



Workplace Safety

What Manufacturers Need to Know About Indoor Air Quality Management

Matt Morgan | Jul 23, 2020

You can't see infectious diseases hanging in the air, but you can do more than just hope that people in the manufacturing facility are not breathing any in. Follow these tips to manage your workplace's indoor air quality and reduce the risk of infection for everyone in the building.

Just like breathing happens without us realizing it, the process of maintaining healthy indoor air quality probably goes unnoticed by most people. Removing dust and pathogens from the air is an important part of running a safe workplace.

The emergence of COVID-19, however, has put air quality near the top of people's concerns. In today's environment, it is more important than ever that manufacturing facilities take steps to protect workers by improving the air quality in the building as much as possible. Here's how.

Understand, Optimize and Regularly Maintain Your HVAC System

Potentially infectious particles can be found in exhaled droplets that land on surfaces around an infected person, or they can linger longer as an aerosol. In any case, they should be removed from the air.

"Outdoor air is fresh, clean air that's coming into your building. So the more you bring in, the more you're going to push out any potentially contaminated air."

David Heritage
Filtration Group

Manufacturing facilities with HVAC systems can remove these particles from the air in two main ways: through filtration (catching them with filters), and through dilution (pushing them out of a space by pulling in clean air).

Smart Ways to Stop Airborne Pathogens Indoors

Although you can't see or smell airborne pathogens like you can other hazards in a manufacturing facility, you can still take action to control the source and reduce the risk of infection.

First, keep sick people out of the building. If workers are showing signs of a viral infection, they should not be inside, for the *safety of everyone who's sharing the space*.

Next, empower employees to practice good personal hygiene. Post these tips throughout the facility as a constant reminder to be vigilant against viruses.

- **Wash hands frequently.** Wet hands with running water, scrub them (front and back) with soap for at least 20 seconds and rinse them clean with running water.
- **Use a sanitizer gel** when hand-washing isn't possible. A product with at least 60 percent alcohol will do the job.
- **Avoid touching your face.** Germs get into your body through the eyes, nose and mouth.
- **Cover coughs and sneezes.** Use your elbow, or use a tissue and immediately throw it away.
- **Avoid physical contact**, such as handshakes and high-fives, and try to keep at least 6 feet of space between you and other people.

Workplaces should start by fully understanding the state of their air quality systems, says David Heritage, vice president of national accounts at Filtration Group, a worldwide provider of filtration solutions headquartered in Oak Brook, Illinois.

"What *types of filters* do you have installed in your HVAC system, if you have filters at all?" he asks. "Understand what you have and how it's installed and how you're maintaining that system."

Bring in a professional consultant if you need help getting to know your system.

Read more: Best Practices for Reopening Safely After COVID-19: What Manufacturers Need to Know

Once you're familiar with your equipment, look for ways it can be optimized to filter out the most particles from the air without taxing the system too much.

Filters are rated on the MERV scale: MERV-1 products capture around 20 percent of larger particles from the air, and on the other end of the scale MERV-16 filters capture 75 percent of those larger particles. **HEPA filters**, by comparison, capture 99.97 percent of larger particles.

But don't rush out and buy the highest-efficiency filter just yet. They're not only expensive—generally, costs rise dramatically with higher-rated MERV and HEPA filters—but high-efficiency filters also could be detrimental to your system.

"One of the drawbacks of going up in efficiency is you typically go up in resistance," Heritage says. "If your equipment wasn't designed to have higher-efficiency filtration, in some cases it just can't handle it. It doesn't operate correctly and do its job of climate control if you have too-restrictive of filters in there."

Heritage says MERV-13 filters strike a nice balance of airflow, filtration and cost, assuming they are compatible with your HVAC system.

Once you've determined your filtration solution, maintain air quality with regular filter changes based on how dirty the filters get in your facility. With regard to infectious diseases, Filtration Group advises that maintenance staff take precautions when changing out filters, such as wearing appropriate personal protective equipment (such as masks, eye protection and coveralls) and disposing of used filters in sealed bags.

Supplement Your HVAC System

Even the most efficient HVAC systems will not completely eliminate the threat of airborne pathogens.

You can't filter 100 percent of the air you breathe using your HVAC system, so there's still a risk of infection, even if your HVAC can capture 100 percent of the particles in the air it filters, Heritage explains.

"After you optimize your filtration, you should evaluate for stand-alone equipment—whether or not you need it, whether or not it will be beneficial and where it will be most beneficial," Heritage says. "Identify areas where social distancing is a challenge—break rooms, for example. Put better filtration in those areas, which could be a stand-alone HEPA air scrubber that would capture 100 percent of the particles out of the air."

Bring in Outside Air

Diluting the air inside the facility is another way to improve air quality. This is ideal when the conditions outside are comfortable and there are no environmental factors such as dust or odors to contend with.

"Outdoor air is fresh, clean air that's coming into your building," Heritage says. "So the more you bring in, the more you're going to push out any potentially contaminated air and dilute it so that the concentration of it around the individuals will be reduced."

Dampers, intake fans and dedicated outdoor air systems all help to bring outside air into the building to dilute the air inside, thus raising the quality of the air.

Read more: How to Manage Employee Anxiety in the Workplace During the COVID-19 Pandemic

Continually Run the Ventilation System

Regardless of whether you're filtering air or diluting it to improve air quality, running the HVAC system longer helps remove potentially contaminated air from the building. This goes against conventional wisdom of energy savings but is necessary to control airborne infectious diseases.

"The idea was that for energy consumption, most people turned off the fans—it doesn't do any good to have a fan running if there's no one in there," Heritage says. "But infection control is essentially overriding the energy savings."

Ventilation systems should be run 24/7, if possible, to allow for better air exchange, writes Lawrence J. Schoen, a member of the American Society of Heating, Refrigerating and Air-Conditioning Engineers, in the *ASHRAE Journal*.

Heritage agrees. "They're saying to keep circulating and providing fresh air into the building 24/7 or at least for several hours before occupants come in, to flush out any potentially contaminated air from the building," he says.

Kill the Virus with UV Light

Ultraviolet light has long been known to kill microorganisms inside buildings. A specific wavelength of UV light, UVC, is particularly damaging to microorganisms such as viruses, as it disrupts their DNA and ruins their ability to reproduce.

One type of application, called upper-room germicidal UV light, is best at disinfecting indoor air, according to the Illuminating Engineering Society (IES). Fixtures mounted to the wall 7 feet above the floor, safely over people's heads, emit UV light out across the room, killing bacteria and inactivating viruses in the space above.

"This is most effective when there is constantly mixed air by fans and HVAC ventilation," *IES reports*, "but even without strong ventilation or fans, air constantly mixes by movements and normal convective currents."

UV lights have been used inside HVAC units to kill harmful mold and bacteria on cooling coils. Also, ***bulbs can be installed inside air ducts*** to zap any viruses that might make their way past the filter.

In areas where workers will congregate or ventilation is not ideal, stand-alone units combine filtration with safely contained UV lights to purify the air.

How are you maintaining high levels of air quality in your facility? What unique challenges have you faced?

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