

Fact Sheet for Portable Air Cleaners

The purpose of this guide is to address the health and safety concerns of ozone-emitting portable air cleaners (i.e. air purifiers) and provide accurate information on effective ways to control indoor air quality pollution.

What are the different types of air cleaning technologies on the market?

Ozone-generating air cleaners, often called “ozone generators” are devices that purposefully create ozone to clean the air through chemical interactions.

Electronic air cleaners (e.g. ionizers, electrostatic precipitators, hydroxyl generators, and UV light) emit ozone as a by-product and work by charging particles in the air causing them to stick to surfaces in the room (e.g. floors and walls).

Filtering air cleaners are designed to remove particles from the air by passing the air through a filter, where particles in the air become sequestered.

What is ozone?

Ozone is a colorless gas that is found naturally in the Earth’s upper atmosphere which protects us from harmful ultraviolet rays produced by the sun. Ozone can be formed at ground level as a result of pollutants in the air undergoing chemical reactions in the presence of sunlight. Several federal agencies have established exposure limits to ozone because of its adverse effects on human health. Inhalation of relatively small amounts of ozone can cause coughing, chest pain, throat irritation, and shortness of breath.

Is ozone effective in controlling indoor air pollution? What are the health concerns?

While ozone can be partially effective in removing pollutants from the air at high enough concentrations, ***ozone is generally ineffective in controlling indoor air pollution at concentrations that do not exceed public health standards.*** Ozone cleans the air through its ability to interact with and chemically alter compounds, which forms the basis of manufacturer’s claims, yet is also the mechanism by which ozone exerts harmful health effects. In other words, if the concentration of ozone in the room is high enough to be effective in cleaning the air, then it’s also high enough to create an inhalation hazard for the people in the room. Furthermore, ozone may even react with existing chemicals in the air to create harmful by-products (e.g. formaldehyde). ***For these reasons, EH&S does not recommend the use of ozone generating or electronic air purifiers under any circumstances.***

Which types of portable air cleaners emit ozone?

- Ozone-generating air cleaners and
- Electronic air cleaners, although at a much lower rates than ozone-generating air cleaners. Electronic air cleaners include ionizers, electrostatic precipitators, hydroxyl generators, and UV light.

What is the best way to control indoor air pollution?

The large majority of indoor air quality issues are due to poor ventilation. As a result, simply increasing ventilation can usually mitigate most concerns. The three most effective ways to control indoor air pollution are (in order of most to least effective):

1. **Source Control:** Eliminate or control the sources of pollution, for example:
 - Cleaning regularly to prevent dust accumulation
2. **Ventilation:** Dilute and exhaust pollutants through outdoor air ventilation, for example:
 - Increasing room air change rates by opening windows and maintaining HVAC systems
3. **Air Cleaning:** Remove pollutants through proven air cleaning methods, for example:
 - Using an air cleaner equipped with a HEPA filter

Using a portable air cleaner is the least effective way to clean the air, but it can be a good supplement to ventilation. If you decide to purchase a portable air cleaner, **filtering air cleaners with High Efficiency Particulate Air (HEPA) filters are recommended** because these do not emit ozone and do remove particulate matter from the air. Electronic air cleaners (e.g. ionizers) and ozone-generators are NOT recommended due to the health and safety concerns of the ozone they emit.

Do indoor plants clean the air?

According to the EPA, there is currently no evidence to suggest that a reasonable number of houseplants would be effective in removing significant amounts of pollutants from indoor air. Indoor houseplants should not be over-watered because overly damp soil may promote the growth of microorganisms which can affect allergic individuals.

For more information:

EPA's Guide to Air Cleaners in the Home [https://www.epa.gov/sites/production/files/2018-07/documents/guide to air cleaners in the home 2nd edition.pdf](https://www.epa.gov/sites/production/files/2018-07/documents/guide_to_air_cleaners_in_the_home_2nd_edition.pdf)

EPA Indoor Air Quality website www.epa.gov/indoor-air-quality-iaq

Association of Home Appliance Manufacturers (AHAM) <https://www.aham.org/>

