BOMB ON INFECTION

Wishing to spare no expense on health and safety, Yaune moved forward to purchase and install 20 UV-C fixtures across campus at a total cost of roughly \$11,000. Units were positioned in the areas where infections are typically most entrenched, such as the cafeteria and daycare center.

"We installed between five and eight units in the daycare center alone, because young children tend to



## Optimize Performance

Dritherm™ is a self-compacting underground pour-in-place insulation. Thicknesses may be adjusted to optimize cost and heat loss.

Call today for a heat loss estimate.



Dritherm International Inc.  
31 Fairfield Place  
West Caldwell, NJ 07006  
P: 1-800-343-4188  
info@dritherm.com  
www.dritherm.com

be ill more frequently than adults, and their interaction with one another makes transmission rates higher” says Yauney. Units were also installed near the security desk, the cafeteria, and the café, as well as in the student forum and lounge.

One installation challenge was how to position the fixtures so that students could not look directly into the harmful light. To minimize direct exposure to UV-C light, the fixtures have baffles that direct

and angle the ultraviolet light upward and out of the line-of-sight.

Some areas at the college are multileveled, however, so units were strategically placed to avoid exposure to the students. Other areas, like the elevators, were avoided for fear that students would purposely try to access the lamps without realizing the danger of direct UV-C exposure. “Teenagers don’t always think about consequences, so we wanted to avoid any possibility of harm,” explains Yauney.

The installations took place over a period of several months, beginning in spring 2015 and ending shortly before school resumed in the fall. Although there is no available empirical data that can assess the units’ performance, knowing that germs are being continuously eradicated is enough for Yauney. Indeed, studies conducted in hospitals by the Centers for Disease Control and Prevention (CDC) have demonstrated that UV-C can reduce the total number of colony-forming units of any pathogen in a room by 91 percent.

“When I get questions from students or faculty about the lamps, I tell them they are removing bacteria from the air, making it healthier to breathe,” says Yauney.

Yauney argues that although most facility managers are probably not as germ conscious as he is, it’s a good trait to have. “Anywhere you put thousands of people in close proximity, be it a hospital, airport, large office building, or college, it’s advisable to try to eliminate disease transmission as much as possible. Otherwise, the money you save will be lost to absenteeism and poor indoor air quality.”

In the case of Schenectady County Community College, students, faculty, and staff can feel safe and secure knowing that their ever-watchful facility director is employing the latest in infection control to help keep them healthy and germ-free. ☞

Dan Jones is president of UV Resources, Santa Clara, CA, an ASHRAE member, and a corresponding member of ASHRAE Technical Committee 2.9, which is devoted to ultraviolet air and surface treatment. He may be reached at [dan.jones@uvresources.com](mailto:dan.jones@uvresources.com).

## It’s the steam storage water heater for universities of the 21st century.

Compared to the u-tube heater designs of yesteryear, COBREX® uses externally mounted vertical heat exchangers that require far less pull space and are only a fraction of the weight. Clean-in-place fittings allow for heat exchanger de-scaling without disconnecting any piping or removing any components.

AquaPLEX® duplex stainless steel tanks have a 25-year warranty. Unlike many lined tanks, the AquaPLEX tank surfaces do not absorb water and are suitable for sanitizing temperatures and biocide treatment without compromising service life. A bottom tank drain facilitates cleanout.



- 30 to 120 gpm recoveries
- 150 to 3000 gallons storage
- 100% redundant designs are available, allowing service to be performed on one heat exchanger without interrupting hot water supply
- Digital operating control with Modbus for connection to a building automation system

**COBREX®**  
*Steam made simple.*  
*Storage that lasts.*



[www.pvi.com](http://www.pvi.com)

Engineered Water Heating Solutions®