

Can air purifiers protect you from COVID-19?

BY Cynthia DeMarco

Studies show that wearing a mask properly and consistently practicing good social distancing can significantly reduce the spread of the coronavirus (COVID-19) through droplet transmission.

But concerns about possible aerosol transmission have many people thinking about air purifiers, too. So, how do the various types of air cleaners work? Are any of them effective against COVID-19? And should you get one (or more) for your home?

We spoke with Tim Peglow, our assistant vice president of Patient Care and Patient Facilities, for guidance. Here's what he had to say about air purifiers and COVID-19.

What are the different types of air purifiers?

Most air cleaners fall into two basic categories: filters or sanitizers. Some combine both types in the same unit.

Filters are designed to improve indoor air quality by physically removing tiny particles of matter that can be floating around — such as dust, pollen and pet dander. These are all things that occur naturally, but can aggravate peoples' allergies if they inhale them. The most common type of home filters right now are HEPA filters.

Sanitizers are designed to kill bacteria, viruses, mold or fungal spores that can also be floating around. These things occur naturally, too, but they can make you sick if you're exposed to high enough concentrations of them. The most common type of sanitizers right now are UV light devices.

How do HEPA filters and UV light air purifiers work?

HEPA stands for “high-efficiency particulate arresting.” As the name suggests, these filters are really good at pulling things out of the air and holding onto them so that they can’t be recirculated. The fibers in a HEPA filter are designed to trap particles as small as .01 micron in diameter — just a tiny fraction of the width of a human hair.

UV light devices, on the other hand, don’t remove anything. Instead, they’re designed to kill any viruses, bacteria or mold spores floating around by exposing them to ultraviolet light.

What about ionizers? How do they work?

Ionizers give air particles an electrical charge, which pulls them toward something with an opposing electrical charge. These objects could be the collector plates within the devices themselves or various surfaces around the room (walls, carpets, curtains, ceilings, etc.). But once they’ve found something they’re attracted to, the particles tend to stay there; it’s very similar to static electricity.

What about ozone generators? How do they work?

Ozone generators alter the standard oxygen molecule so that it has three atoms instead of just two. The three-atom molecule is called ozone, not oxygen, and it interacts differently with its environment than the normal air we breathe does.

Are all of these types of devices safe to use?

No. Air purifiers that use HEPA filters, UV light or ionizers are fine. But inhaling ozone can cause coughing, throat irritation, shortness of breath and other issues, even in healthy individuals. Ozone can even result in lung damage, which is why local weather authorities sometimes issue ozone alerts.

People with asthma or other breathing problems can be very sensitive to air quality, so they need to limit their exposure to ozone by either staying inside on those days or avoiding heavy exertion while outdoors.

Are any of these air purifiers effective against COVID-19?

The coronavirus is at the lower end of a HEPA filter’s range, so it might not be 100% effective on a single pass. But if a HEPA system is run over a period of time, it can take out a big chunk of viruses — somewhere in the high ninetieth percentile (99.94 to 99.97%). And long enough exposure to the UV light in an air purifying device can disable some viruses, including COVID-19.

Under what circumstances should people use an air purifier during the COVID-19 pandemic?

Your own home is generally the safest place you can be during the COVID-19 pandemic. So, the average person probably doesn't need an air purifier. This is especially true if you're socializing only with members of your own household, wearing a mask whenever you go out, and following good social distancing practices.

But if someone in your household has COVID-19 or needs to quarantine until they can be sure they don't have it, it might make sense to have an air purifier in their room with the door closed, if only to help protect caregivers from possible exposure.

It's also something to consider if someone in your household is at extremely high risk — either of contracting COVID-19 or of developing complications from it.

What should you look for when shopping for an air purifier?

Think about the size of the area you want to cover. Air purifiers are most effective in smaller rooms with all the doors shut. So, spaces with an open floor plan are going to be more difficult to manage. You also might have to upsize a little if you have 10-12 foot ceilings. But if you have a 600-square-foot area and a device that's designed to cover 300 square feet, it would be logical to get two.

What are some other things people can do to improve the overall indoor air quality at home?

If temperature, humidity, ozone, and additional allergens are not a concern, you could:

- Open windows/turn on ceiling fans to increase air circulation
- Use box or floor fans strategically (position one so that it "pushes" indoor air out one window and another one so that it "pulls" fresh outdoor air inside from a different window)

If any of those factors *are* a concern, you could keep the windows closed and:

- Set the fan on the HVAC system to run continuously, even if it doesn't always cool or heat the air
- Upgrade to a better, higher-quality air filter in the central air return

- Replace the filter more frequently. The typical lifespan of a 1"-thick home air filter is 90 days. If you are running the fan continuously, you should consider replacing it every 45 days.

Keep in mind that unless you have someone with an active COVID-19 infection in your home, you're not going to have any source of the coronavirus to reduce or filter out using any of these methods. So, you'll just be changing the air quality inside your home in other ways.

What's the one thing you want people to know about air purifiers?

Air purifiers are not a magic bullet. So, it's important to think of them more as *part* of your plan rather than your *whole* plan.

Let's say I'm visiting you at your home and I don't know I have COVID-19 yet. If I sneeze on you from only two feet away, and neither one of us is wearing a mask, then your exposure risk will definitely go up, even if you have an air purifier nearby. But if you live alone and you're the only one who's ever there, your chance of contracting the coronavirus from the air in your own home is virtually zero.

Air purifiers can provide you with an *additional* layer of protection, but they are limited in their effectiveness when compared to other strategies, such as wearing a mask, social distancing, and disinfecting surfaces. All of those will play a much more significant role in keeping you safe than anything else we've talked about.