

# Indoor Air Filters Cleaning Your Home's Air

## YOU AND YOUR FAMILY CAN START BREATHING EASIER AT HOME BY CHOOSING AN APPROPRIATE AIR FILTER.

Many types of air pollution may be found in your home. One way to make the air cleaner in your home is to use an air cleaning device, such as portable air filter or a whole-house filtration system.<sup>1</sup> Replacing the standard low efficiency "furnace filter" in your home's forced air system with a high efficiency filter is a very effective and economical solution. Air filters reduce levels of airborne particles, including PM<sub>2.5</sub>, that can result from outdoor pollution sources like traffic, industry and wood smoke, and also from cigarette smoke, pollen, cooking fumes, and dust.

- **The appropriate air filter depends on your situation.** The size, location and type of home you have affects the type of filter that is right for you. Your family's health concerns and budget also play a role.
- **There are many air filter options available.** While air filters alone cannot remove all pollutants from your home, an appropriate filter can greatly reduce the level of air pollutants.<sup>2</sup> Options range from small plug-in portable filters (like the units shown in pictures to the right), to whole-house filters.
- **Filters must be maintained and used properly to obtain the largest health benefits.** Filters require simple but regular maintenance to properly function. They should be replaced every 3 to 24 months, depending on the type of filter and the level of pollution present. Filters only clean the air when there is air blown past it, so operate your filter system as much as you can to obtain the biggest air quality improvements.<sup>2</sup>
- **When properly used, air filters will remove pollution from your family's home.** Less air pollution can lead to improved health for you and your family!

CAPHE is a community-based participatory research project. In collaboration with community partners, CAPHE is developing a public health action plan to improve health in Detroit by promoting clean air for Detroit residents.

This work is made possible by National Institute of Health and Environmental Sciences, RO1ES022616, and the Fred A. and Barbara M. Erb Family Foundation. Additional support was provided by the Michigan Center on Lifestage Environmental Exposures and Disease (M-LEEAD), #P30ES017885.

Winix PlasmaWave 5300- \$170



Whirlpool Whispure Air Purifier



Typical forced-air ventilation system



## Do you have a forced-air heating system?

If your home heating system has registers or vents that discharge warm air in winter (or cool air in summer if you use air conditioning), then you have a forced-air system. All forced air systems should have a furnace filter, although sometimes it is missing. Traditional furnace filters can be replaced with high efficiency filters, significantly improving air quality throughout your home. This is often the best and most economical approach for improving air quality in your home.

1. Check the filter size — this can be done by examining the existing filter, looking at your owner's manual, or by measuring the dimensions of the filter slot. Typical dimensions are 24 x 12 x 1 inch, 12 x 24 x 1 inch, and so forth. The filter must fit, so be sure to check the exact size.
2. When shopping for filters, check the MERV (Minimum Efficiency Reporting Value) on the filter. A higher MERV rating means that the filter will remove more particles. Filters with a MERV rating between 7 and 13 can be effective in homes,<sup>3</sup> but filters with MERV ratings from 11 to 13 are most effective and are recommended.
3. Purchase filters that fit your forced air system's dimensions, and follow instructions to remove the old filter and install the new one. Follow replacement instructions provided with the filter.
4. Forced air systems with good filters will clean the air only when the system is operating, that is, heating or cooling the house. Your system can be operated in the "fan" mode, which you can set using your thermostat's controls. This is effective when windows are closed.

## Where can I buy filters for my forced-air system?

- Most hardware stores (Ace, HomeDepot, Lowes, etc.) and department stores sell air filters. There are many good brands, e.g., 3M Filtrete, Rheem, RPS BestAir, etc. Avoid the standard fiberglass filters since these provide very little filtering.
- You can also order filters on-line, which can be handy if you need a difficult to find size. Companies like Amazon and Accumulair.com have good quality and competitive products.
- **How much do air filters cost?** A quality in-home air filter can cost between \$15 and \$60; most cost about \$15 to \$20. Keep in mind that these filters need to be replaced regularly, ideally each season (4 times per year).

## Don't have a forced air system?

If your home has radiators, baseboard heaters (electric or hot water), or some other type of heating system that does not use using forced air, you can still improve the air quality using a portable air filter. These can be placed in living rooms and bedrooms, places where you and your family spend most of your time.

1. When shopping for a portable filter, check the MERV (Minimum Efficiency Reporting Value) rating on the filter or system. A higher rating means that the filter will remove more particles. Filters with a MERV ratings between 7 and 13 can be effective in homes,<sup>3</sup> but MERV ratings from 11 to 13 are recommended. Some filters use HEPA (high efficiency particle arrestance filters) that can be very effective, especially for smaller particles. HEPA filters usually cost more, but they typically last longer than standard filters.

We do NOT recommend buying an ionizer, ion generating or electronic filter since they may not work well and some emit harmful levels of ozone.

2. When purchasing a portable filter, check the CADR (Clean Air Delivery Rate), which shows how large an area or room the filter can handle. For example, a 17 ft. x 17 foot room needs a filter with a CADR of 200, while a 25 ft. x 25 foot room needs a CADR around 400.<sup>4</sup> It is best to match the room size to the CADR (even approximately is fine).
3. Purchase an in-home air filtration system that suits your family's needs and budget.

## Where can I purchase a portable filtration system?

- Most local hardware stores, and many supermarkets sell portable filtration systems. (See left panel).

## How much do portable air filters cost?

- A portable air filtration system will cost between \$125 and \$450. Keep in mind that portable systems need to have filters replaced regularly.

## Citations

1. California Air Resources Board (CARB) 2014. Air Cleaning Devices for the Home: Frequently Asked Questions. Available: <https://www.arb.ca.gov/research/indoor/acdsumm.pdf> [accessed 12 October 2016]
2. Batterman S, Du L, et al. Use of Freestanding Filters in Asthma Intervention Study. *Air Qual Atmos Health* (2013) 6:759–767
3. U.S. Environmental Protection Agency. 2009. Residential Air Cleaners (Second Edition): A Summary of Available Information. Available: <https://www.epa.gov/indoor-air-quality-iaq/residential-air-cleaners-second-edition-summary-available-information> [accessed 12 October 2016]
4. UCSC Environmental Health and Safety. Fact Sheet: Personal Air Cleaners. Available: <http://ehs.ucsc.edu/programs/safety-ih/documents/personal-air-cleaners.pdf> [accessed 12 October 2016]

## Thank you to our partners:

Community Action Against Asthma — Detroit Community-Academic Urban Research Center — Detroit Hispanic Development Corporation — Detroit Future City — Detroiters Working for Environmental Justice — Green Door Initiative — Healthy Environments Partnership — Michigan Department of Environmental Quality — Sierra Club — Southwest Detroit Environmental Vision — University of Michigan School of Public Health — Wayne State University Law School

