Health Effects of Roadway Pollution
Joint Research Project by the U.S. Environmental Protection Agency and University of Michigan

What is the research?
Automobiles, trucks, and other vehicles on our roadways are an important source of air pollution. With more than 45 million Americans living less than 300 feet from a highway, there is growing concern about the health impacts of living near heavily traveled roads.

To address this important issue, the U.S. Environmental Protection Agency (EPA) and University of Michigan (U-M) are conducting NEXUS — the Near-Road EXposures to Urban Air Pollutants Study — a collaborative research project to study the impact of vehicle emissions on near-road air quality, human exposures, and potential health effects. Through a cooperative agreement, this study brings together specialized expertise and skills in exposure and health effects research from these two organizations. This research supports EPA’s priorities to improve air quality, and to work for environmental justice by protecting vulnerable groups of people.

How will the research be conducted?
The study will be conducted in Detroit, Michigan, as part of EPA’s larger research program on roadway air pollution and its potential health effects. Up to 105 children, 6 to 16 years old with persistent asthma who live close to different kinds of roadways, will be asked to participate in this study. Partnering with EPA and U-M in this research is Community Action Against Asthma (CAAA). This community-based participatory research partnership is working to improve the health of asthmatic children in Detroit.

In this collaborative research study, EPA scientists will measure levels of traffic-related air pollution near roadways and in the neighborhoods of study participants. Air pollutant levels will be measured inside and outside of up to 30 homes in the study.

During weeklong measurement periods in fall 2010 and spring 2011, the children’s parents or guardians will also be asked to complete activity diaries and questionnaires. Air pollutant measurements and information collected about the children’s activities, including the amount of time the children spend near roadways, will be used to estimate their exposures to air pollution. U-M researchers will collect information concerning the children’s respiratory health, including measurements of lung function and airway inflammation.

Researchers will then use the exposure measurements, along with the health effects measurements, to determine how exposure to traffic-related air pollutants affects the health of...
children — including whether these pollutants
induce more frequent or more severe asthma
attacks. The study is designed to help answer
critical scientific questions, including:

- Which measures of traffic-associated
  pollution are most closely associated
  with aggravated asthma?

- Do children with asthma who live near
  major highways show more
  inflammation and other biological
  responses than those who live further
  from the highway?

- Does traffic exposure influence the
  likelihood of respiratory viral infections
  in children with asthma?

**How will the research benefit the
community?**

Answering the study questions will help federal,
state, and local governments and organizations
make public health decisions about community
development near roads. State highway planners
and environmental agencies can use the science
to assess the local impacts of vehicle emissions
and determine the impacts of future road
projects. Study results will be useful for policy
makers developing plans to reduce exposures to
air pollution for people living near roadways.
The results will also be useful for individuals
making decisions about where to live.

Study results will be shared with Detroit
community members in collaboration with the
Community Action Against Asthma, whose
partners include numerous community-based
organizations in the Detroit area, including
Detroiter Working for Environmental Justice,
the Detroit Department of Health and Wellness
Promotion, Community Health and Social
Services Center, Detroit Hispanic Development
Corporation, Arab Community Center for
Economic and Social Services, Friends of
Parkside, Henry Ford Health System, Latino
Family Services, and Warren Conner
Development Coalition.

For more information about EPA’s roadway
research, visit: www.epa.gov/airscience/quick-
finder/roadway.htm.

**EPA Technical Contact**

*Dan Costa, Sc.D.,
National Program Director
Clean Air Program
Office of Research and Development
919-541-2532 or costa.dan@epa.gov*

*July 2010*