

# Air Filters and Filtration

The wildfires are producing significant amounts of noxious smoke that is blanketing our great state. The smoke produced by the fires have a significant amount of particulate materials (PM) as well as volatile organic chemicals (VOC) that don't belong in anyone's lungs. This info sheet from the Berkeley Disability Lab only deals with room air filters — whole house air filters and personal respirators and masks are topics for future infosheets.

There are two types of air filters that are on the market, ones that we recommend and ones that we don't:

- Electrostatic air filters (and ozone machines) - DO NOT RECOMMEND
- HEPA and HEPA-Like air filters with activated carbon - RECOMMENDED

## Electrostatic filters - NOT RECOMMENDED

Electrostatic filters were all the rage around 20 years ago and can still be found in people's homes, closets, garage sales, and thrift stores. There's two reasons that they aren't commonly sold now:

- Reason #1: They don't work very well. They are sold as filterless - you only have to wipe them down from time to time, but that's because they aren't taking that much gunk out of the air. They work by giving the air a slight electrostatic charge, that's supposed to make the air particulates clump up and either fall to the ground or collect on the vanes of the filter unit. This does happen but not very well.
- Reason #2: They produce a small amount of ozone. A side effect of the electrostatic charge is that they produce a small amount of ozone. Ozone is an eye/lung irritant at ground level. While the levels the electrostatic filters produce are usually well within health standard limits, sensitive people may still be affected by them. While the air "smells" cleaner, this is usually the smell of ozone - often associated with the smell of the air

after a thunderstorm, or with the smell of an office photocopier - both sources of ozone. Clean air smells like nothing.

There's also ozone generators which are sold online as odor removers. They produce copious amounts of ozone and they do work to remove odors — by tearing organic odor molecules apart, but they also do the same to other organic material - such as the mucous membranes in your eyes and lungs. Never willingly be in the same room as an active ozone generator.

## **HEPA and HEPA-Like Filters**

The Lab suggests that you look at room air filters that use HEPA or "HEPA-Like" air filters. HEPA filters will cut both PM2.5 and PM10 pollutants, the most common and most harmful particulate matter types. The WireCutter has some recommendations for air filters:

<https://thewirecutter.com/reviews/best-air-purifier/>

Be sure that your room size matches the capacity of the air filter.

Activated Carbon filters will also reduce the amount of volatile organic compounds (VOC) in the air. Activated carbon filters do wear out and need to be replaced regularly. They may look fine but the magic juju goes out of them while they're doing their job.

## **Sealing your doors and windows**

Making sure polluted air doesn't enter your house is essential to your air purifying working efficiently. Seal your windows and doors with appropriate door and window sealing foam or trim. We're assuming you don't have a newer forced air conditioning or heating system (if you did, then you should put a new HEPA-like filter into your duct system). If your system is older and potentially leaky then turn off your ventilation, especially if it's designed to suck in air from the outside.

When you come home, take off your clothes and put them in your hamper and change into home clothes. Take off your shoes if applicable and keep them by the door. Wipe down your wheelchair wheels if you can. You track a considerable amount of pollutants with you back into the house from outside.

Please give us feedback on this! Either now or later on at: [knak@berkeley.edu](mailto:knak@berkeley.edu). v0.1b