



OPINION | ENERGY & ENVIRONMENT

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We need an Operation Warp Speed for clean indoor air

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When we think about the full suite of tools we need to combat covid-19, now and in the future, we've had many successes - a safe and effective vaccine created and rolled out in record time, new therapeutics coming into widespread use that reduces hospitalization by almost 90 percent, the authorization of more rapid test platforms and roll-out of hundreds of millions of tests, and the distribution of millions of N95 masks.

These are all enormous successes and speak to the power of the government to spur public health advances. But amid all of these achievements, one of the most important and needed has been ignored: good ventilation and filtration. It's a mistake that hurt us throughout the pandemic and will continue to hurt us in future waves if we don't act now.

This wouldn't be a problem except for the fact that just about every building you've ever walked into is underventilated with low levels of filtration. That's because the standard that governs ventilation rates in offices, schools, lecture halls, local coffee shops and hair salons is a bare minimum not designed for health.

How much of a non-focus are ventilation and filtration? We don't even include an assessment of the building systems in our outbreak investigations, as a [Lancet COVID-19 Commission report](#) I coauthored pointed out should be done every time.

A school outbreak investigation that didn't even mention if the windows were open or closed? A hospital outbreak investigation that failed to look at how the mechanical systems were performing? This is malpractice. And it's a missed learning opportunity for the world, in terms of what levels of ventilation and filtration are associated with the best outcomes.

And it's not like we didn't know what to do. We've known exactly what was needed since [day one](#) of the pandemic: enhanced ventilation, better filtration in mechanical systems, in-room portable air cleaners as supplements.

This isn't rocket science. Many schools, offices and colleges have taken these simple steps, but so many more have not. Better air also comes with the benefit of being a passive mitigation measure that doesn't require human behavior change.

Here are six recommendations for what the government can do today:

- Invest in public-private partnerships to spur the market for better ventilation and filtration and new technologies for this space. This worked well when the government did it for vaccines, therapeutics and rapid tests. They guaranteed customers and the market responded in a big way. The same can happen for ventilation and filtration and air cleaning;
- Re-up the [FRESH AIR for Businesses Act](#) -which was set to provide up to \$15,000 for businesses to upgrade their ventilation, filtration and monitoring systems - or create something similar;
- Bring building scientists into the core function at the Centers for Disease Control and Prevention. This virus - and all respiratory viruses - spread predominantly indoors. We have great epidemiologists, virologists, immunologists and medical doctors at the CDC, but where are the engineers? Putting them up on the podium next to the CDC director would send a powerful message about how our buildings should be part of the mitigation package;
- Elevate the U.S. Environmental Protection Agency. They have a terrific indoor environments division and should be the governmental organization that leads the way for creating updated indoor clean air guidelines. We have been focused on *outdoor* air quality for over 40 years, and this has led to the [Clean Air Act](#) which established [National Ambient Air Quality Standards](#) that have dramatically cleaned our skies and saved lives. We are overdue to extend this thinking to the indoor environment - the place where we spend most of our time - and have National *Indoor* Air Quality Standards;
- Put real-time air quality sensors in all government buildings and provide open access to the data. The famous business maxim is you can't manage when you don't measure. We've been flying blind when it comes to indoor air quality, but we don't have to. Advances in low-cost sensors mean these can be deployed at scale. [Boston Public Schools](#) just did this and transparently displays all of the air quality data for the public, by classroom. They should be in all schools and government buildings. And, finally;
- Create simple messaging so building owners and operators know where to start. Here's an example of a FIRST step plan for what needs to be done in buildings:

Find out what your existing systems are doing by hiring a building engineer.

Improve the existing systems with retro-commissioning (give your buildings a tune-up).

Replace or renovate faulty systems.

Supplement with temporary measures like portable air cleaners.

Test the air quality regularly with real-time monitors, to ensure systems are working.

Improving air quality in buildings not only helps to mitigate the spread of COVID-19 but also helps against other infectious diseases. On top of that, better air quality is associated with [better scores](#) on reading and math tests and fewer missed school days and workdays. The business case for healthy buildings is also strong - good indoor air quality also improves employee cognitive function, which flows directly to the [bottom line performance of businesses](#).

We're on the back-end of the omicron surge. But this is not a "mission accomplished" moment. There will be future curveballs that this virus - and other respiratory viruses - throw at us. We need to use this brief reprieve to shore up our defenses.

Buildings have been an afterthought, but they have the power to be our first line of defense.

Joseph Allen, DSc, MPH, is associate professor and director of the healthy buildings program at Harvard T.H. Chan School of Public Health, and co-author of the book, "Healthy Buildings." Twitter: @j_g_allen