

# Community Action to Promote Healthy Environments

## Exposure to Particulate Matter (PM<sub>2.5</sub>), Ozone (O<sub>3</sub>), Sulfur Dioxide (SO<sub>2</sub>), Nitrogen Oxides (NO<sub>x</sub>)

### Policy recommendations to reduce exposure to PM<sub>2.5</sub>, O<sub>3</sub>, SO<sub>2</sub>, and NO<sub>x</sub> include:

- **Control emissions from industrial sources**, including older facilities that have been exempted from installing up-to-date control technologies—this is known as being “grandfathered”;
- **Control emissions from mobile sources**, such as cars, trucks and heavy equipment, by retrofitting or replacing older diesel engines, reducing idling, and using clean fuels;
- **Install filters** to remove pollutants from indoor air in homes, schools and other buildings;
- Use **buffers and barriers** between sources of pollution and people;
- Invest in **renewable energy**;
- **Enhance compliance and enforcement** of existing air quality rules; and
- **Increase air quality monitoring** to better understand air pollution impacts, trends and sources.

### Annual health Impacts in Detroit and neighboring cities due to PM<sub>2.5</sub>, O<sub>3</sub>, SO<sub>2</sub>, and NO<sub>x</sub> exposure from all emission sources (point, mobile, and regional sources) are:

- **690 deaths**;
- **1,800 hospitalizations and emergency department visits**;
- **Hundreds of thousands of lost workdays and school absences**; and
- **6.9 billion dollars** in monetized impacts (2010\$).

### Air pollution exposure contributes to Detroiters' higher risk of environmentally-related disease:

- People living and working in Detroit are exposed to elevated levels of ambient air pollutants.
- Air pollutants of concern include (but are not limited to) particulate matter (PM<sub>2.5</sub>), diesel exhaust, sulfur dioxide (SO<sub>2</sub>), ozone (O<sub>3</sub>), nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOCs), manganese (Mn) and lead (Pb).
- Well-established health effects associated with air pollutant exposure include **asthma**, **cardiovascular and respiratory disease**, and **adverse birth outcomes**.
- Exposures to ambient air pollution disrupt everyday life for thousands of Detroiters, and result in **missed work days for adults** and **missed school days for children**.

### Project overview

- Community Action to Promote Healthy Environments (CAPHE) is a community-based participatory research partnership that has developed a **scientifically-informed public health action plan** to reduce air pollutant exposure and improve public health in Detroit.
- Our partners include: 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, and Taubman College of Architecture and Urban Planning, University of Michigan-Dearborn, and University of Detroit Mercy School of Law

Support for this collaboration was provided by grant R01ES022616 from the National Institute of Environmental Health Science, National Institutes of Health, and the Fred A. and Barbara M. Erb Family Foundation. Additional support was provided by grant P30ES017885 from the National Institute of Environmental Health Science.

