



# How the right ventilation can provide safe and effective re-entry to work

Five questions to ask

BY DAN DIEHL | JANUARY 2021

With the COVID-19 pandemic resurging throughout the country, employers and building managers have an obligation to provide a safe and healthy workspace. Sharing indoor space with people who are outside one's quarantine "bubble" brings heightened risk of exposure to the novel coronavirus through airborne transmission.

Very simply, that risk goes down depending on air quality and the amount of ventilation inside any building that will be reopened, and whether an owner or manager has the tools to monitor the air quality. We know definitively that offices and other indoor spaces with poor ventilation carry a higher risk for endangering occupants and thus a higher risk for airborne infection.

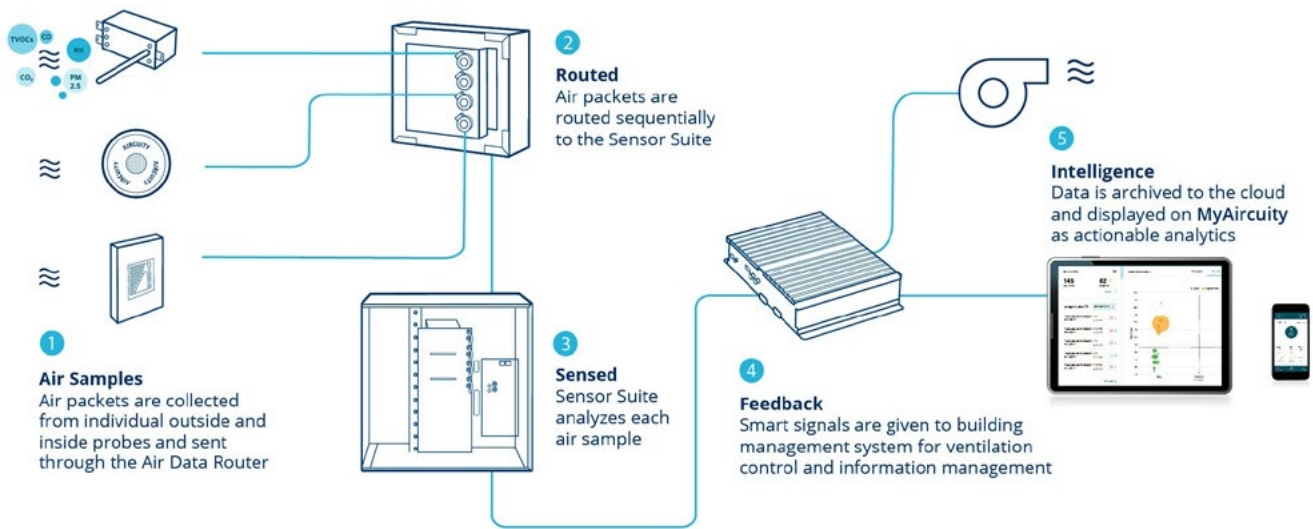
There are five important questions that business leaders,

administrators, and building managers should ask themselves as employees and others re-populate buildings. The answer to these will help guide leadership to provide and validate a safer indoor environment for all constituents.

## 1. Can ventilation really help reduce the spread of COVID-19?

Yes. Ventilation is an effective way to minimize the risk of airborne transmission of COVID-19 and is decidedly the key piece of the puzzle.

There is near-universal scientific consensus that the novel coronavirus and other viruses attach themselves to small particles in the air. Offices or classrooms with poor air quality automatically put occupants at heightened risk for airborne bacterial or viral infection. We know this



from research and we know it from experience. Indeed, the evidence of airborne spread of COVID-19 in poorly ventilated buildings is irrefutable.

While ventilation is not the only measure of defense against the spread of COVID-19, managing the environment to healthy building standards is paramount to ensuring safe and productive indoor spaces.

## 2. What do employers need to know?

There are science-based healthy-building parameters that, if understood and managed, can most significantly improve air quality and reduce negative health and wellness impacts. These essential and observable indicators of a healthy indoor space are particles, CO<sub>2</sub>, RH and TVOCs (volatile organic compounds).

- One of the ways that coronavirus and other viruses can be spread in poorly ventilated indoor spaces is through attachment to **airborne particulates**, so it is a priority to limit these as much as possible. Even if a building has recently upgraded its filters, administrators need to be able to quantify the impact. For example, a MERV 13 filter is only 40 percent efficient with a 0.3 µm particle, whereas the same filter is 100 percent efficient with a 2.5 µm micron particle. Using the right data, building operators can determine the “effective filtration rate” and whether small particle levels are being mitigated.

- To verify that enough dilutive air is being brought in, buildings should have a reliable system to measure the amount of **carbon dioxide (CO<sub>2</sub>)** in the space and bring more air in where and when needed. A high-quality measurement platform can read CO<sub>2</sub> levels of the outside air, supply air, and room air via differential measurement, ensuring accurate control of ventilation.
- At lower humidity levels, airborne droplets containing viruses evaporate and lighten, allowing the droplets to float longer and travel further. These levels weaken respiratory immune defenses and put everyone at higher risk. This means buildings should provide, where possible, higher **relative humidity levels**, especially during peak viral season.

*Note: Accurate measurement is essential to manage and report on a healthy and safe environment. Shown above is a depiction of how higher quality and more easily maintained sensors can be utilized to cost effectively provide this healthy environment.*

## 3. Are most buildings prepared?

The only truly reliable way to determine the safety of a workspace or classroom is to understand its current IAQ baseline. Some building operators might find they do not need to make significant adjustments, while others will require improved ventilation, filtration, and potentially



additional air-clean technologies. The beginning is discovering where you are at today.

We know how to make buildings intelligent and to automatically manage frequent air-quality demands. Most often, active ventilation increases will mitigate IAQ events. However, when the system can't automatically resolve the issue, building managers can receive notifications to help them quickly identify problem areas. Building managers are overwhelmed very often, so they need only receive real-time updates on those measurements of high concern. Knowing that building systems are continuously reacting to and tracking these parameters instills confidence for owners, managers, and, many times, even the occupants.

It is often said, "you cannot manage what you do not accurately measure" and managing air quality during this pandemic is a business and enterprise necessity, not a luxury.

#### 4. Are employees safer in buildings with proper ventilation?

Absolutely, yes. During this pandemic, the world has become more aware of what we have known for decades – increased effective ventilation provides a safer and healthier environment. Of course, there is no absolute safety, but owners and operators want to remove the possibility of their HVAC system contributing to spread of viruses – and just plain unhealthy buildings.

Improving ventilation effectiveness, filtration and air cleaning, and control of humidity when possible are all keys to reducing the risk of airborne transmission and getting your businesses returned to normal.

#### 5. Where do I start?

Leadership is paramount. Organizations should have a plan to understand their baseline, along with making initial and ongoing IAQ changes. We support other important strategies, such as hand-washing, mask-wearing and social distancing, but we know from experience that buildings dramatically differ in their ventilation effectiveness. Occupants expect lighting and temperature to be accurately controlled in the built environment – and the same should be expected for healthy building air quality. Coronavirus is an example of the importance of healthy buildings, but it is not the reason; **healthy people are**. The technology has been implemented for decades and it is time now to prioritize health and wellness in the spaces where we all spend 90 percent of our time.



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