

Sarah Anderson, [sanderson@ph.ucla.edu](mailto:sanderson@ph.ucla.edu)  
310-267-0440

For Immediate Release  
March 17, 2004

## **UCLA School of Public Health to Lead Consortium Addressing Effects of Air Pollution on Asthma Epidemic; South Coast AQMD Provides Funding**

Amid growing concern about the link between air pollution and asthma, the UCLA School of Public Health has received a \$700,000 grant from the South Coast Air Quality Management District to create the Asthma and Outdoor Air Quality Consortium. The consortium will conduct research to better understand how air pollution affects asthma and to guide the crafting of regulations intended to decrease the impact.

“We are pleased to be able to sponsor the creation of the Asthma and Outdoor Air Quality Consortium,” said William Burke, chairman of the South Coast Air Quality Management District’s Governing Board. “A better understanding of asthma and the air pollution impact is central to reducing risks and protecting public health. This research will benefit efforts nationwide.”

The first-year funding will allow consortium researchers at UCLA, UC Irvine, UC San Francisco and the University of Southern California (USC) to pursue six projects, including three studies involving traffic-related pollutants in the City of Los Angeles, East Los Angeles County, Riverside and Long Beach. Two other projects will investigate asthma at the cellular and subcellular levels, exploring the biology and chemistry of pollutants on airway inflammation processes. An additional project will develop a research tool for measuring air pollutants.

John R. Froines, Ph.D., UCLA professor of environmental health sciences, will direct consortium activities. Froines is also director of the Centers for Environmental Quality and Health that houses the Southern California Particle Center and Supersite.

“Consortium members and the AQMD are committed to making inroads to understanding the problems of asthma in the Los Angeles Basin and to facilitate intervention that will reduce the morbidity and mortality from this highly prevalent disease,” Froines said. “Clarifying the role of mobile sources such as motor vehicles and trucks play in the symptoms and onset of asthma is of ever increasing importance, especially as the region’s densely packed roads and freeways expand.

“The AQMD commitment will enable advanced research to be directed at this debilitating problem affecting a large number of the region’s citizens on a daily basis, and open new doors for prevention and treatment,” he said.

Asthma has reached epidemic proportions in the United States, with more than 17 million people suffering from the disease, including five million children. Each day 14 Americans die and thousands miss school or work due to this chronic respiratory disease characterized by attacks of inflammation and narrowing of small airways in response to a range of triggers, including air pollution. Asthma costs an estimated 10 million school days and nine million workdays each year, costing business and government more than \$10 billion annually.

Recent research has established that air pollution can act as a trigger for asthma, however the extent of its effects, and the mechanisms by which it affects the body, are still unknown. Initial consortium projects include the following:

- UCLA researchers will estimate the effects of air pollution exposure on the risk of hospitalization for acute respiratory illness and asthma in children ages 0-5 in the Los Angeles area. The study will begin to fill the gap in research on health effects in infancy and early childhood, a critical period since a child's lung continues to undergo important development in the early years of life. The onset of up to 80 percent of persistent asthma occurs prior to age 6.
- USC researchers, in conjunction with the longitudinal Children's Health Study, will investigate how pollution varies with local traffic near the homes of children in Long Beach to determine whether traffic-related air pollution causes new cases of asthma. With 80 percent of the area's air pollution attributed to traffic-related pollutants, examining the role of traffic is a key element in understanding the effects of air pollution on asthma.
- A complementary study based at UC Irvine will follow 64 children in Riverside and Eastern Los Angeles County. Each child will carry a personal air sampler in a backpack to measure their exposure to fine particulate matter and other important traffic-related pollutants. By measuring exhaled nitric oxide in the breath of the children, investigators will study whether combustion-related pollutants are more strongly associated with exhaled nitric oxide than particle mass alone. This study is important because current EPA regulations are based on mass measurements, which do not account for differences in the composition of particles.
- A team from UCLA and UC San Francisco will examine the expression of proteins as a way of identifying the biological mechanisms by which air pollution incites airway inflammation. By taking samples from the lungs of people with asthma who have been exposed to air pollution, investigators will look for "markers" indicating oxidative stress and inflammation. These tools will be helpful in future clinical studies to identify human subjects that may be more prone to asthma exacerbation by air pollutants.
- UCLA researchers will pursue additional information from previous findings showing that certain compounds in air pollution contract smooth muscle in the lung. This contraction occurs under conditions that indicate the involvement of a key inflammatory receptor, the vanillin receptor. The study exposes a cellular system to

small quantities of particulate matter. Responses to the exposure will be measured in terms of key steps in the activation of the receptor. This project aims to determine the molecular basis for the responses and the nature of the chemical reactions involved.

- USC engineers will design, test and deploy a new type of aerosol concentrator. Until recently, researchers had been limited to using artificially generated particles for their tests. New concentrators allow scientists to collect real-world ambient air for analysis. However these machines tend to require constant supervision. The new concentrator will require very little supervision and be able to run non-stop for up to two weeks, allowing investigators to collect large amounts of particles enabling them to better approximate actual exposure.

For more information on the Consortium, please visit the Southern California Particle Center and Supersite website at [www.scpcs.ucla.edu](http://www.scpcs.ucla.edu).

The UCLA School of Public Health is dedicated to enhancing the public's health by conducting innovative research, training future leaders and health professionals, translating research into policy and practice, and serving local, national and international communities. Detailed information about the school is available online at [www.ph.ucla.edu](http://www.ph.ucla.edu).

-UCLA-