



WTP COVID-19 BRIEF:

Selection and Use of Portable Air Cleaners to Protect Workers from Exposure to SARS-CoV-2

This brief provides an overview of key issues in the selection and use of portable air cleaners to prevent the spread of infectious diseases. It is an abbreviated version of NIEHS WTP Selection and Use of Portable Air Cleaners to Protect Workers from Exposure to SARS-CoV-2.

Ventilation and filtration are important to prevent transmission of COVID-19 and other infectious diseases. SARS-CoV-2, the virus that causes COVID-19, is mainly spread through inhalation of virus-contaminated air when an infected person speaks, laughs, coughs, sings, or sneezes. Physical distancing alone will not prevent the build-up of viral particles in a room or workspace.



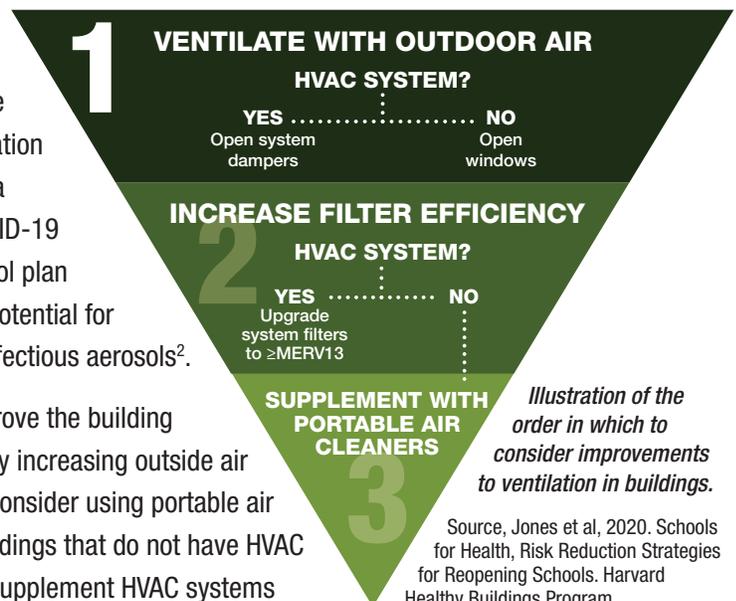
What are portable air cleaners?

Portable air cleaners and HVAC¹ filters are designed to capture air pollutants that pass through them. When used properly, they can help reduce the spread of airborne viruses in a building or enclosed space. Portable air cleaners may be particularly helpful in buildings that do not have mechanical HVAC systems or when changes to existing HVAC systems is not possible. This may be the case when increasing the amount of outdoor air and/or filtration negatively impacts indoor temperature control or when outdoor air pollution is high.

Can current building ventilation and filtration systems be improved?

When used along with other protective measures, filtration can be part of a workplace COVID-19 exposure control plan to reduce the potential for inhalation of infectious aerosols².

If feasible, improve the building HVAC system by increasing outside air and filtration. Consider using portable air cleaners in buildings that do not have HVAC systems or to supplement HVAC systems in buildings where adequate ventilation and filtration are difficult to achieve.



1 HVAC = heating, ventilation, and air conditioning

2 Aerosols are defined as suspensions of solid or liquid particles in the air.

What are key considerations in selecting portable air cleaners?

1. Determine the capability and number of portable air cleaners needed for the workspace.
2. Detailed information on how to do calculations to select the correct sized portable air cleaner is available in the NIEHS WTP Selection and Use of Portable Air Cleaners fact sheet at: https://tools.niehs.nih.gov/wetp/public/hasl_get_blob.cfm?ID=13021.
3. Select a portable air cleaner that uses a HEPA filter. A HEPA filter will remove at least 99.97% of sub-micron particles.
4. To achieve the desired level of protection, the portable air cleaner must be run on the highest setting.
5. Consider the noise rating and whether it will disrupt activities in the room or workspace.

NOTE: There is no standard for labeling portable air cleaners. This makes product selection difficult. Consider consulting an expert such as an HVAC engineer, an industrial hygienist, or safety professional.

Where should portable air cleaners be placed?

- Consider the location of furniture and people in the room and the placement of portable air cleaners relative to room layout. This is to ensure that there is as much air flow as possible through the HEPA filter.
- Obstructions and distance can interfere with drawing air into the air cleaner. DO NOT place portable air cleaners within 3 feet of corners, doorways, curtains, walls, or furniture.
- Portable air cleaners should be placed away from open windows to provide the maximum protective benefit so that units filter air from inside the room, not air directly from outdoors.
- In a large room, use more than one portable air cleaner to promote better mixing and overall air cleaning.
- If feasible, air cleaners should remain on and maximized in the space 2 hours before and after occupancy.

What else needs to be considered?

If you decide to use a portable air cleaner, here are other considerations:

Maintenance	<ul style="list-style-type: none"> • Schedule preventive maintenance for the units. • Ensure a sufficient supply of the correct filter needed for change-out of both the pre-filter and HEPA filter. • Follow the manufacturer maintenance and filter change requirements. • Ensure staff are aware of these requirements. • Ensure good fit of filters in the frame and no leakage of air around the filter unit.
Cost	<ul style="list-style-type: none"> • Expect that portable air cleaners will range in cost from about \$150 to \$2,000 depending on their size and features. • Use the shut off timer feature that allows the unit to shut down and turn on at set times. • Estimate the average annual electricity costs for running portable HEPA air cleaners 100% of the time to be just under \$200 per year, with individual unit electricity costs ranging from just over \$100 to nearly \$250 per year. • Include the cost of a replacement filter in estimating overall annual cost.
Additional Risks	<ul style="list-style-type: none"> • Do not select a unit that includes ultraviolet irradiation, ozone generators, or other disinfection features. These extra features may pose a health hazard to building occupants and provide little added benefit to air cleaning.