

► **DIRECT FROM CDC** ENVIRONMENTAL PUBLIC HEALTH TRACKING NETWORK



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## Striving to Achieve the Mission of CDC's National Environmental Public Health Tracking Program

**Editor's Note:** As part of our continuing effort to highlight innovative approaches and tools to improve the health and environment of communities, the *Journal* is pleased to publish a bimonthly column from the Centers for Disease Control and Prevention's (CDC's) Environmental Public Health Tracking Network (Tracking Network). The Tracking Network is a system of integrated health, exposure, and hazard information and data from a variety of national, state, and city sources. The Tracking Network brings together data concerning health and environmental problems with the goal of providing information to help improve where we live, work, and play.

Environmental causes of chronic diseases are hard to identify. Measuring amounts of hazardous substances in our environment in a standard way, tracing the spread of these over time and area, seeing how they show up in human tissues, and understanding how they may cause illness is critical. The Tracking Network is a tool that can help connect these efforts. Through these columns, readers will learn about the program and the resources, tools, and information available from CDC's Tracking Network.

The conclusions of this article are those of the author(s) and do not necessarily represent the views of CDC.

Heather Strosnider has served as an epidemiologist for CDC's Environmental Health Tracking Branch since 2006. Her primary responsibilities are to develop environmental health indicators and measures, identify appropriate analytic and data visualization methods, and monitor the impact of the environment on health in order to guide public health action and policy.

The Centers for Disease Control and Prevention's (CDC's) National Environmental Public Health Tracking Program (Tracking Program) was established in 2002 with the mission "to provide information from a nationwide network of integrated health and environmental data that drives

actions to improve the health of communities (CDC, 2005)." To tackle this mission, CDC first brought together environmental public health professionals and experts from local, state, and national agencies; from academia; and from nongovernmental organizations. The group set the mission into motion

by identifying the relevant and necessary information, network architecture, data, and actions. In 2006, I joined CDC's Tracking Program as an epidemiologist, just in time to assist in laying the groundwork for the National Environmental Public Health Tracking Network (Tracking Network). Over the years, we've continued to collaborate with partners to enhance the network, including its data and information, to support public health actions. Approaching my 10th anniversary with the Tracking Program, I'd like to reflect on the progress we've made towards achieving our mission and the opportunities we have to improve.

First, "a nationwide network." In 2009, the Tracking Program launched the Tracking Network, a web-based surveillance system that now exists in 25 states and New York City (<http://ephtracking.cdc.gov/showStateTracking.action>) and at the national level (<http://ephtracking.cdc.gov>). It provides access to data and information for communities, environmental public health agencies, health care providers, and researchers. At each level, the network consists of centralized data repositories, gateways for transporting data between levels, secure portals, public portals, and a variety of technical services like data management, geocoding, metadata creation, and report generation.

While the Tracking Program and its network aren't nationwide, we have supported pilot and capacity building projects in 34 additional state and local health departments. This was done through an Association of State and Territorial Health Officials (ASTHO) fellowship program. And over 70% of the data on Tracking Network's National Public Por-

tal covers the U.S. population beyond the 25 funded states and New York City.

The network is more than just the technical infrastructure. It's also the people. The Tracking Program supports over 200 environmental public health practitioners at the state and local level. This people network has built capacity in state and local agencies in disciplines such as data science, informatics, surveillance, geospatial information science, spatial analysis, hazard and exposure assessments, and risk communication.

Next, “**integrated health and environmental data.**” The Tracking Network provides access to health, exposure, hazard, and population data; it puts data at the fingertips of public health professionals, nongovernmental organizations, and communities. With our partners, we've identified priority environmental health issues, reviewed the state of the science, determined surveillance needs, developed data standards, and integrated available, relevant data into the network.

Currently, data are available for 18 environmental health issues on the Tracking Network's National Public Portal. Additional data are available on state and local portals to address specific state and local needs. While integrating data into the network, we've addressed important data gaps by supporting existing systems like birth defects surveillance, developing modeled grid-level fine particulate matter and ozone concentration data with the U.S. Environmental Protection Agency, identifying key data elements to support new surveillance for radon in homes and private well water, and improving the utility of hospitalization data by refining our protocols for data extraction and case definitions.

Then, “**provide information.**” We have turned terabytes of data into useful, “bite-sized” information by combining our understanding of the environmental public health question with our knowledge about how data are collected. With our partners, we've developed key content for each environmental health issue in the network to explain what we know and don't know about the connections between health and environmental hazards. We've developed and implemented risk communication messages so that users better understand the associated risks and what steps they can take to protect the health and safety of their families and themselves.

Recognizing that different users have different needs, the Tracking Program presents the data in multiple formats. For example, we recently added a new feature on Tracking Network's National Public Portal called “Info by Location.” This tool provides quick and easy access to snapshots of county-level data and information covering multiple environmental health issues. In addition, the Tracking Program and its partners have contributed to over 200 peer-reviewed publications and numerous health department reports to describe and inform important environmental public health issues (<http://ephtracking.cdc.gov/showScientificPublications.action>).

Finally, “**drives actions to improve the health of communities.**” We drive actions by first using the data in the network to detect and monitor trends, identify populations at risk, examine the relationship between hazards and disease, assess potential disease clusters, identify sources of exposure to hazards, evaluate proposed interventions or policies, and more. Then with our partners, we use the information we've generated to inform, improve, and evaluate public health actions, including programs, interventions, and policies. So far, we've documented that the Tracking Program's data and information have informed over 300 public health actions and likely many additional contributions have gone unreported (Qualters, Strosnider, & Bell, 2014). Some examples ([www.cdc.gov/nceh/tracking/successstories.htm](http://www.cdc.gov/nceh/tracking/successstories.htm)) where we have supported and informed decision making include the following:

- The addition of arsenic as a required contaminant for private well water testing in Oregon.
- The adoption of a policy to phase out the use of residual oil for heating in New York City.
- The targeting of small water systems vulnerable to drought in California.
- The implementation of policy requiring carbon monoxide detectors in new construction and rental properties in Maine.
- The deployment of an interactive map of cooling centers in Missouri.
- The development of an intervention to prevent the effects of wildfire air pollution in New Mexico.

In my 10 years with the Tracking Program, I've been fortunate to witness and be part of the tremendous progress we've made towards

accomplishing our mission. Looking forward, we find ourselves faced with significant challenges as well as great opportunities. As a program with a strong informatics focus, it's incumbent on us to stay current with the technology we employ. Across the network as a whole, it's important to evaluate the technology and processes we use to ensure we are as efficient and effective as possible to maximize use of existing resources. It's imperative that we continue to address data gaps by supporting new data collection or modeling for issues such as developmental disabilities, private well water quality, and radon. To provide more local and timely data, it's essential that we tackle the science and privacy issues surrounding small numbers and take advantage of new data streams like electronic health records. Finally, it's critical that we evaluate the utility of the information we provide to ensure we are providing the right information to the right people for the right action. We have built an extensive people and data network which presents a great opportunity to drive actions to prevent or reduce the effect of the environment on health. In collaboration with our many partners, we will use our network to continue progress towards achieving our mission of ultimately improving the health of communities. 🐾

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