Community Action Against Asthma Working in Detroit, Michigan

Presented to the Public Health and Safety Committee of the Detroit City Council February 10, 2004

Community Action Against Asthma (CAAA)

- Funded by the Environmental Protection Agency and the National Institute of Environmental Health Sciences
- A community-based research and intervention project working in Detroit to identify and address environmental factors associated with childhood asthma.

Asthma Facts in Detroit

- **The burden of asthma is borne disproportionately by children living in poverty and in urban areas, many of whom are from minority groups. African-Americans have more than double the rates of emergency room visits, hospitalizations, and deaths than Whites.**

- **In Detroit, the hospitalization rate for children aged 1-14 is 53.0 per 10,000, more than three times the statewide average**

More Asthma Facts

- **In Detroit, among elementary school students, one study reported a prevalence of 14.3% of physician-diagnosed asthma with wheezing in the last 12 months and an additional 14.4% prevalence of undiagnosed asthma**

- **Among children with asthma in Detroit who have moderate to severe asthma (or are using medicines that suggest they have moderate to severe asthma), CAAA has found that increases in particulate matter (PM) and ozone are significantly associated with worsening lung function and increased symptoms (such as cough, chest tightness, wheeze).**

More Asthma Facts

- **The levels of PM 2.5 outdoors in Detroit may be above the current annual standard, especially in Southwest Detroit. Exposure to PM at levels currently reported in most urban areas can cause significant adverse health effects in addition to aggravation of asthma, including increased rates of hospital admission due to other respiratory disease (pneumonia, emphysema), as well as cardiovascular disease (heart attacks, congestive heart failure, cardiac arrhythmia), and premature death**

- **Previous studies conducted in Detroit have linked outdoor levels of air pollution (including PM) to adverse health effects such as premature death.**

What CAAA has meant to the community and why Detroit Hispanic Development Corporation is involved – Linda Gonzalez

Community Action Against Asthma Partners

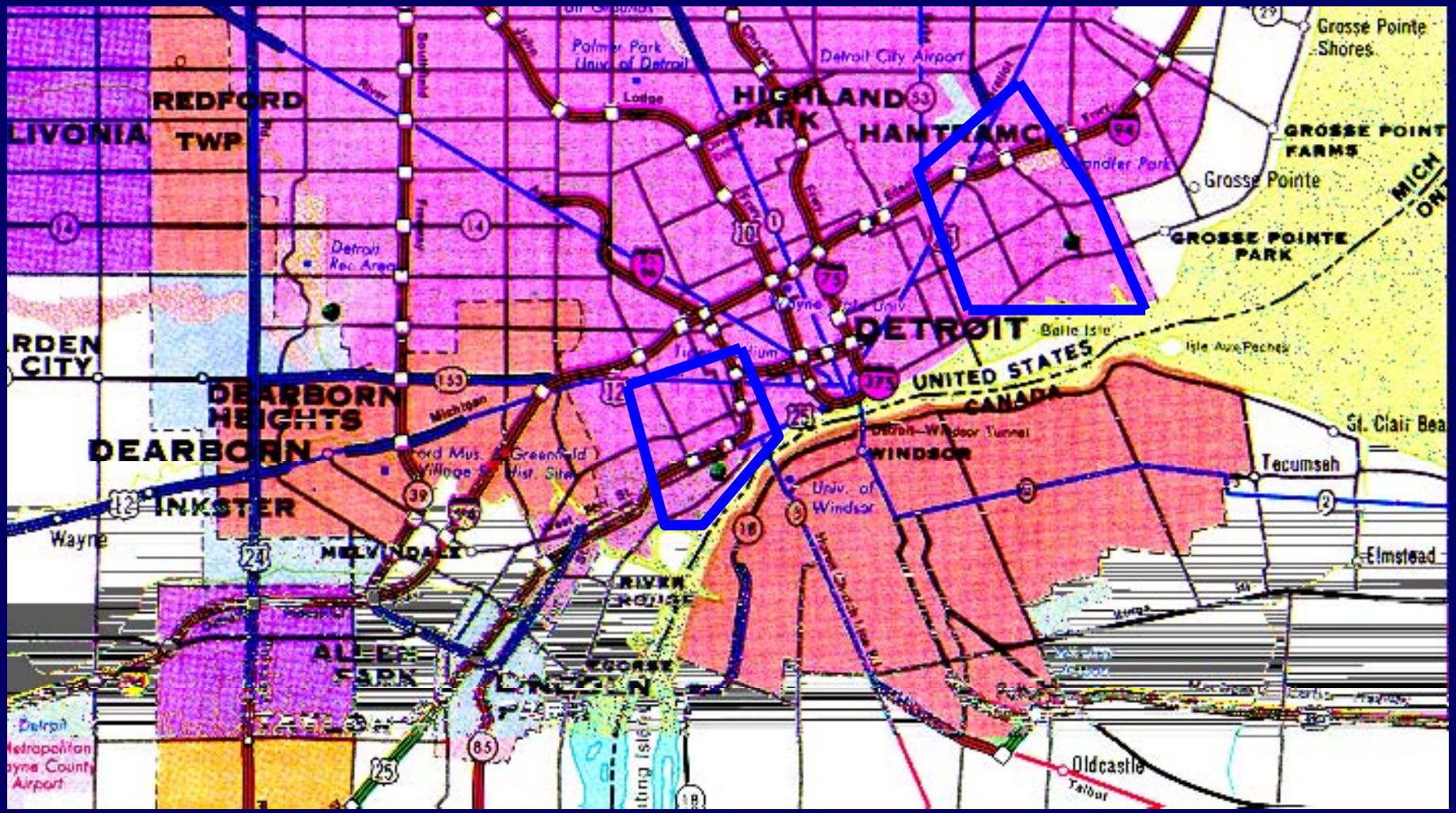
- UM School of Public Health
- UM School of Medicine
- Detroit Health Department
- Community Health & Social Services Center
- Detroit Hispanic Development Corporation
- Detroiters Working for Environmental Justice
- Friends of Parkside
- Latino Family Services
- Warren/Conner Development Coalition
- Henry Ford Health System
- Michigan Department of Agriculture, Plant and Pest Management Division

What CAAA means to the community and why Detroiters Working for Environmental Justice (DWEJ), as a community-based organization has remained involved – Donele Wilkins, Executive Director, DWEJ

The Household Intervention

- We worked with 300 families from the SW and East sides of Detroit.
- We went to their homes to help them reduce asthma triggers—customized interventions included education, medical referral, mattress and pillow covers, provision of vacuum cleaners and cleaning supplies, and integrated pest management as needed

CAAA Detroit Communities



- Comments from one of the participants in Community Action Against Asthma's Household Intervention – Marquette Sims

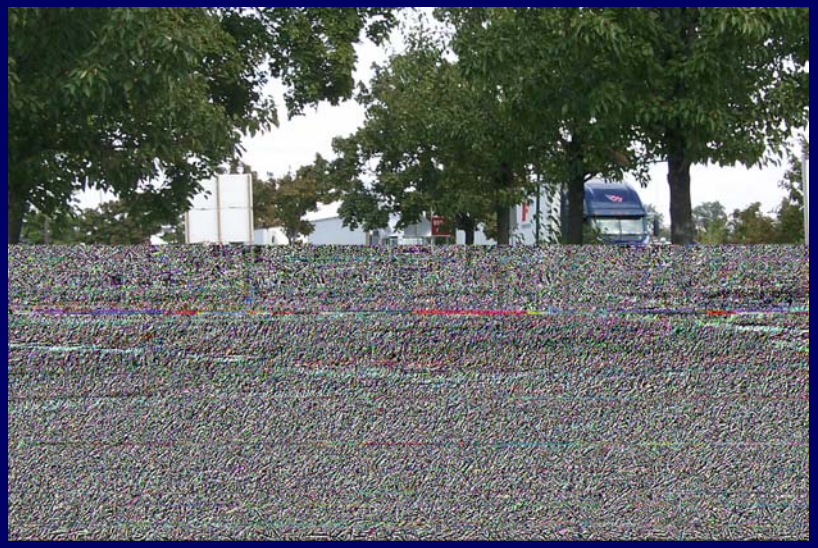
Historical Detroit Air Quality

- **Air Quality in Detroit was generally quite poor prior to the 1990's.**
- **Reductions in the emission of many air pollutants during the 1970's, 80's, & 90's resulted in steadily improved air quality in Detroit over those time periods.**
- **Significant concerns remain for particulate matter and ozone**

What is Particulate Matter?

- **"Particulate Matter" (PM), a form of air pollution, are very small particles found in the air.**
- **The two different sizes of PM that scientists often measure are called PM10 and PM2.5.**

What are the Sources of PM?

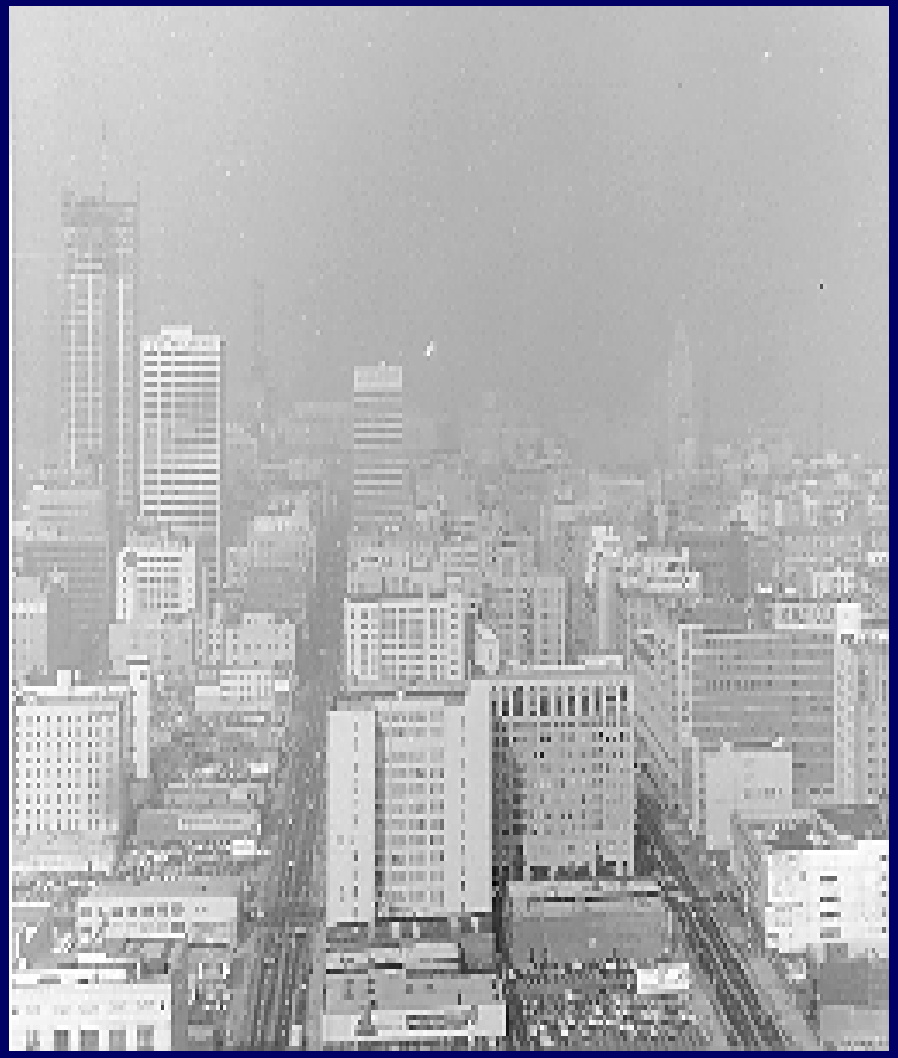


PM10 are particles mostly from "natural" sources such as wind blown dust.

PM2.5 are smaller sized particles that are commonly from outdoor sources such as smokestacks, cars and trucks as well as indoor sources such as cigarette smoke.

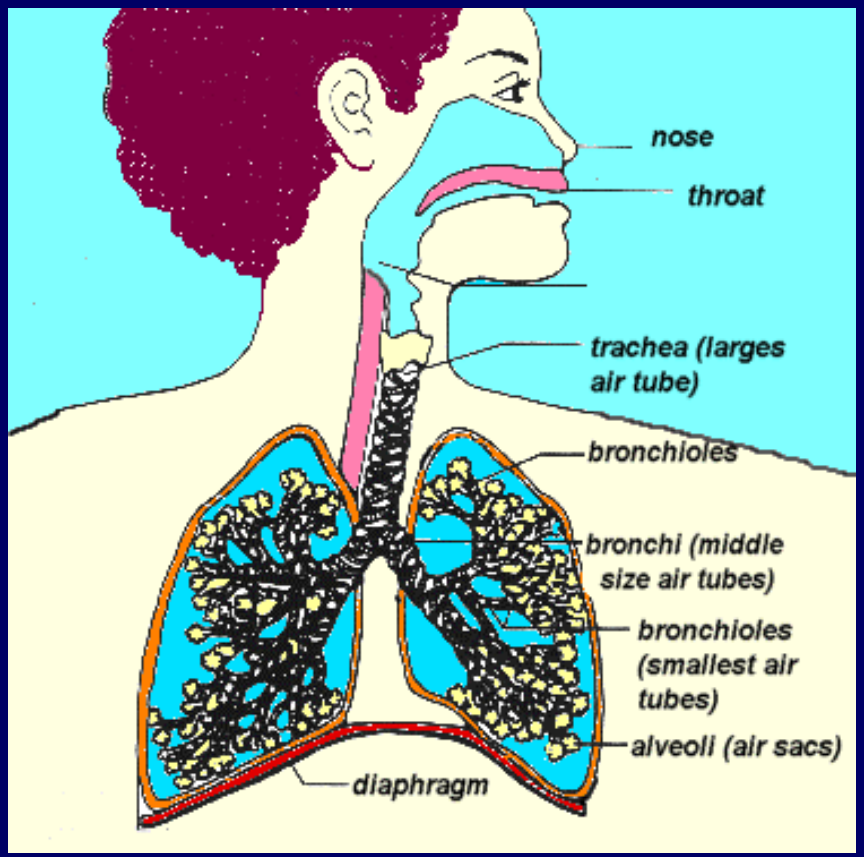
The smallest particles, ultrafines, come from smokestacks and vehicles, with diesel exhaust being one especially important source

What is Ozone?



- Ozone is a gas that is formed in the air from other pollutants that come from cars, trucks, factories, incinerators, and power plants.
- Ozone levels tend to be highest on hot, sunny days.

Why are PM and Ozone Important?



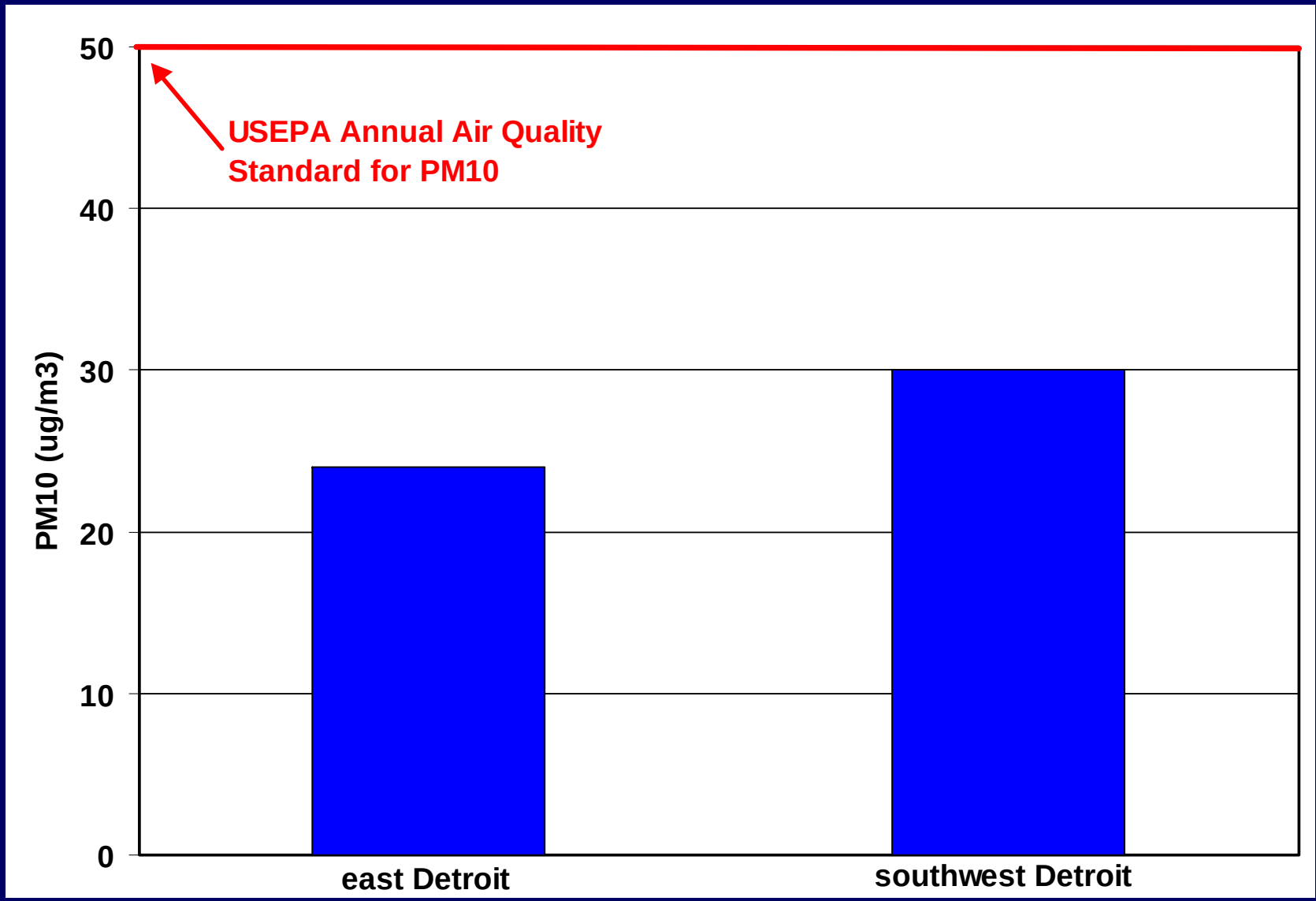
- PM10 particles can be inhaled and get into the nose and larger airways.
- PM2.5 particles can also get breathed in, and reach deep into the lungs.
- Ozone is a gas and can easily be breathed deep into the lungs.

Outdoor PM and Ozone Sample Collection

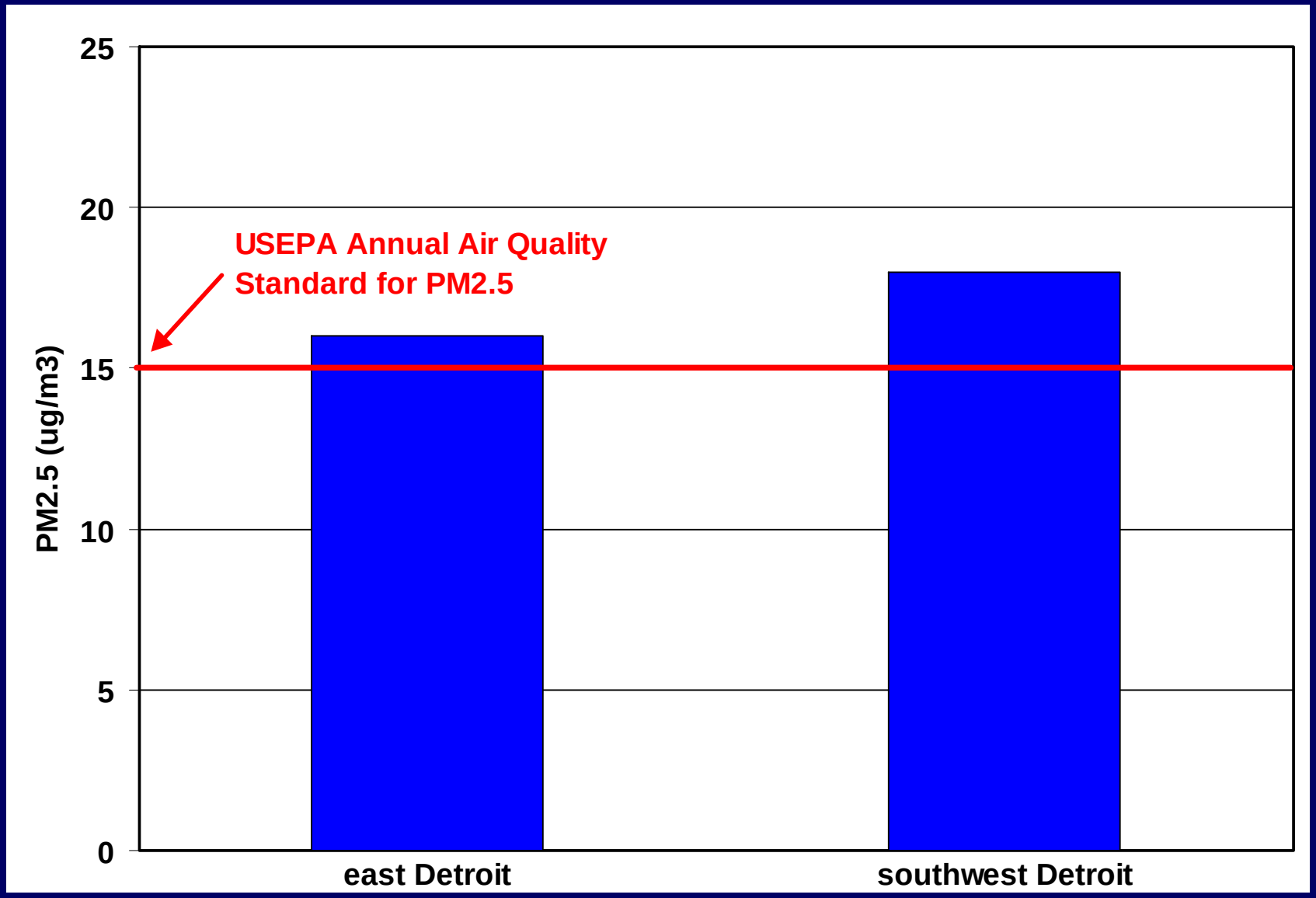
Collected by CAAA:

- **in southwest Detroit at Maybury Elementary.**
- **in east Detroit at Keith Elementary.**

Outdoor PM10 in Detroit (2000-2001)



Outdoor PM2.5 in Detroit (2000-2001)



Effects of PM and Diesel Particulate on Health

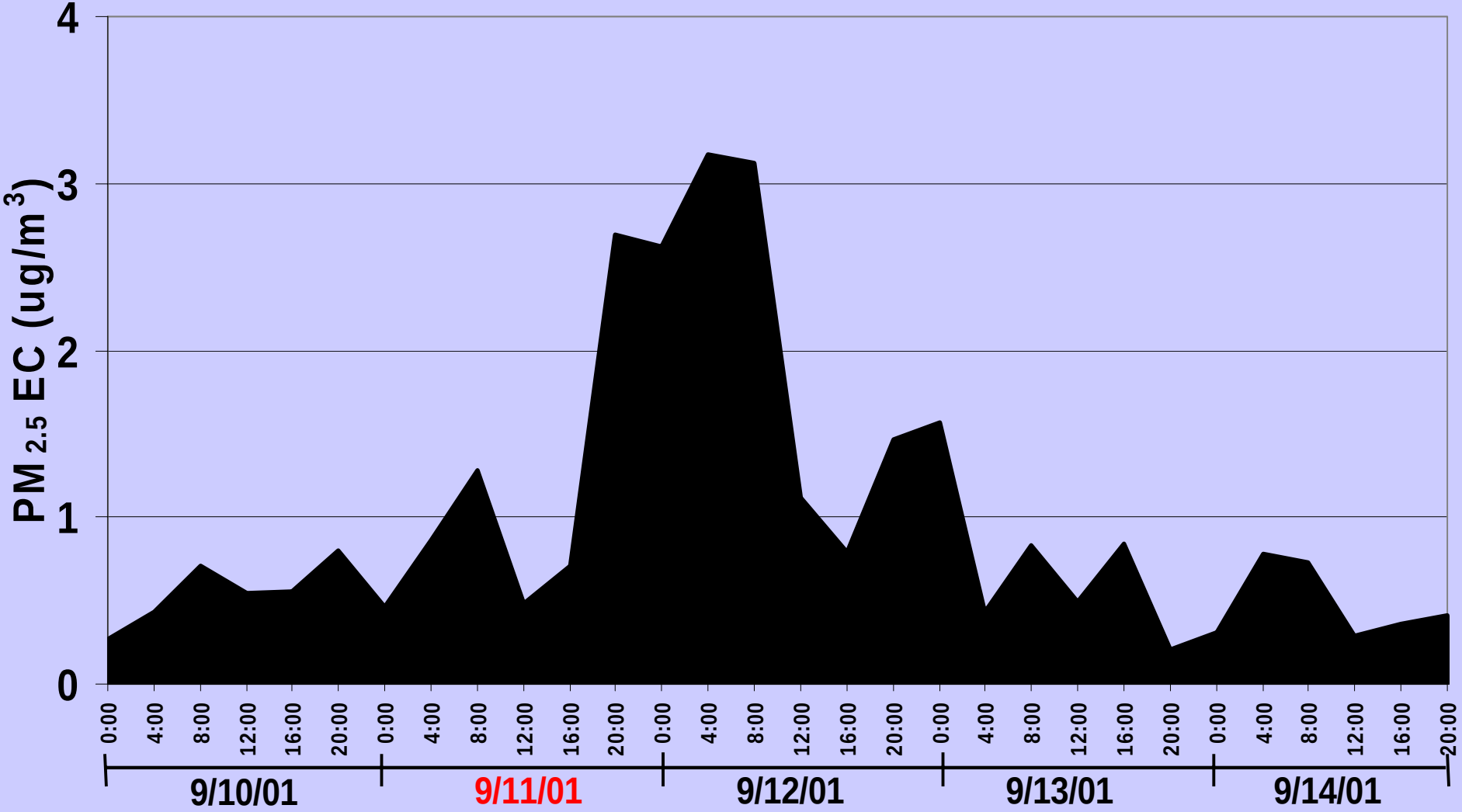
- PM at levels currently reported in most U.S. urban areas has been linked to:
  - increased risk of death from cardiovascular disease (heart attacks, congestive heart failure, cardiac arrhythmia) and respiratory disease (asthma, pneumonia, COPD)
  - increased symptoms (cough, wheeze, chest tightness) and poorer lung function among children and adults with asthma
  - Several studies **conducted in Detroit** have linked PM to these adverse health effects

Effects of PM and Diesel Particulate on Health

- Recent studies have linked both traffic-related pollutants (including PM) and traffic density with increased hospital admissions for asthma and increased asthma symptoms in children.
- Other studies in urban areas, without measuring health status, have found large increases in PM and components of PM specific to diesel truck exhaust measured in schools located along and near highways.

Effects of September 11th, 2001

Elemental Carbon (EC) in PM2.5 at Maybury School



Focus on diesel exhaust

- Diesel exhaust contains a much higher weight and much, much higher number of particles than exhaust from gasoline-fueled vehicles, on an equivalent fuel energy basis.
- Diesel exhaust includes over 40 substances that are listed by the United States Environmental Protection Agency (U.S. EPA) as hazardous air pollutants. Fifteen of these substances are listed by the International Agency for Research on Cancer (IARC) as carcinogenic to humans, or as a probable or possible human carcinogen.
- IARC has concluded that diesel engine exhaust is **probably carcinogenic to humans**

Focus on diesel exhaust

- More recent changes in the designed of diesel engines substantially reduce the **weight** of the total particulate matter emitted in exhaust.
- However, these design changes also tend to markedly **increase the total number of particles** emitted, because the particles are of much smaller size on average. For this reason, the potential health consequences of these changes are uncertain.

Air Pollution Summary

1) PM 2.5 levels already exceed EPA standards in Southwest Detroit
2) Diesel exhaust contributes to PM2.5 and, especially, to the ultrafines suspected of being more toxic
3) Health effects associated with PM include increased deaths from heart attacks and respiratory disease, and worsening of asthma

4) Measured PM levels are higher along truck routes, and children with asthma living along these routes have more problems
5) Diesel exhaust is considered to be probably carcinogenic in humans
6) Newer diesel engine designs decrease the weight of particles emitted, but increase the number of particles emitted

Summary of Some of CAAAs Findings

- Slightly more than half of the children who have asthma have not been diagnosed by a doctor and aren't receiving the right medicine.
- The household intervention improved three asthma-related symptoms of the child: persistent cough, wheeze with cold, and cough with exercise. It also reduced depressive symptoms in caregivers and reduced doctor visits, emergency room visits, hospitalization and ICU stays and increased the percent of children adequately medicated.

More Findings

- Levels of PM 2.5 outdoors may be above the current annual standard, especially in SW Detroit.
- Levels of summertime ozone outdoors are above the current 8-hour standard.
- A significant increase in elemental carbon in SW Detroit after 9-11 was likely due to backup of truck traffic at the bridge.

More Findings

- Among children with asthma in Detroit who have moderate to severe asthma, increases in PM and of ozone are significantly associated with increased symptoms and worse pulmonary function on days following their exposure.
- Substantial exposure to diesel exhaust exists in SW already. Subjecting these neighborhoods to additional exposure to air contaminants through projects such as the DIFT can only serve to worsen what already appears to be a problematic health situation.

OUR PRIORITIES

We have a community organizing component of CAAA that is working on priorities established by the Steering Committee:

- Air Quality – we are very pleased that the City Council has gone on record as opposing the DIFT
- Housing
- Community Education and Awareness

Next Steps and How You Can Help

- The City Council and the Health Department have an opportunity to be leaders in addressing problems in urban air pollution. You can establish policies and practices at the city level that take health impacts into account when making decisions. We are aware that you have taken steps to address the lead issue. We would like to work with you to address the asthma problem in the same way.

Next Steps and How You Can Help

- We would like to meet with relevant city department heads to talk about more ways we can work together to improve the health of Detroit residents.

Next Steps and How You Can Help

- We would like to work with you to set up a process that informs grassroots community people about city issues that might effect their health.
- We would like for you to keep us informed about proposed transportation projects so we can do grass-roots community outreach when we are making presentations to schools, churches, community groups and block clubs on our findings and about asthma and ways residents can get involved

Next Steps and How You Can Help

- We are circulating a petition requesting a health impact study be conducted about potential health effects from the proposed DIFT.

  We would like you to have consideration of health impacts be a regular part of your decision-making process on all transportation issues. With you, we could develop a checklist of requirements for things to be addressed regarding health issues.

Next Steps and How You Can Help

- You can advocate for health impacts to be considered in decisions made on the state level.

Next Steps and How You Can Help

- We are writing a proposal to NIEHS to study diesel more and take the intervention a step further to help other families in Detroit.

  -You could write a letter of support

- We are planning a spring community forum to present information on developments and how they relate to environmental health.

  - You could attend and participate

For Further Information

- Call our toll free number:
- 1-877-640-4064

- Or e-mail: kedgren@umich.edu