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# Community Action Against Asthma Fact Sheet on "AirCARE1"



## 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.

## What is AirCARE1?

AirCARE1 is a unique mobile air research laboratory designed by scientists at Michigan State University and the University of Michigan as part of the CARE project, which stands for Collaborative Air Research Effort.\* The CARE studies have been conducted each summer, when air pollution levels in Detroit are usually high (Keeler et al. 2002), in coordination with CAAA over each of the last four years at Maybury Elementary School in southwest Detroit. AirCARE1 has also traveled for research studies in Grand Rapids and Los Angeles.



## How does AirCARE1 Work?

The studies with AirCARE1 use laboratory rats or mice to conduct research on the health effects of air pollution using a device that takes outdoor air and "concentrates" the pollution to levels much higher than actual pollution levels in outdoor air. After the animals breathe this concentrated pollution, studies are performed on them to see whether the pollution has hurt their lungs.

\*CARE research studies are funded by grants from the United States Environmental Protection Agency, the Health Effects Institute and the Michigan Economic Development Corporation. Contact [kedgren@umich.edu](mailto:kedgren@umich.edu) for further information.

### **What is Particulate Matter (PM)?**

Particulate matter is a scientific term for small pollution particles that are found in the air. Levels of PM in the air are often checked in cities because many of these particles are small enough to be inhaled and reach deep into the lungs of people. The smallest of these particles, called PM<sub>2.5</sub>, are often from things such as smokestacks (power plants, incinerators, etc) and are in the exhaust from cars and trucks. It is the PM<sub>2.5</sub> pollution that AirCARE1 concentrates for use in the health effects studies.

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

Many previous scientific studies have found that exposure to PM at levels currently reported in most cities may harm health, including increased rates of hospital admissions due to cardiovascular disease (heart attacks, congestive heart failure, cardiac arrhythmia) and respiratory disease (asthma, chronic bronchitis), 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).

### **To Date, What are the Results of the AirCARE1 Studies in southwest Detroit?**

AirCARE1 studies have shown that breathing the concentrated PM<sub>2.5</sub> pollution does not harm “healthy” animals. However, some AirCARE1 studies have shown that breathing the concentrated PM<sub>2.5</sub> pollution may cause harm to the lungs of animals who already have an asthma-like condition (Harkema et al. 2004). This result may be important when considering how air pollution may worsen symptoms of children with asthma. We hope that the AirCARE1 study results will help other scientists and regulatory agencies to maintain safe limits of air pollution to protect the health of children living in cities. Since not all types of particles in the air may cause injury to the lung, the CARE project scientists are currently trying to identify specific parts of PM that may be responsible for the health problems and the sources from where the most harmful types of PM are released (cars and trucks or industrial emissions).

### **Additional Information:**

The lead scientists for the CARE project are Dr. Jack Harkema of Michigan State University – College of Veterinary Medicine, and Dr. Gerald Keeler of the University of Michigan – School of Public Health. For more information on the CARE and CAAA projects, contact Kathy Edgren toll-free at 877-640-4064.

### **References:**

- 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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