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

CDC's Environmental Public Health Tracking Network: An Innovative Dynamic Surveillance System for You

Lina S. Balluz, MPH, ScD

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.

Lina Balluz has been with CDC for over 17 years. Prior to becoming chief of the Environmental Health Tracking Branch in 2012, Dr. Balluz led the Behavior Surveillance Branch and directed the Behavioral Risk Factor Surveillance System at CDC.

The Centers for Disease Control and Prevention's (CDC's) Environmental Public Health Tracking Network
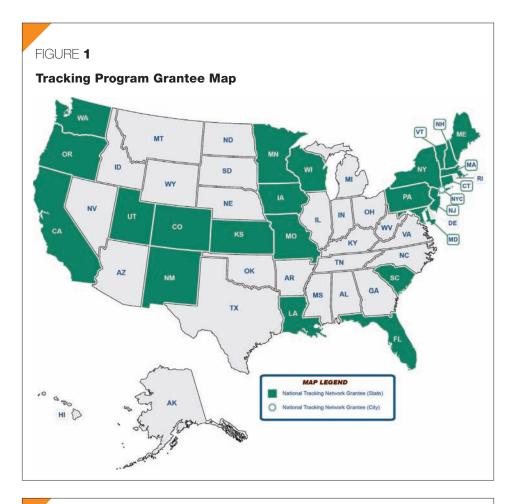
CDC's Environmental Public Health Tracking Program (Tracking Program) began with the idea that health and environmental problems are not always separate issues with unrelated solutions. When the Tracking Program was funded in 2002, no systems existed at the state or national level to track many of the exposures and health effects that may be related to environmental hazards. In addition, in most cases, existing environmental hazard, exposure, and disease-tracking systems were not linked. Because existing systems were not linked, studying and monitoring relationships among hazards, exposures, and health effects was difficult. The National Environmental Public Health Tracking Network (Tracking Network) is CDC's solution to these issues.

CDC's Tracking Network is a surveillance system that integrates data about environmental hazards and exposures with data about diseases and conditions that are possibly linked to those hazards and exposures. This system allows federal, state, and local agencies and other organizations to

- monitor and distribute information about environmental hazards and disease trends;
- advance research on possible links between environmental hazards and disease; and
- develop, implement, and evaluate regulatory and public health actions to prevent or control environment-related diseases.

The data in this surveillance system come from a variety of national, state, and city sources. CDC funds health departments in 23 states as well as New York City to build and maintain local tracking networks and contribute data to the national system (Figure 1). CDC also works with other federal and professional organizational partners to obtain data from national data sources. These data are accessible in maps, tables, and charts. The Tracking Network's mapping and data-searching features are interactive and highly customizable; data can be organized and viewed in many different ways; and most of the data can be viewed at county as well as state level. The most recent functionality improvements lets users build dynamic, animated maps to easily see trends over time for any content area on the Tracking Network.

FIGURE 1

Tracking Program Grantee Map

MAP LEGEND
- National Tracking Network Grantee (State)
- National Tracking Network Grantee (City)

FIGURE 2

Tracking Network Home Page

Before the Tracking Network, even simple questions about health and the environment could take months to answer. With the Tracking Network in place, public health officials can respond quickly, often within hours, to locate hazard sources or answer citizens' concerns. Before tracking was available, public health and environmental officials had to concentrate mainly on acute events such as hazardous chemical releases or point-source pollution such as air pollution from a specific source. Using the Tracking Network, officials can trace amounts of pollutants and their geographic spread over time. This capability allows officials to monitor long-term trends and place those acute events in context. More than 70 examples of how Tracking Network data have been used by state and local health departments to improve health in their communities are available at www.cdc.gov/ephtracking (Figure 2).

Data Available on the Tracking Network

The Tracking Network has data divided into three content sections. The Health Effects section includes data about asthma, birth defects, cancer, carbon monoxide poisoning, childhood lead poisoning, developmental disabilities, heart attacks, and reproductive and birth outcomes. The Environments section includes data about climate change, community water, housing, and outdoor air. The Population Health section includes data about biomonitoring, health behaviors (e.g., smoking), socioeconomics, and demographics. Geographic and temporal coverage of each data set varies, depending on the source.

In addition to their contributions to the national system, Tracking grantees have the flexibility to add data and content about locally relevant issues to their individual tracking networks. For example,

- Maine features data about Lyme disease;
- Massachusetts includes pediatric asthma data;
- Minnesota provides hospitalization data for chronic obstructive pulmonary disease;
- New York City includes data about pests and pest management practices;
- Oregon provides obesity data from driver's license records; and
- South Carolina provides extensive coastal data such as fishing, swimming, and water advisories.

New to the Tracking Network

Enhanced Health Impact Assessment Tool

CDC recently expanded the tools on the Tracking Network by adding a new filter to the health impact assessment tool in the outdoor air quality section. This filter shows how lowering fine particulate matter ($PM_{2.5}$) by certain percentages can lead to fewer deaths from coronary artery disease (CAD), the most common type of heart disease in the U.S. (Figure 3). CAD is largely related to lifestyle habits such as poor diet, lack of physical activity, and smoking, but it is also the most common heart problem related to $PM_{2.5}$ exposure over a long period. This health impact assessment tool can help identify areas where interventions to reduce air pollution could generate meaningful health improvements.
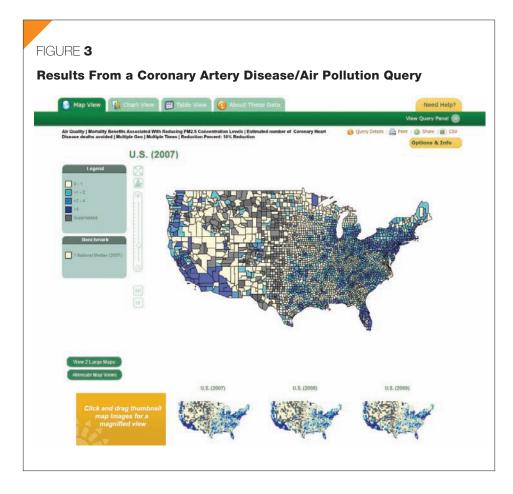
Expanded Climate Change Data

The expanded climate change data provide more than 30 years (1979–2011) of weather data about extreme heat days and events and temperature distribution. The extreme heat days and events data include temperature, heat index, and number of days to define extremely hot days and extreme heat events. The temperature distribution data allow access to daily temperature and heat index by county. These data can be used with historical hospitalization data to show how heat events may have affected health care use in a particular area, or indicate which areas might have the highest number of residents susceptible to a heat-related illness. This information can be used to design prevention messages and emergency planning.

New Data About Smoking-Related Cancers

Data about cancers related to tobacco smoking are also now available on the Tracking Network. The newly added information includes data for esophageal, larynx, oral, and pancreatic cancers. These data can be studied in conjunction with the smoking prevalence data also available on the Tracking Network.

Coming Soon to the Tracking Network

In 2014, CDC expects to add data about pesticides from the American Association

FIGURE **3**

Results From a Coronary Artery Disease/Air Pollution Query

of Poison Control Centers and a bibliography of literature featuring Tracking Network data. Data-display enhancements planned for 2014 include the ability to view multiple data sets together and a more intuitive and user-friendly "Info by Location" search option.

Resources for Environmental Health Professionals

In addition to the data and mapping features available on the Tracking Network, many other resources are available for environmental health practitioners. CDC has partnered for many years with NEHA to provide tracking-related training accessible through the Tracking Network Web site and NEHA's online training Web site. CDC also has written a "how-to" guide for states or cities that are not funded by the national program but may be interested in starting environmental public health tracking activities. Many communication materials for raising awareness about environmental and health issues, including tool kits, fact sheets, videos, and

podcasts, are available on the Web site in the Communication Tools section.

The best way to stay connected with the Tracking Program is by joining our LIST-SERV. Send an e-mail to epht@cdc.gov and you will receive updates about new data, tools, and other resources.

The Tracking Network is the nation's most comprehensive environmental public health surveillance system. If you have not had an opportunity to try it out, visit today at www.cdc.gov/ephtracking. I am very interested in hearing your feedback and suggestions on making this system useful for you. ◾◾

Corresponding Author: Lina S. Balluz, Chief, Environmental Health Tracking Branch, Division of Environmental Hazards and Health Effects, National Center for Environmental Health, CDC, 4770 Buford Highway, NE, Mailstop F-60, Atlanta, GA 30341. E-mail: lballuz@cdc.gov.