

NEW YORK STATE

Keeping Track, Promoting Health

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 to 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 healthy 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.

The 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: New York State (2002—2006)

In 2002, the New York State Department of Health (NYSDOH) received funding from CDC to plan for a statewide Environmental Public Health Tracking Network that will be part of the national tracking network. New York State used the funding to build capacity, enhance infrastructure, and complete data linkage projects. The results range from improving surveillance to enabling faster responses to environmental public health questions.

Why Tracking Matters to New York State

Asthma is one of the most common and costly illnesses in the United States. In New York, young children are increasingly being admitted to hospitals because of this respiratory condition. Under the Tracking grant, the New York State Tracking Program was able to examine and confirm a long-held theory that links children's health and air pollution. The study looked at nearly 135,000 hospital admissions for asthma and other respiratory diseases in children over a 10-year period. The data were then linked to daily ozone levels in the area. Ozone is a main ingredient of smog; it is a gas that occurs both in the upper atmosphere and at ground level. At ground level, ozone can be a significant health risk. In 5 of the 11 regions that the New York State Tracking Program analyzed, researchers found a link between hospital admissions for respiratory conditions and ozone levels two days before the patient was admitted to the hospital. This type of environmental health information is beneficial to both health professionals and policy makers. Pediatricians can provide preventative tips to their young, asthmatic patients, and policy makers can use this tracking information to guide regulations that keep New York's children healthy.



“Infrastructure is rarely at the top of the public’s agenda, yet it is essential to improve the health care in the United States.”

Thomas Burke, Ph.D.,
Professor, Co-Director, Risk Services
and Public Policy, Johns Hopkins
University

Tracking in Action

What is the problem?

Understanding the Relationship between Water Quality and Reproductive Health

Drinking water is often chlorinated to reduce the threat of disease. Chlorine can react with naturally occurring organic matter in the water to form unwanted contaminants known as disinfection byproducts. Public water supplies are monitored for levels of disinfection byproducts on a regular basis to make sure they comply with state and federal standards. Some studies have suggested a link between disinfection byproducts and miscarriages, neural tube defects, and low birth weight.

What did tracking do?

New York State's Tracking Program developed a surveillance system to track birth weight and length of pregnancy as they relate to potential exposure to disinfection byproducts. Information about birth outcomes, along with data about levels of disinfection byproducts was gathered. A geographic code was assigned using the mother's address as listed on the birth certificate. The Tracking Program linked these data and developed methods to estimate the level of disinfection byproducts in drinking water serving the mother's residence.

Improved public health

The linked data did not establish a relationship between disinfection byproducts and birth outcomes. However, because of this project, the New York State Tracking Program now has methods and data in place for evaluating any measured contaminant in drinking water and related health outcomes. In addition, this work has increased awareness of the small number of water supply systems that have difficulty meeting disinfection byproduct standards and that may need assistance in improving water quality.

Tracking Contaminated Bottled Water

Producers of bottled water often use ozone to disinfect water that contains naturally occurring bromide. Bromate is a carcinogen that forms when ozone is used. Bottled water sold by a western New York supermarket chain was recalled because it was found to have bromate concentrations higher than the Food and Drug Administration standard for bottled water. There were concerns that other bottlers might also be affected.

Maps for each water supply system pointed to high bromide levels in the source groundwater for a number of water supply systems in New York's Southern Tier and for water suppliers drawing water from Seneca Lake. The maps and data, together with information on producers of bottled water using ozone disinfection, enabled NYSDOH to geographically focus efforts to identify bottlers whose water might be at risk for high bromate concentrations.

The review indicated that the high level of bromate was likely to be an isolated incident involving a single bottler. This conclusion was determined by comparing public water suppliers with higher levels of bromine-containing disinfection byproducts to information about which public water suppliers used ozone disinfection. With this information, NYSDOH was able to quickly allay concerns.

Understanding How Air Quality Affects Children's Health

Asthma is the most common chronic disease in children, and over the last decade young children in New York are being admitted to hospitals at an increasing rate. Many studies have reported the effect of air quality on respiratory health. Ground-level ozone is an air pollutant; it is found in smog and is known to cause harmful effects to the respiratory system. However, more information was needed to determine if and how much ozone contributed to respiratory distress in a child.

The New York State Tracking Program divided the state into 11 geographic regions based on air quality monitoring data to characterize regional differences in exposure to ozone. Tracking staff then collaborated with the New York State Department of Environmental Conservation's (NYSDEC) air resources staff to share air pollution data. Together, they established a data exchange system to track both air pollution and health in New York State. The group then evaluated how ozone affected the health of children in the state.

When looking at the data statewide, tracking staff and NYSDEC did not find an association between ozone levels and hospitalizations for respiratory illness in children. However, a link between hospital admissions and ozone levels was established in five regions of New York State, including Upper and Lower Adirondacks, Upper Hudson Valley, Staten Island, and New York City. In this case, environmental health tracking provided public health officials with the type of useful information they need to identify where to target their limited resources.

Sharing Health Resources for a Common Goal

The acute health impacts of outdoor air pollutants have been shown to vary geographically. Currently, no multi-state system links air pollution and health and sociodemographic data to explore reasons for these differences.

NYSDOH collaborated with CDC, the U.S. Environmental Protection Agency (USEPA), and health departments in Maine and Wisconsin to evaluate the advantages and disadvantages of different air characterization methods that could be routinely used for environmental health surveillance. This project was called Public Health Air Surveillance Evaluation, or PHASE. USEPA developed better estimates of fine particulate and ozone concentrations for linking with health data. NYSDOH developed the tools to link and estimate the impacts of air pollution on heart attack and asthma hospitalizations.

Through this collaboration, the three health departments successfully shared air pollution, health and sociodemographic data, and the tools used to estimate the effects of pollution on health. This collaboration can lead to broad scale sharing of environmental health information and resources between states and federal agencies. The implementation of new surveillance methods will enable the health department to better understand the differences in public health effects of air pollution across the country and lead to a stronger environmental health surveillance program.



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

