



# Asthma & Air Pollution

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**Air pollution increases the risk of getting asthma, and worsens asthma among those who have it.** Detroit residents experience high rates of asthma and exacerbations of asthma linked with poor air quality, which lead to increased health care visits, school and work absenteeism, and higher health care costs. Policies that reduce environmental pollutants are critical to reduce asthma and its effects on the health of Detroit residents<sup>1</sup>.



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- Community Action Against Asthma
- Community Member-at-Large, Theresa Landrum
- Detroit Community-Academic Urban Research Center
- Detroit Health Department
- Detroit Hispanic Development Corporation
- Detroiters Working for Environmental Justice
- Green Door Initiative
- Healthy Environments Partnership
- Michigan Department of Environment, Great Lakes, and Energy (EGLE)
- Sierra Club
- Southwest Detroit Community Benefits Coalition
- Southwest Detroit Environmental Vision
- University of Michigan School of Public Health, Michigan Medicine, & Taubman College of Architecture and Urban Planning
- University of Michigan-Dearborn
- University of Detroit Mercy School of Law

## Policy Recommendations

- **Increase monitoring, inspection, and enforcement** for point sources (e.g., facilities releasing air pollutants) and mobile sources (e.g., trucks, cars) of air pollutants to provide more accurate information on emission and concentration of air pollutants, and to ensure more effective enforcement of regulations.<sup>2</sup>
- **Expand diesel retrofit programs and fleet and engine replacements by requiring heavy duty vehicles contracted in Michigan using state or federal funds to be equipped with modern pollution control devices.** Emissions in Rhode Island were reduced by 20-90% after the state enacted a law in 2010 that required this and adherence to the state's anti-idling law and use of clean burning ultra-low sulfur diesel fuel. Emissions were lowered by 20-90%.<sup>8</sup>
- Increase use of renewable energy sources by **establishing renewable energy goals, removing regulatory barriers to renewable energy, and increasing financial feasibility.** For example, West Hollywood, CA has a Mandatory Green Building Ordinance requiring that city owned facilities be certified as LEED buildings and new developments meet the city's green building point system.<sup>8</sup>
- **Require health impact assessment (HIA)** and cumulative impact and risk assessments (CIAs, CRIs) in air quality planning and permitting procedures so that public health and safety for vulnerable populations are appropriately considered.<sup>2</sup> A recent study by the EPA found that focusing on reducing air pollutants in areas where there are more vulnerable populations (e.g., high poverty, high asthma incidence) helped to improve air quality and resulted in substantial health benefits among vulnerable populations.<sup>6</sup>
- **Require indoor air quality, filter and preventive maintenance programs in schools.** Using filters in all schools could reduce the asthma-related health burden of PM2.5 exposures in schools by an estimated 40-80%.<sup>8</sup> See reverse for more information about air pollution and asthma in Detroit.

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## Facts about air pollution and asthma in Detroit:

- **Detroit's asthma rate is 29% higher than Michigan's average.** In 2012-2014, 15.5% of adults and 11.3% of children in Detroit had asthma.<sup>3</sup>
- **People living in Detroit are exposed to elevated levels of outdoor air pollutants**, including particulate matter, diesel exhaust, ozone, nitrogen oxides, and sulfur dioxide. Pollutant sources include steel mills, power plants, coking plants, incinerators, other industrial emitters, diesel trucks, and other vehicles.
- In addition to contributing to the development of respiratory disease<sup>4</sup>, **exposure to environmental pollutants can make existing asthma worse**, resulting in increased physician visits, increased hospital admissions and emergency department visits<sup>5</sup>, and contribute to lost time from school and work.
- Currently, Wayne County does not meet the National Air Ambient Quality Standard (NAAQS) for sulfur dioxide. **Brief periods of exposure (as short as 5 minutes) to sulfur dioxide can lead to asthma exacerbation and other serious health concerns.** Portions of Wayne County are also in nonattainment for ozone.<sup>7</sup> Ozone exposure also exacerbates asthma.
- **Asthma disproportionately impacts lower socioeconomic groups and minority communities.** Lower income communities in Detroit, which are predominantly Latino and/or African American, are likely to live in environments where they are exposed to higher levels of air pollutants, in addition to things that can create a cumulative effect on health, such as mold or stressful life conditions. These communities also tend to have fewer resources with which to cope with their adverse health effects<sup>1</sup>.
- **Exposure from air pollutants (PM2.5, O3, SO2, and NOx) from local and regional sources have significant impacts on the health of residents of Detroit and neighboring cities.** The monetized impact in 2010 dollars was estimated at \$6.9 billion.<sup>8</sup>

## REFERENCES

1. Schulz, A., Mentz, G., Sampson, N., Ward, M., Anderson, R., De Majo, R., Wilkins, D. (2016). Race and the Distribution of Social and Physical Environmental Risk. Manuscript submitted for publication, University of Michigan.
2. Community Action to Promote Healthy Environments. Public Health Action Planning Resource Manual. (2016). Ann Arbor, MI.
3. Michigan Department of Health and Human Services. (2016). Detroit: The Current Status of the Asthma Burden. Retrieved from [http://www.michigan.gov/documents/mdhhs/Detroit-AsthmaBurden\\_516668\\_7.pdf](http://www.michigan.gov/documents/mdhhs/Detroit-AsthmaBurden_516668_7.pdf).
4. U.S. EPA. 2013 Final Report: Integrated Science Assessment of Ozone and Related Photochemical Oxidants. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-10/076F, 2013.
5. Pruitt, K., Nolen, J., Garcia-Reyes, K., Edelman, N., & Schachter, N. (2009). Improving asthma outcomes: Evidence-based health policy priorities. *Pediatric Asthma, Allergy and Immunology*, 22(4), 189-196. doi:10.1089/pai.2009.0021.
6. Fann, Neal, Roman, Henry A., Fulcher, C.M., Gentile, Mikael A., Hubbell, Bryan, J., Wesson, Karen, Levy, Jonathon I. 2011. *Maximizing health benefits and minimizing inequality: Incorporating local-scale data in the design and evaluation of air quality policies*. *Risk Analysis*, vol 31 (6): 908-922.
7. Michigan Department of Environmental Quality, Attainment Status for the National Ambient Air Quality Standards, [https://www.michigan.gov/documents/deq/deq-aqd-aqe-mi\\_attainment\\_status\\_map\\_407842\\_7.pdf](https://www.michigan.gov/documents/deq/deq-aqd-aqe-mi_attainment_status_map_407842_7.pdf)
8. Community Action to Promote Healthy Environments Public Health Action Plan. 2017. <http://caphedetroit.sph.umich.edu/wp-content/uploads/2017/05/CAPHE-PHAP-Full-Report-and-Executive-Summary-5-10-17.pdf>, and the Community Action to Promote Healthy Environments Resource Manual. 2016, <http://caphedetroit.sph.umich.edu/resource-manual-cover-page-with-full-manual/>