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# Community Action Against Asthma

## Fact Sheet on "Particulate Matter"



### What is Community Action Against Asthma (CAAA)?

Community Action Against Asthma is a community-based, participatory research partnership working to improve the health of children with asthma in the East and Southwest sides of Detroit. The purpose of community-based participatory research projects is to enhance the understanding of issues affecting the community and to develop, implement and evaluate plans of action that will address those issues in ways that benefit the community.

Since 1999, CAAA has been researching air quality and working with families in their homes in Southwest and Eastside Detroit. For the household activities, outreach workers called Community Environmental Specialists (CES's) visit homes of families who signed up to be in the household project. During these visits, the CESs work with the families to educate them about asthma triggers (things that may cause an asthma attack), and to develop a plan to reduce the household environmental triggers for asthma. For the air quality research, CAAA is collecting information on the quality of the indoor and outdoor air in Southwest and Eastside Detroit and looking at the relationship between the quality of the air (primarily particulate matter and ozone), lung functioning, and reports of asthma symptoms of the children enrolled in the household project.

### What is Particulate Matter (PM)?

Particulate matter, a form of air pollution, are particles found in the air. Levels of PM in the air are routinely monitored in urban areas because many of these particles are small enough to be inhaled and reach deep into the lungs of people. The two different sizes of PM routinely measured are PM2.5 and PM10. The emission sources of PM2.5 in urban areas are primarily from combustion sources such as smokestacks (power plants, waste incinerators, etc) and emissions from cars and trucks. The emission sources of PM10 include these combustion sources and to a lesser extent, emissions from natural sources such as wind blown dust.

### What are the Effects of PM on Health?

Many scientific studies have found that exposure to PM at levels currently reported in most urban areas can cause significant adverse health effects, including increased rates of hospital admission due to cardiovascular disease (heart attacks, congestive heart failure, cardiac arrhythmia) and respiratory disease (asthma, pneumonia, COPD), as well as premature death (Samet et al. 2000). In studies specific to inner-city children with asthma, scientists have linked exposure to PM to decreases in lung function and increases in asthma symptoms (cough, chest tightness, wheeze) (Mortimer et al. 2002).

Some 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 (English et al. 1999, Gehring et al. 2002). 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 (Janssen et al. 2001). Several scientific studies are currently underway to better assess the effects that diesel related components of PM may have on the worsening of symptoms of children with asthma, as well as other health end-points mentioned above.

### **Have the Effects of PM on Health been Measured in Detroit?**

Several studies conducted in Detroit have linked outdoor levels of air pollution (including PM) to adverse health effects (Schwartz 1994). These also include studies linking daily changes in PM10 with premature death (Lippmann et al. 2000), as well as associations between PM, both PM10 and PM2.5, and increases in hospitalization for cardiovascular and respiratory disease, and also links between exposure to PM10 and decreases in lung function and increases in asthma symptoms (cough, chest tightness, wheeze) for Detroit children with asthma (Mortimer et al. 2002).

### **What are the Next Steps in the CAAA Data Analysis?**

With all of the CAAA PM data collection coming to an end in 2002 (Keeler et al. 2002), CAAA will be spending the next year combining the PM data with data from the measures of lung function and symptom diaries that each CAAA child and family has filled out. This analysis will help CAAA to determine what effects the PM levels in Southwest Detroit and Eastside Detroit are having on children with asthma in these two communities. For more information on the CAAA project, or to get involved, contact Kathy Edgren toll-free at 877-640-4064.

### **References:**

- Samet et al. (2000) Fine Particulate Air Pollution and Mortality in 20 U.S. Cities, 1987-1994. *New England Journal of Medicine*, **343(24)**:1742-1749.
- Mortimer et al. (2002) The Effect of Air Pollution on Inner-City Children with Asthma. *European Respiratory Journal*, **19**:699-705.
- English et al. (1999) Examining Associations Between Childhood Asthma and Traffic Flow Using a Geographic Information System. *Environmental Health Perspectives*, **107**: 761-767.
- Gehring et al. (2002) Traffic-Related Air Pollution and Respiratory Health During the First 2 Years of Life. *European Respiratory Journal*, **19**:690-698.
- Janssen et al. (2001) Assessment of Exposure to Traffic Related Air Pollution of Children Attending Schools Near Motorways. *Atmospheric Environment*, **35**:3875-3884.
- Schwartz (1994) Air Pollution and Hospital Admissions for the Elderly in Detroit, Michigan. *American Journal of Respiratory Critical Care Medicine*, **150**:648-655.
- Lippmann et al. (2000) Association of Particulate Matter Components with Daily Mortality and Morbidity in Urban Populations. *Research Report of the Health Effects Institute*, **95**:5-82.
- Keeler et al. (2002) Assessment of Personal and Community-Level Exposures to Particulate Matter (PM) Among Children with Asthma in Detroit, Michigan as part of Community Action Against Asthma (CAAA). *Environmental Health Perspectives*, **110 (suppl 2)**:173-181.

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