

MASSACHUSETTS

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.

DID YOU KNOW?

In 2004, tracking data on asthma and lupus helped to influence the passage of new state regulations. The state health department is now authorized to collect data on asthma, systemic lupus erythematosus (SLE), autism, amyotrophic lateral sclerosis (ALS), aplastic anemia, multiple sclerosis (MS), myelodysplastic syndrome (MDS), and scleroderma.

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: Massachusetts (2002—2006)

In 2002, the Massachusetts Department of Public Health received funding from CDC to plan for a statewide Environmental Public Health Tracking Network that will feed into the National Network. Massachusetts used the funding to build workforce capacity and to enhance infrastructure. In 2003, the Department of Public Health also received funding to link selected health data with environmental exposure and hazard data. The results range from starting or improving surveillance to providing faster responses to public health questions and faster action to prevent disease.

Why tracking matters to Massachusetts

Massachusetts ranks third in the United States, behind Puerto Rico and Oregon, for lifetime prevalence of asthma. Between 137,000 and 152,000 of the state's children are living with asthma. Ambient or outdoor air pollution (e.g., particulate matter and ozone) and indoor air pollution (e.g., from mold and mildew, dust, pets and pests, and second-hand smoke) may contribute to pediatric asthma. Massachusetts Tracking Program staff conducted pediatric asthma surveillance and indoor air quality assessments in schools. The results indicated a statistically significant association between moisture problems and the prevalence of pediatric asthma. Based on tracking data, staff identified a need for public health follow-up or intervention, which provided a strong foundation for policy changes aimed at reducing mold and moisture in schools. Tracking Program staff is also working with school officials to correct the moisture problem.



“Our investigations pointed to a relatively inexpensive problem to fix,” explains Suzanne Condon, the state’s associate health commissioner. “In this case, if you have to make a decision with limited resources, fixing the school with the leaky roof first makes the best public health and economic sense.”

Tracking in Action

What is the problem?

What did tracking do?

Improved public health

Tracking Developmental Effects in Berkshire County

In Berkshire County, widespread polychlorinated biphenyl (PCB) contamination from local industry raised concerns after research showed that children's development could be affected by PCBs at even lower levels than previously believed.

To track developmental effects, health data for children from birth up to 3 years of age with developmental delay were combined with associated medical diagnosis data from the health department's Early Intervention Program and education records on 3- to 10-year-olds. Tracking staff mapped more than 100 areas that were once contaminated with PCBs, linking children's addresses to the areas contaminated with PCBs.

In general, the results revealed that PCB exposure did not likely contribute to developmental disabilities. Although data access was limited, this project did highlight the value of such data linkages. Tracking staff also calculated a crude developmental disability prevalence rate, which helped to illustrate the burden of this condition on communities in Berkshire County.

Lupus in Boston and State Hazardous Waste Sites

Lupus is a disorder with complex causes. While the exact cause is unknown, genetics is thought to play a role in the occurrence of the disease. Several studies have also shown that occupational exposure to chemical solvents is a risk factor.

Massachusetts Tracking Program staff explored the possible relationship between lupus and environmental exposure throughout the City of Boston. They gathered statistics on lupus cases among Boston residents from hospitals. In addition, they surveyed 27 community health centers, all of which responded with information about individuals diagnosed with lupus in their centers.

Program staff then worked with the Massachusetts Department of Environmental Protection to evaluate and organize that Department's electronic database of hazardous waste sites in Boston to identify those sites with contaminants, such as petroleum distillates and polycyclic aromatic hydrocarbons (PAHs) that may be associated with lupus. Boston sites were also geocoded.

The Tracking Program found that rates of lupus were significantly higher in neighborhoods with a greater density of hazardous waste sites. The results answered community concerns and, more important, demonstrated that the exposure that may have placed residents at higher disease risk likely occurred in the past because most sites have since been cleaned up. To better understand the number of people diagnosed with lupus, Tracking Program staff launched a statewide surveillance effort to include private rheumatology practices in addition to hospitals and community health centers. They also conducted two conferences on SLE. One program for health care professionals focused on the medical management of lupus. A second program focused on persons living with lupus and their families.

Birth Defects and Drinking Water Data Linkage Project

Certain adverse reproductive outcomes may be associated with exposures to disinfectant by-products (DBPs). Some studies have demonstrated an increased risk of low birth weight due to such exposure.

Tracking staff linked low birth weight data for select Massachusetts communities with public water supply data. The goal of this project was to track such data and the mothers' exposure to chlorine DBPs, specifically total trihalomethanes (TTHMs) in drinking water to determine possible patterns that may warrant further public health follow-up.

Staff found that people with high TTHM exposure, notably Hispanic women, had a statistically significant risk for having babies with low birth weight at term. Further study is warranted and may lead to the development of new policies to protect public health.

Reducing Cancer Cluster Response Time

The Massachusetts Health Department receives thousands of calls each year related to the environment's role in health effects. About 430 calls are received about cancer "clusters." However, a typical call is from a parent whose child has been diagnosed with cancer.

The Massachusetts Tracking Program developed a ground-breaking tool called the standardized incidence ratio (SIR) calculator. This electronic statistical tool combines geocoding with statistical programming in order to calculate rates of cancer. The tool greatly reduces the response time to inquiries about suspected cancer clusters, including childhood cancers in neighborhoods throughout Massachusetts. Health department staff can choose any community in the state and compute a SIR for 27 different cancer types by gender or age group. In addition to the SIR, the calculator produces a color-shaded map and a table of statistics including an observed number of cancer diagnoses, expected number of cancer cases, and confidence interval for the census tract(s) selected.

The Health Department received a call about cancer rates in two towns. They used the SIR calculator to determine rates of childhood cancer for each town. Staff shared these rates with the caller along with other general information about cancer. Historically, these types of requests for neighborhood analysis of cancer would have taken weeks or months to complete.

For more information about tracking in Massachusetts, visit www.mass.gov/dph/environmental_health.



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

