



# Enhanced Indoor Air Filters:

## Reducing Air Pollution Inside Homes and Schools

### What are air filters?

Air filters are devices that trap particles in the air from a type of air pollution called particulate matter or PM2.5. Heating and cooling systems in most buildings usually have some type of air filter installed within the system. Portable air cleaners are also available for buildings that have radiators or baseboard heating systems.

### What are enhanced indoor air filters?

Enhanced air filters are more efficient at trapping particulate matter and have higher efficiency ratings than the standard filters in most buildings.

### What are MERV ratings?

MERV stands for Minimum Efficiency Reporting Values. It is a measure of a filter's ability to capture particles and remove pollution. Enhanced filters have higher MERV ratings and are better at removing particles.

- A MERV rating of 13 or above is recommended to remove small particles.
- You can find the MERV rating on the air filter package label near the brand logo (see example above).



High Efficiency Particulate Air filters (HEPA filters) is a type of enhanced filter that can remove 99.97% of air particles<sup>3</sup>.





## What is Particulate Matter (PM) and where does it come from?

PM is a mix of solid and liquid particles found in the air. It includes soot, smoke, dust, pollen and bacteria.

PM2.5 is a type of PM composed of very small particles, with diameters below 2.5 micrometers, that can be inhaled deep into the lungs and affect health.

- Sources of PM2.5 in Detroit include many industrial facilities, commercial ports, rail terminals, and highways and truck routes.



Marathon's Detroit Refinery in Oakwood Heights.  
Via Flickr, Creator: [Stephen Boyle](#)



Primary entry lanes to the U.S. at the Ambassador Bridge in Detroit, Michigan. Photographed by: Kris Grogan, United States Department of Homeland Security

## How do enhanced air filters affect indoor particulate matter?

Many studies have tested the effect of using different types of filters<sup>2</sup>.

- Homes with enhanced filters installed in heating and cooling systems show lower levels of PM.
- Homes using portable air cleaners also showed drops in PM2.5 levels and often great improvements in indoor air quality<sup>2</sup>.
- In schools and large buildings, many factors affect indoor air quality, including the maintenance of the building and the amount of ventilation, but again, PM2.5 levels are much lower with enhanced filters.
  - Air quality is also improved in schools that use portable filters if the filters are large enough for the space<sup>2</sup>.

## How do enhanced air filters at home and at school affect health?

High levels of air pollution, including PM<sub>2.5</sub> are linked to increased and more severe rates of childhood asthma<sup>2</sup>.

Children, the elderly, and those with pre-existing conditions such as chronic heart or lung disease or people with asthma are most vulnerable to health effects from PM<sub>2.5</sub> exposure<sup>4</sup>.

- One study found that switching air filters in schools from MERV 5 to MERV 8, 12, or 14 can decrease the yearly asthma problems caused by PM<sub>2.5</sub> by 8%, 13%, and 14%, respectively.<sup>2</sup>

If all Detroit homes that have kids with asthma used improved filters, the asthma issues linked to PM<sub>2.5</sub> would decrease by 11-16% <sup>2</sup>.

## What does this mean for me and my community?

One report ranks Detroit 5th among the most challenging places to live with asthma in the U.S<sup>1</sup>. Use better filters (MERV rating 13 and higher) in homes, schools, and other buildings to reduce asthma issues . It is especially important to focus on buildings near busy roads, construction areas, and places with high levels of PM<sub>2.5</sub><sup>1</sup>.

Explore these funding sources to improve air filters in homes and schools:

- “MI Safe School Indoor Air Ventilation Program” provides free air purifiers to all K-12 Michigan Schools. Schools can apply through the MI Safe Schools Indoor Air Ventilation Program Request Form: <http://tinyurl.com/27kttaww>
- Community Action to Promote Health Environments provides “Take Action on Air Quality” Mini-grants up to \$5,000 for pilot projects designed to improve air quality in Detroit neighborhoods. Learn more information on their website: <https://caphedetroit.sph.umich.edu/2022-2023-caphe-mini-grant-application/>

Please see [http://mleead.umich.edu/Coec\\_Fact\\_Sheets.php](http://mleead.umich.edu/Coec_Fact_Sheets.php) for the citations included in this factsheet.

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