CLEANER AIR PRACTICES

For Reducing COVID-19 Risk Indoors

Airborne Transmission of COVID-19

COVID-19 is usually spread through breathing air containing respiratory droplets from someone who has COVID-19. These droplets are large and settle out of air rapidly, so maintaining six feet of distance between yourself and others can help prevent exposure. However, these respiratory droplets can dry out and remain as tiny particles suspended in the air, and breathing them can cause infection. The best way to prevent this is through improving ventilation, taking virus-contaminated air and exhausting it from the building, and replacing it with clean air. There are two routes to improve ventilation, first by making sure your HVAC system is operating properly, and secondly through additional steps to increase ventilation or clean the air.

In Your Home

CDC provides guidance on ventilating your home to reduce the potential levels of virus in the air if a visitor enters your home. When someone in your household has COVID-19, improving ventilation can reduce the risk of other people in the household catching it. If a person who has COVID-19 can isolate themselves in a room away from others and open the windows, that can help reduce the amount of virus in the air. Be aware of other risks from open windows, like insects if windows are not screened, allergens, or irritating odors or exhaust fumes. If outdoor air quality is bad, it is better to keep windows closed and take steps to improve indoor air quality like using a HEPA filter.

Air Filters

HEPA filters can improve air quality by removing particles from the air, including particles containing the virus that causes COVID-19. Some air cleaners are advertised as cleaning air by ionizing particles in the air, which can produce ozone. These types of technologies are not generally recommended, since ozone is a respiratory irritant and can trigger asthma attacks.

Some air cleaners and lamps for the home are advertised as using UV light to kill viruses. UV light technology is not recommended for the home due to the potential for improper usage and other safety risks. Potential safety hazards of using UV lights or lamps include eye and skin burns, increased skin cancer risk, ozone exposure, and mercury exposure. Since HEPA filters are effective and do not have these potential health hazards, it is safest to use HEPA filters at home instead of UV devices. The FDA has more information on UV lights for disinfection.

For Businesses and Facility Managers

Tune-Up Your HVAC System

Have your HVAC system inspected and load tested.

HVAC systems are designed to have a certain air turnover rate, but changes to the system (such as closing the damper and closing registers or renovation projects that change air flow) and maintenance problems can reduce air turnover and result in less fresh air entering your building. Having the system inspected can ensure that sufficient fresh air is being brought in from outside and distributed to all areas of the building. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) has developed Guidance for Building Operations During the COVID-19 Pandemic that may be helpful in optimizing your HVAC system's operation.

If you have an advanced HVAC system that incorporates CO2 monitoring, make sure that it is not throttling the system when CO2 levels are low. Some HVAC systems are designed to reduce airflow when CO2 levels are low, with the assumption that fewer people are in the building so less ventilation is necessary. However, to reduce COVID-19 risk, we want to reduce the number of people in buildings while keeping ventilation the same.

Use the highest MERV filter recommended by the manufacturer for your system.

Tighter filters are better at capturing small particles in the air that can carry the virus that causes COVID-19. However, tighter filters are also harder to push air through, so using too tight a filter can strain your HVAC's motor. You should use the highest MERV filter that the manufacturer recommends for your system, and make sure that it is the correct size to avoid air gaps.

Ultraviolet Germicidal Irradiation (UVGI)

Ultraviolet germicidal irradiation (UVGI) uses ultraviolet (UV) waves to kill viruses, bacteria, and fungi which may be in the air. With "Upper-room" UVGI, a fixture is installed and operates in the airspace above people's heads, which minimizes the risk of exposure to the UV waves. This technology has been used for decades in healthcare settings and may be appropriate in other high-risk settings, or when there is no HVAC system or insufficient natural ventilation. CDC provides more information about the benefits and drawbacks of this technology.

Some companies install in-duct UV lamps intended to kill viruses as it passes through HVAC ducts. The effectiveness of this technology depends upon the virus passing close enough to the UV source and for a long enough time to kill the virus. The system installed must be designed by a professional to work with the HVAC system, and should only be serviced by qualified personnel due to the potential for UV exposure.

Additional Ventilation Options

Open doors and windows for better airflow.

Opening doors and windows can help bring in fresh air, but in some buildings it can cause problems with the HVAC system. If air outside is very warm and humid, it will place more load on the HVAC to cool and dehumidify a larger volume of outdoor air than the system was intended. Cooling of very humid air can create excess condensation and lead to corrosion and mold growth. If you own a business, consult with an HVAC contractor to determine if opening windows and doors would be a good option for your system and under what weather conditions. In your home, opening doors and windows when the weather is mild can air out your home without putting unnecessary stress on your HVAC system.

If you do open doors and windows, take precautions to avoid any unintentional hazards. Occupants, particularly young children, could fall out of an unprotected window. In densely populated cities, building occupants are at greater risk of illnesses associated with poor outdoor air quality. People who have allergies are more susceptible to illness when pollen counts are high.

When opening doors and windows, especially if you are using fans to direct air flow, make sure not to have air blowing rapidly across groups of people. This could cause respiratory droplets that would normally settle out within a few feet to be carried farther through the air and could put others in the group at risk. This was seen recently in an outbreak at a restaurant caused by an air conditioner that blew air across several different tables.

Consider using portable HEPA filters to supplement your HVAC system.

Portable HEPA filters are units that can be moved room to room and have a fan that blows air through a HEPA filter. HEPA filters are very high efficiency filters capable of filtering out the small particles that can carry the virus that causes COVID-19. For adequate filtration, portable HEPA filters should be sized appropriately to the room that they are placed in. Filters must be replaced as recommended by the manufacturer. Avoid air purifiers that are advertised as ionizers. These filters can generate ozone, a gas that causes airway irritation and can trigger asthma attacks.