

## Building a Network

Without question environmental contaminants are affecting people's health. Environmental hazards are among parents' top health concerns for their children, according to the American Academy of Pediatrics. Understanding how these contaminants and other environmental factors are linked to chronic disease is essential to disease prevention - and protecting the health of our communities.

The Centers for Disease Control and Prevention (CDC) is leading the initiative to build the National Environmental Public Health Tracking Network. The Tracking Network is being developed in response to calls for better understanding of how the environment can affect people's health. This Web-based system will integrate health and environmental data and provide information to address public health concerns, educating the public about ways to protect themselves from possible contamination and disease.

States and communities can act upon data generated through tracking. Today, because of tracking, public health officials in Washington State can do more than determine mercury levels in fish. They can also compile information from many sources and use the data to educate citizens about health fish choices with greater speed and accuracy. In Maine, tracking has allowed researchers to examine high arsenic levels in well water and its effects on reproduction. Consequently, state public health officials can now warn well users about the hazards of exposure to arsenic during pregnancy.

Tracking Network will enable and encourage communities, health care providers, state and local health departments, and others to take control of their health.

The building blocks of this network are grants to state and local health departments and universities around the country to build capacity and demonstrate just what tracking can do.

## Building the Foundation: University of California at Berkeley (2002—present)

The University of California at Berkeley (UCB) has received funding from CDC since 2002 to assist state and local health departments and CDC in building the Tracking Network. The UCB Tracking Program works to increase capacity for environmental public health tracking. The program staff develops methods and conduct research that will improve the ability of people to understand relationships among environmental factors (hazards), exposures, and health outcomes. With this knowledge, officials are better able to protect health at the national, regional, and community levels.

## Why Tracking Matters to the University of California at Berkeley

The 2001 California Health Interview Survey (CHIS) reported that 11.9% of Californians (3.9 million) have been diagnosed with asthma at some time in their lives. Understanding the correlations between this significant state health issue and environmental factors is a crucial step in preventing new cases among children and adults. UCB's Tracking Program collaborated with the University of California at Los Angeles Center for Health Policy Research (CHPR) on a project that examined asthma and air quality using asthma data gathered from the CHIS and air pollution data for the Greater San Francisco Bay Area, San Joaquin Valley, and Los Angeles County.

Together, UCB and CHPR developed a model that links asthma outcome data to air pollution data, allowing researchers to look for patterns that associate asthma cases with geographical locations of air pollution. This project increases the understanding of how air quality data can be linked to health outcome data for tracking purposes. Since CHIS collects data on other chronic diseases, these data also could be linked to air quality data or other types of environmental data.



## DID YOU KNOW?

The California Senate Bill 702 Expert Working Group report stated that an effective surveillance system that helps to reduce just 1% of the cost of environmentally-related chronic diseases would save California \$100 million annually. In California, the costs associated with only nine such diseases, including childhood asthma, cancer, and lead poisoning, is an estimated \$10 billion per year, or \$288 per person.

# Tracking in Action

## What is the problem?

### Linking Traffic Exposure to Asthma

Research is needed to determine if children who have short-term, adverse health responses to traffic-related air pollutants have a greater risk of suffering from asthma longer in life.

Geocoding is the process that assigns a latitude-longitude coordinate to an address. Once a latitude-longitude coordinate is assigned, the address can be displayed on a map.

## What did tracking do?

UCB's Tracking Program staff used data from the Fresno Asthmatic Children's Environment Study (FACES) to link asthma data to traffic exposure data. To see if the impact of this type of exposure was similar in children and adults, they also linked asthma data from a study of adult asthmatic subjects from Northern California with traffic exposure data. Information on the affect of neighborhood poverty on this relationship was also studied.

## Improved public health

Results showed an association between asthma exacerbation and distance from home to nearest roadway and density of heavy-duty vehicle traffic for both children and adults. The similarity of both studies' results suggests that distance from a home to the nearest roadway is a simple yet viable approach to assess exposure to traffic, at least regarding its effect on asthma.

### Addressing Health Disparities and Environmental Justice

Developing ways to identify groups and populations whose health is most affected by environmental factors is critically important. Such populations might be defined by health status or proximity to environmental agents. Methods are needed to uncover when and where unequal environmental effects are related to age, socioeconomic status (SES), race, ethnicity, or gender.

The Tracking Program staff, in conjunction with researchers from other institutions, reviewed published literature assessing disparities in exposure to environmental agents by race or ethnicity and SES. They researched options for using available data to assess disparities in environmental exposure on a broad scale. The staff also examined scientific literature to assess inequalities in diseases linked to environmental exposures and to evaluate conceptual approaches for addressing community-level factors that may interact with environmental factors to produce disparities.

UCB's Tracking Program developed conceptual models for the relationships between health status and social and environmental factors at the community level. Specifically, the staff developed measures of income inequality and racial segregation using Census data. These measures can be integrated with environmental health information at regional, state, and national levels. Tracking staff then worked with other state tracking programs to integrate key indicators of community vulnerability into ongoing environmental public health tracking.

### School-based Surveillance for Tracking

Tracking asthma is a priority, but information is limited on the prevalence of asthma at the local level.

UCB's Tracking Program added questions about the severity and symptoms of asthma to a screening survey based on one used in the International Study for Asthma and Allergies in Childhood. UCB's Tracking Program collaborated with the Fresno Unified School District to use this survey to understand asthma prevalence among middle school students in the district. In the 2006-2007 school year, high school seniors handed out the survey to all 7th grade classes in the school district as part of a school research project. The UCB Tracking Program is mapping these data and plans to link the mapped data with environmental data.

The UCB Tracking Program demonstrates low-cost, sustainable ways to collect childhood asthma surveillance data. The screening survey provides information on community-level asthma that can be linked with environmental data.



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For more information about the National Environmental Public Health Tracking Program please visit: [www.cdc.gov/nceh/tracking](http://www.cdc.gov/nceh/tracking)

