



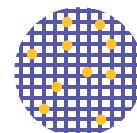
# Portable Air Cleaner Optimization Checklist

Dilution = Ventilation

**Ventilation** is key in reducing the amount of airborne viral particles indoors.  
You can reduce this two ways: **dilution and air cleaning**.



**Dilution** happens when you introduce clean uncontaminated air into a space. Most HVAC systems bring in a percentage of outdoor air that is filtered and then mixed with the indoor recirculated air. This process forces air in the room to be moved outside and reduces the amount of viral particles indoors by replacing it with filtered, outdoor and indoor air.



**Air cleaning** reduces the amount of viral airborne particles by filtering them from the air.

There will be scenarios when the **building ventilation system is under-designed or does not exist and cannot provide the level of ventilation and air cleaning needed to help keep people safe**.

## Examples of these include:

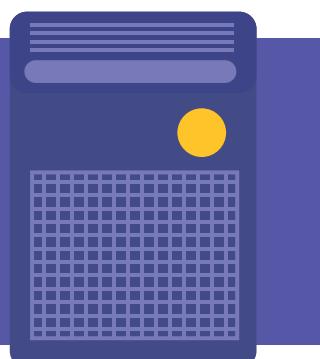
Buildings may have been designed and built with residential HVAC systems that are **cannot handle higher efficiency air filters** and could cause damage when installed.

Others may exist with only **non-forced air heating capabilities or unit ventilators that are not equipped with appropriate filtration**, making them struggle to clean and provide clean air indoors.

Without the introduction of outdoor air in a room combined with poor filtration, particle concentrations can build up.

In these situations, **portable air cleaners** can help clean the air and make it safer for people to be indoors.

While these systems do not bring in outdoor dilution air like an HVAC system, **they are effective at cleaning air indoors to reduce the concentration of airborne particles**.



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# PAC Optimization Checklist

**1** **Make sure to select portable filters that combine a HEPA filter with a powered fan system.** These are the preferred options for air cleaning, especially in higher risk settings such as health clinics, vaccination and medical testing locations, workout rooms, or public waiting areas.

**2** **Keep in mind typical risk assessment using the 4 Ds (Density, Duration, Dilution, and Distance),** you'll want to consider things like how many people are infected with COVID-19 in the community, how likely will people in the space where a mask or be vaccinated, and how many people will be in the space. While a portable air cleaner helps to reduce the risk of transmission, the overall risk changes based on the 4Ds.

**3** **Select a system that is designed to work in the size of the space you will be using it.** You can determine this by looking at the air flow listed with the unit, which is typically reported in cubic feet per minute (cfm). This can tell you how much cubic feet of air can be moved or exchanged each minute. You can determine the cubic feet per minute through the following steps.

- First determine the size of your room by multiplying the length, width, and height of the room the unit will be used.
- Next multiply how many times you want the air to be cleaned in your room. For none medical use, 3 room cleanings per hour is a good baseline. Assuming the unit is properly sized and placed, this will result in 99.9% air cleaning within about one hour.
- Now divide this amount by 60 (number of minutes in an hour). This will be the target CFM you want for your space.

**4** **Make sure to review the Clean Air Delivery Rate (CADR) of your unit** (See EPA's Guide To Air Cleaners In The Home), these are noted on a label in the operators' manual, on the shipping box, and/or on the filtration unit itself.

**5** **The CADR is an established standard** defined by the Association of Home Appliance Manufacturers (AHAM).

- The larger the CADR, the faster it will clean the room air.
- Three CADR numbers are given on the AHAM label, one each for smoke, dust, and pollen. The smoke particles are the smallest, so that CADR number applies best to viral particles related to COVID-19.
- The label also shows the largest room size (in square feet, ft<sup>2</sup>) that the unit is appropriate for, assuming a standard ceiling height of up to 8 feet.
- The CADR program is designed to rate the performance of smaller room air cleaners typical for use in homes and offices.
- For larger or smaller air cleaners whose manufacturers choose not to participate in the AHAM CADR program, select a HEPA unit based on the suggested room size (ft<sup>2</sup>) or the reported air flow rate (cfm) provided by the manufacturer.

**6** **Place your unit correctly.** You want to ensure that the location of the unit is positioned so that it is collecting as much of the room air as is possible.

**7** **Make sure your room is well-mixed** A portable air cleaner is just one part of helping reduce the risk of transmission. You want to ensure that air is circulating and moving to not create stagnant reservoirs of potential viral particle build up. This will help to increase the probability that most of the air in it can enter the air cleaning unit at some point. One strategy is to use a ceiling fan\* in combination with the portable air cleaner. Appropriate placement of the ceiling fan can create a balanced, circular motion of the room air.

\*If pedestal fans or hard mounted fans are used, be sure to minimize air blowing from one person to another as this may contribute to the spread of the virus.

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