AWAIR

THE BIG RETURN

Navigating Re-Entry in the Time of Variants

There is no real return-to-office date anymore. Delta and Omicron variants scrambled plans to return to the office in the fall, but as experts begin talking about a "new phase" of the pandemic that offers stabilization and normalization, there are tentative plans.

While many articles and opinion pieces have covered re-populating buildings, we discovered one common thread amongst them all: The need for a layered approach to return-to-office plans.

Fortunately, you don't need to go it alone. We're here to provide you with reopening resources to move ahead during these ever-changing times.

Official Coronavirus Guidance Resources

+ World Health Organization Coronavirus Guidelines
+ UK Coronavirus Guidelines
+ ECDC Coronavirus Guidelines
+ White House COVID-19
+ ASHRAE Coronavirus Guidelines
+ OSHA Coronavirus Guidelines

THINK GLOBAL, ACT LOCAL

Please follow global guidance but also pay close attention to your own national and local requirements, which may vary widely by country/region, state, business type, or building. Should there be a conflict between the guidelines you encounter, follow the most stringent rules to be safe - both for occupants and for your building or business to avoid fines.

LAYER UP

No single approach to indoor environmental quality (IEQ) will completely eradicate COVID-19 or any human virus. However, implementing a multitude of approaches can help protect your building's occupants. Additionally, some steps may even help improve efficiency or add to the value of your building(s) as an unintended consequence.

ENGINEERING | AUTOMATION

In preparation for the return of employees, students, occupants, building owners, and facilities managers should review their current HVAC systems. This review may eventually lead to updating to a more modern infrastructure. To start, however, it is recommended to simply service your current system.

> "I don't think business people realize **the power of buildings to not only keep people safe from disease but to lead to better performance,"**[1] said Joseph G. Allen, Associate Professor, Harvard T.H. Chan School of Public Health & Director, Harvard Healthy Buildings Program

[1] Susan Caminiti. "Healthy Buildings Can Help Stop Covid-19 Spread and Boost Worker Productivity." CNBC Workforce Wire. November 6, 2021

Despite the fact that COVID-19 may be a catalyst to consider maintenance, **the role of indoor air quality in "sick building syndrome"** means there are long-term advantages to investing the time. The benefits range from **improving productivity** to lowering overhead expenses by keeping employees healthy.

Any C-suite executive looking to incentivize workers to return to the physical office has likely spent more time thinking about indoor air quality and ventilation over the past two years than at any other point in their pre-pandemic life. Without a doubt, "healthy buildings" have become the latest enticement to bring employees back into the office. As people return to in-person or hybrid work, they're naturally concerned with how safe they'll be. They want to know that desks, keyboards, elevator buttons, and every other public surface are being sufficiently sanitized.

How can you augment your building's health story via your current HVAC system?

VENTILATE PROPERLY

While HVAC systems provide heating or cooling mechanisms, air circulation has increased in importance over the years, particularly within commercial buildings. HVAC systems can now be programmed to react to air quality signals, such as oxygen, carbon dioxide (CO_2), and particulate matter. Whether passive, mechanical, or a hybrid approach, vents to external air and dampers can be adjusted to help optimize airflow. This is critical, especially because the **EPA reports**, "Indoor concentrations of some pollutants have increased in recent decades due to such factors as energy-efficient building construction (when it lacks sufficient mechanical ventilation to ensure adequate air exchange)." [2]

Beyond COVID-19, there are a number of reasons why you should ensure proper ventilation. Managing air exchange rates can mitigate the negative effects of CO_2 including:

- Drowsiness
- Decreased productivity
- Headaches
- Difficulty with decision making

Since we have already learned about **the high level of CO_2 in conference rooms**, there are now many new areas to think about for adequate ventilation or occupant reduction. These locations are lobbies, kitchens, elevators, restrooms, and any spaces unique to your building.

Adequate air circulation can also help to mitigate **VOCs (Volatile Organic Compounds)**, which can arise from pre-existing building materials and/or cleaning products such as:

- Flooring
- Adhesive
- Painting
- Office furniture

Air quality is not the only factor that drives health and performance. **A study of workers** found that they reported more headaches and worked 6.5% more slowly on a test when they were in an office with a pollution source. In this example, the pollution source was a dirty carpet.

While a lot has been written on the physical causes of VOCs, it is likely air pollutants will also be on the rise

[2] "Report on the Environment: Indoor Air Quality." Environmental Protection Agency. Accessed May 5, 2020.

from increased cleaning to protect building occupants from COVID-19. With the updated disinfection protocols, it will be important to ensure VOC levels are not too high post-cleaning for occupants, or for the facilities crews doing the incredibly difficult work.

At this point in the pandemic, we know that airborne transmission of COVID-19 is happening, and that healthy building strategies are important. In fact, many organizations are now saying, "Bring in more outdoor air." But, an outstanding question remains: How much ventilation and filtration should we target exactly? Harvard Healthy Buildings program Director Dr. Joseph G. Allen teamed up with Dr. Andrew Ibrahim **in this article in JAMA** to make the case that the target should be 4-6 air changes per hour (in small volume spaces), and offered some practical design considerations.[3]

As air changes are implemented, it's important to note that air quality is dynamic and should be monitored in real-time so adjustments can be made to ensure occupant safety.

REPLACE FILTERS

Particulate matter, or PM, is the name given to liquid particles or fine dust that are suspended in the air we breathe. PM is generally measured by size inclusive of PM10, PM2.5, and PM1. The numbers refer to the diameter of the particle measured in micrometers. As a comparison point, the diameter of the average human hair is 30 times larger than PM2.5.

PM2.5, specifically in outdoor air pollution, has been attributed **to a rise in the mortality of COVID-19 patients**. It is a great time to check on filters within your HVAC system, ensure you have clean filters and possibly a high enough **MERV (Minimum Efficiency Reporting Value)** rating. ASHRAE calls out MERV 13 or higher filters as being particularly effective against human viruses, and it's suggested to use a MERV 8 filter at the minimum. When used properly, air cleaners and HVAC filters can help reduce airborne contaminants including viruses in a building or small space. By itself, air cleaning or filtration is not enough to protect people from COVID-19.[4]

Air cleaners and HVAC filters are designed to filter pollutants or contaminants out of the air that passes through them. Air cleaning and filtration can help reduce airborne contaminants, including particles containing viruses. Portable air cleaners (known as air purifiers) may be particularly helpful when additional ventilation with outdoor air is not possible without compromising indoor comfort (temperature or humidity), or when outdoor air pollution is high. Given its size, COVID-19 can still find its way both into and

Joseph G. Allen explained that a typical building has a MERV 8 filter that captures only about 20% of airborne particles. **A MERV 13 filter**, on the other hand, **will capture closer to 90% or more** of those particles.

[3] Samuel Fekadu Hayleeyesus and Abayneh Melaku Manaye. "Microbiological Quality of Indoor Air in University Libraries." National Center for Biotechnology Information. May 2014.

[4] 2019 Novel Coronavirus (COVID-19) Pandemic: Built Environment Considerations to Reduce Transmission." American Society for Microbiology. Accessed May 5, 2020.

potentially through the highest end MERV rated filters, which is why other steps are also necessary to keep air healthy. You should also establish a process or automated signal to change air filters regularly and ensure HVAC technicians follow safety standards when disposing of the used ones.

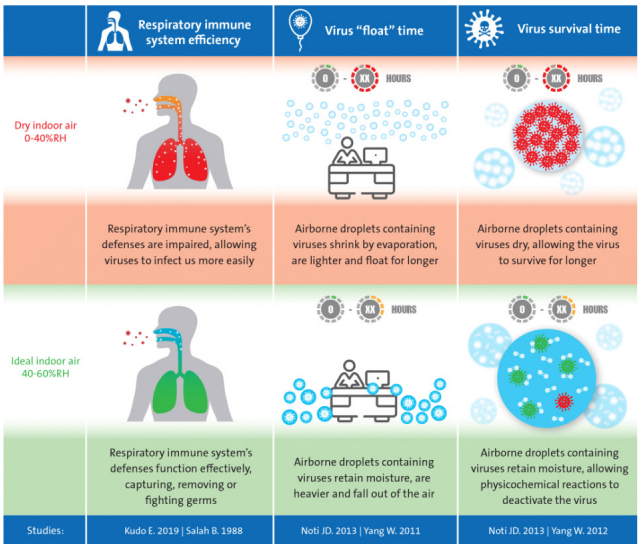
In a similar manner, portable or plug-in air filters with HEPA filters may help as well, particularly for those employees that will continue working from home or those that return to the office in open spaces. Given the various sizes of the virus, air filters will only help mitigate it. There are no clearly defined recommendations about portable air filter devices.

If the virus can escape air filtration, what other other methods can you use to contain it?

CONTROL TEMPERATURE AND HUMIDITY

Another recommendation is to keep indoor air at a **relative humidity (RH)** of 40% to 60% to decrease viral infectivity. When RH is under 40%, airborne droplets tend to dry out more quickly and remain in the air for longer. Dry air, considered to be 0-40% RH, can also lead to respiratory issues because it impairs our natural ability to fight off airborne viruses and germs on our own. An RH over 60% may support the growth of mold, so this is not recommended either.

The below graph is taken from a petition by Harvard researchers to the WHO to start including Indoor Air Quality in its requirements for health. The graph illustrates the above principles in action:



The steps, including proper ventilation, filter replacement, mold checks, and temperature and humidity control, can help keep occupants safe. There are also studies about other measures, such as the impact of UV-C (Germicidal Ultraviolet) light on the virus. The benefit of the above steps is that they should not require major investment, simply careful maintenance of a company's existing HVAC system.

However you choose to proceed, keeping an eye on the invisible will not only help with aspects of the virus's behavior - it may also reduce dangerous factors such as PM2.5, VOCs, CO_2, and more. Awair Omni and the Awair Dashboard and/or API can help provide insights and enable you to more effectively control your air. Please feel free to reach out to **learn more from our Sales team today**.

ENVIRONMENTAL | MANUAL STEPS

Keeping building occupants safe cannot be based on air circulation alone, nor can the process be fully automated or covered by technology.

There are more tactical steps you can begin to implement as well, even in the midst of uncertainty. These controls are manual. Right now, that may make them easier to manage and change moving forward as we learn new information about the virus.

SECURITY

To return to buildings, occupants, and employees will need to feel safe, which may entail far more than any previous steps you may have taken for security, such as fire drills, security guards, and/or limited access to buildings. Security now also means ensuring that your buildings are optimized to prevent the spread of COVID-19 or future viruses. In addition, your business or building should be prepared in case there is an onsite outbreak of COVID-19. As such, security for a building's occupants at that point will take on a more figurative meaning: Reassurance.

SAFETY STEPS

Please always follow the **most recent guidance** for your particular country/region. The below is a recommended list to start for building safety steps.

Create Building and/or Corporate Policies for COVID-19

- Each building, school, and business will need to create policies unique to their situation and in alignment with local ordinances.
- Work closely with your building managers, facilities team, and/or bring on professional guidance to ensure all policies are realistic and attainable with current staff and budgets.
- Regularly review the **OSHA Guidance on Preparing Buildings**, or the equivalent.

Communicate New Policies Clearly and Often

- You may have already received emails from other businesses, such as restaurants or rideshares, about how their business is instituting updated safety policies. These notes serve to help people feel safe about continuing to use the business, but in addition can include new rules and expectations of a business's customers so that their employees stay safe. Your building, school, or business should do the same. Health will be a collective effort more so than ever before.
- Publish your policies via email, post them external to the building for those that missed it, and again in the lobby or entry areas, as well as elsewhere on site.
- Educate your occupants, students, or employees about new COVID-19 learnings and policies as they arise.

Provide Required Health Items On-Premises

- If you have a mask policy to enter a building and would like occupants to sanitize their hands, please have these items readily on hand for your occupants, employees, students, or visitors.
- Provide reminders about hand-washing and social distancing.

Provide Guidance for WFH

- Outline the importance of proper ventilation even at home, especially when there are potentially more people in the home environment than usual, closed door rooms, and increased cooking and cleaning routines happening.

- Ensure those that are feeling sick or may have been exposed to others with COVID-19 stay home as outlined by CDC and local requirements.
- Give information on proper ergonomics and lighting to prevent injury.
- Offer occupants, students, or employees discount purchase programs for certain health items, such as air filters, humidifiers, desk setup guides, and indoor air monitors. If you are interested in discount codes for certain Awair products for such a program, please reach out to us at **business@getawair.com**.

Ensure Your Policies Work for the Immunosuppressed and those with Disabilities

- This may include additional WFH time, non-peak travel time, or a safe area onsite.
- Check in with individual employees to ensure options work for them (and their physician) as applicable.
- Be certain to comply with the **Family and Medical Leave Act (FMLA)** and the **Americans with Disabilities Act (ADA)**, or adhere to the local labor laws in your region.

Review Workspace Layouts

- **Open work environments will pose a challenge for virus control**.
- Pay close attention to occupancy levels and space people six feet apart.
- Consider staggering the amount of the workforce in the office on any given day.
- Consider having different start times during the day.

Create a Stringent Cleaning Schedule

- Common areas in buildings will need increased attention for cleaning and wipe downs.
- Review the **CDC's guidelines on disinfecting buildings**.
- Ensure VOCs are not too high from the extra cleaning materials and activities.

Have a Containment Plan for Onsite Outbreaks

- Have a plan should a COVID-19 case happen within your building, school, or company.
- Consult with your local health department for further guidance should a case arise.
- Inform those potentially affected about any possible exposure to COVID-19 but also ensure you follow **HIPAA guidelines** or privacy laws within your region as you do so.
- Ensure employees are well-versed and follow **CDC guidelines for individuals** on a normal basis and that they know what to do if they **suspect they are sick**.

Be Transparent

- Communicate your current plans and indicate that they will change as official guidance does.
- Work with your employees and occupants - this is new for everyone and an evolving process.
- Continue real-time monitoring of the air, particularly in the lobby, conference rooms, elevators, and restrooms.
- Keeping an air score visible may help people feel more comfortable in your space.

FINAL THOUGHTS ON RE-OPENING

It is important to remember that safety for COVID-19 and future pandemics is not a checklist that you complete and move on. Recovery is not linear. Guidelines will adapt and change - and so will your air quality as people re-enter and leave buildings and indoor spaces.

You may be thinking this all sounds expensive. The good news is it doesn't take a huge investment to create a healthy building and start reaping the benefits. In fact, the cost is far greater if your building helps spread communicable diseases.

Our studies and financial simulations have found that the efforts you put in will pay back in multiples. The benefits of higher ventilation alone are estimated to be between $6,500 and $7,500 per person per year. Researchers at Lawrence Berkeley National Laboratory have estimated that improving indoor air quality in offices could add as much as $20 billion annually to the U.S. economy. This new calculus should inspire a new generation of highly justifiable investment in creating and operating a healthy building.

Further, consider the talent you will want to attract. Today, businesses need to understand that prospective hires are not just interviewing you, they are interviewing your buildings. And you can be sure that future employees will be paying close attention.

HOW IS YOUR BUILDING'S AIR RIGHT NOW?

Awair Omni features enterprise-grade sensors that track temperature, humidity, CO_2, chemicals (TVOCs), fine dust (PM2.5), light, and noise. A software dashboard and/or API provide air data as well as actionable insights so you can take control of the air in your environment no matter where you are.

Omni is already used by leading organizations like WeWork, AirBnB, Harvard, Stanford University, and Google to keep their facilities optimized for employee and tenant health. If you would like to learn more, please reach out to us at business@getawair.com.

Let's keep the air healthy

Learn More

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