

# UV light provides alternative to chemical cleaning

By **George Berkheimer**  
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Ultraviolet (UV) light, usually associated with medical and healthcare settings, is getting a second look as a safe and effective alternative to traditional methods of cleaning commercial spaces during the COVID-19 pandemic.

Disinfectant sprays and wipes are in short supply. Cleaning services are also stretched thin and frequent cleaning service is expensive.

Derek McDaniels, president of Eagle Integrated Solutions in Washington, DC, said the ultraviolet light option is not only inexpensive but also treats areas and surfaces that are easily overlooked, such as the undersides of tables and chairs.

“Chemical sprays can be labor intensive, you have to do them every day that space is used, and there’s residue,” he said. “Many of these – chemicals also have corrosive issues as well as potential health issues.”

He said, COVID-19 is a respiratory disease that can be spread through the air. Surface cleaning does not kill any airborne pathogenic viruses, but ultraviolet light does.

## Early Adopters

According to an Illuminating Engineer’s Society (IES) report published in April this year, the 200- to 280-nanometer wavelength of UV-C light is the most effective spectrum for inactivating the DNA in viruses.

Filtered out of natural sunlight by the Earth’s atmosphere, it can only be produced by special light bulbs.

The IES report also recommends upper room illumination or internal lights inside air handling systems as the



Photo courtesy of CNBC

most effective ways to inactivate airborne contaminants inside buildings.

There are portable disinfecting systems on the market, but they can only operate in areas that are unoccupied, as the light can damage human skin and retinas with prolonged exposure. These devices typically employ a reverse occupancy sensor to guard against health risks.

Devices range from wands and tabletop book sanitizers used by libraries up to 1,000-watt cart units that can weigh approximately 100 pounds, in addition to robotic irradiators currently in use in Amazon warehouses and inside the Pittsburgh International Airport.

For smaller business use, McDaniels said a 300-watt unit weighs only 24 pounds and can be carried from room to room.

Portals employing far-UV-C light that does not harm human skin for the short duration humans pass through it were recently installed at the Space Needle in Seattle, he added.

“I think we’re going to see more use of portable applications in the future, particularly as we have children going back to school,” McDaniels said. “I also think we’re going to see more use of far-UV-C portals.”

## Technology Revival

There’s no absolute guarantee that UV-C light works against every pathogen, but scientists know it inactivates pathogens like COVID-19 and the technology was used effectively in hospitals and waiting rooms in undeveloped countries during the Ebola crisis.

UV light was first discovered in 1801 and has seen routine use in hospital settings since the 1930s, but gradually fell out of favor there with the advancement of medications and antibiotics.

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“Hospitals have re-embraced UV-C in recent years because of its ability to deactivate pathogens that have become resistant to antibiotics,” McDaniels said.

The technology hasn’t shown up in regular commercial use in Howard and Anne Arundel counties just yet, he noted, partly because businesses are still getting their bearings with reopening and need to continue operations without additional delay.

As of the end of July, the lead-time for delivery of commercial-grade portable UV disinfection technology was six weeks.

Nevertheless, it could prove a worthwhile future investment for the companies that can afford it.

An online price list for Puro brand’s line of UV disinfection lights ranges from approximately \$3,700 to \$4,000 for single UV light engines and \$7,100 for a dual light engine in their Helo series, and from \$9,200 to \$21,000 for larger lights in their Sentry series.

According to the Atlantic Ultraviolet Corp., ultraviolet lamps typically last for 10,000 hours of use and should be replaced after one year, although some can last up to three years.

## Ounce of Prevention

Companies don’t necessarily need to purchase UV technology outright, but the cost will add up.

“We’re developing our own [UV cleaning] service but I can imagine that service is going to cost more than \$100 per day,” McDaniels said. “That’s why people buy it so they can spend pennies per day to irradiate high-touch spaces.”

Like traditional cleaning supplies, UV disinfection technology could also experience future shortages as demand grows, particularly if professional and college sports organizations begin using it and taking a large share of inventory off the market.

The bottom line for many companies on the fence about acquiring their own UV disinfection lights will come down to the amount of time they can afford to be shut down or whether their employees feel safe returning to work.

“You can’t base things on one event,” McDaniels said, citing evidence that the virus will continue to impact business and human interaction for years to come.

“We’re going to have a segment of the population that can’t or won’t take any vaccine, and we have to go through a five year process of seeing if the vaccine ... actually works,” he said. “We don’t see this just disappearing quickly, too many people carry it around.”

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