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THE (INDOOR) AIR WE BREATHE

INNOVATIONS PROMISE TO IMPROVE THE QUALITY OF AIR IN COMMERCIAL BUILDINGS. PROPERTY MANAGERS, BUILDING OWNERS, AND DEVELOPERS WILL LEARN FROM EARLY ADOPTERS.

By Carol Weinrich Helsel, contributing writer

The focus on COVID-19 transmission shifted in summer 2020 to include the role that ventilation, and heating, ventilating, and air-conditioning systems, might play in preventing the spread of the virus. In October, the Centers for Disease Control and Prevention (CDC) updated its guidance accordingly. The property market response shifted, too. A survey of corporate decision-makers by the Building Owners and Managers Association International in late 2020 found that among five COVID-related health and

safety services tenants would pay extra for, “full utilization of 100% fresh air in HVAC systems” topped the list.

Scientists now have a better grasp of the COVID-19 virus, including consensus that it is transmitted primarily in crowded and poorly ventilated indoor areas. Yet property managers, building owners, and developers don’t yet have a clear playbook on how to factor effectiveness, practicality, and affordability into a clean and safe air quality strategy.

TECHNOLOGY OPTIONS

Various technologies can mitigate airborne pathogens. Most fall into one of the following three categories:

- 1. Air exchange.** Replacing indoor air with fresh outdoor air is a basic approach that has been proven to reduce the transmission of airborne diseases by lowering the concentration of infectious particles in the air. The technology ranges from none (opening the window) to pumping air through HVAC systems. Most important to consider is the rate of air exchange. The World Health Organization recommends a ventilation rate of six to 12 air exchanges per hour, although space size and number of occupants should be considered.
- 2. Air filtration.** Filters can be built into an HVAC system or function as part of a standalone unit. The two most common are:
 - **High-efficiency particulate air.** HEPA filters capture up to 99.97% of harmful particles sized down to 0.3 microns, the hardest size to capture. While highly rated, HEPA filters may not be compatible with all HVAC systems. The wrong filter setup can strain the HVAC system, increasing electrical bills and potentially damaging the system. HEPA filters require careful handling, although they are available preassembled and in portable systems. While replacement is required only every two to three years, it can be costly.
 - **Minimum efficiency reporting value.** MERV represents a rating system developed by the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE), based on the filter's efficiency in capturing particles down to 0.3 microns. The higher the MERV number, the more efficient the filter. A high-efficiency filter, recommended for coronavirus pathogens, is rated between MERV 13 and 16. Increased filter efficiency usually results in increased pressure drop (the difference in the ductwork air pressure on one side of the filter versus the other side). Check the HVAC system to confirm it can handle a filter upgrade. For any filter to be effective, the particles must reach the filter, so even the best filter isn't a cure-all for COVID-19 but can significantly lower the risk.
- 3. Deactivation of microorganisms.** Ultraviolet light—specifically UV-C, a high-energy form of ultraviolet light—has been shown to be effective at breaking

down coronavirus microorganisms, rendering them harmless. UV-C technology is available in systems designed for in-duct and upper-air disinfection, in-duct surface disinfection, and portable room decontamination. Property managers and developers have been especially interested in UV-C solutions because they're relatively inexpensive and don't affect pressure drop. Not everyone is on board with the effectiveness of UV-C technology, however. There is no tried-and-true formula for determining the best placement and dosages of UV-C for killing the coronavirus. Applications vary by the device design, and all come with some caveats, including potential damage to skin and eyes if safety guidelines aren't followed when handling.

In this category of solutions, **needlepoint bipolar ionization** has gained a lot of attention due to COVID-19. Integrated into HVAC systems, bipolar ionization chemically converts oxygen molecules into charged atoms that deactivate airborne pathogens. Many consider this an emerging technology compared to other air cleaning systems, because its track record is less documented. Also, some of these systems may emit harmful ozone. If you're considering using bipolar ionization equipment, the CDC recommends verifying that it meets UL 2998 standard certification for zero ozone emissions.

BEST SOLUTION IS ASSET-SPECIFIC

As organizations plan for employees' return to the workplace, building owners and property managers may be pressured to address the possible spread of COVID-19 through HVAC systems. Tenant demand for enhanced air filtration systems varies, according to Chip Watts, president of Watts Realty in Birmingham, Ala., and 2021 president of the Institute of Real Estate Management. "Some of our members report higher demand, especially as virus-related concerns continue to heavily impact high-density properties."

COVID-19 has moved air quality higher on the list of tenant demands, but interest has been growing for some time as part of the well building movement. The pandemic accelerated the industry's response by three to five years, according to Watts. "Without COVID, we wouldn't be where we are now with air quality until 2025."

While the industry works to adopt solutions to enhance air quality, no easy formula exists to determine the best solution—or more likely—mix of solutions. "The most effective approach will combine options and be asset-



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specific,” says Watts. “Variations in moisture balance, vent locations, and HVAC effectiveness, along with building size and design, all must be considered.”

LARGE COMPANIES LEAD ADOPTION

In the property industry, early adopters have mostly been large companies—not surprising, given the cost. In January, real estate investment management advisor Bentall-GreenOak (BGO) announced it had achieved Fitwel’s Viral Response Approval for 17 U.S. office buildings, making it the largest commercial real estate portfolio to do so, to date. Fitwel is a building certification that supports healthier workplace environments.

Other leaders include Madison, Wis.-based Compass Properties and Dallas-based Granite Properties, both of which installed needlepoint bipolar ionization technology as part of a broader initiative to protect building users from the coronavirus.

“There was no specific demand from tenants,” says Todd Greenwald, vice president of real estate operations for Compass Properties. “We started talking about our systematic approach to COVID measures in January 2020, and this specific project in August 2020, because we thought it was the right thing to do. Others have pointed out that it separates us from the competition, and I think that’s true, but that is truly a side benefit. Safety was the No. 1 driver.”

COST AND ROI

Most firms will likely consider cost and return on investment. Air purification-filtration systems on a commercial scale will likely increase costs by 20% to 25%, although the cost will drop as the technology advances. “Installation costs for needlepoint bipolar ionization systems started at \$40,000 for each office building,” says Greenwald. “There is no immediate measurable ROI for installation.”

It’s too early to fully understand the long-term ROI of installing purification-filtration systems, but improved air quality adds value, especially in high-density buildings, notes Watts. Right now, “systems that mitigate viral spread can help entice users back to a property and attract new occupants.”

Compass’ experience confirms this. “We heard from many tenants who were very appreciative of our efforts. They see the enhanced air quality systems as a great way to retain employees and attract talent in the future.”

BGO is also thinking about the future. “We expect that the demand for these sorts of building-level plans to mitigate COVID-19 and any future infectious disease will only increase over time,” says Scott Matthews, managing director, asset management for BGO.

A January 2021 survey by Honeywell found that specific to COVID-19, 31% of workers said updates to air quality systems were critical to their feeling safer in returning to work.

EXPERT GUIDANCE RECOMMENDED

To find best-fit solutions, seek expert guidance from a recognized resource to review the property and make recommendations. The pandemic generated a flood of new products. “Property managers will make their own decisions on improved air quality but should have the facts,” says Watts.

Separating the facts from marketing messages, however, can be challenging. ASHRAE is a widely recognized source of guidance (including by the CDC) for managing the spread of COVID-19 related to the operation and maintenance of HVAC systems. The ASHRAE website (www.ashrae.org) offers extensive resources, including a COVID-19 infographic on the homepage that links to information about building readiness, mitigation strategies, building guides, standards, and certification.

Although optimism is growing about progress to end the pandemic in the U.S., COVID-19 has fundamentally changed our view of the air in our shared work and living spaces. Long-term, expect changes in the way buildings are designed. Short-term, property managers and developers must weigh the various factors to identify the right mix of solutions for each asset.

CORRECTION

Congratulations to Another Award Winner:

Randy Scheidt, CCIM, GRI, broker-owner of Scheidt Commercial Realty LCC, Columbus, Ind., was a 2020 National Commercial Award winner, recognized by the Indiana Commercial Board of REALTORS®. Scheidt was inadvertently omitted from the 2020 NCA list that appeared in the Winter 2020-21 issue.