

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

Youlanda R. Outin

CDC's National Environmental Public Health Tracking Network Adds Pesticide Exposure and Prospective Climate Data

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.

Youlanda Outin is a health communications specialist in CDC's Environmental Health Tracking Branch and has been with CDC for 20 years. She has extensive experience in health communications.

The Centers for Disease Control and Prevention's (CDC's) National Environmental Public Health Tracking Network (Tracking Network) expands content and functionality every year. This year, two new datasets were added: pesticide exposure and 70 years of prospective climate data. These represent two important environmental public health concerns. In 2012, pesticides

were the 10th leading cause of poisoning exposure reported to poison control centers in the U.S. (Mowry, Spyker, Cantilena, Bailey, & Ford, 2013). Understanding how and where pesticide exposures are happening can inform public health interventions and public education on the dangers of using these chemicals inappropriately. Extreme heat events, or heat waves, are one of the leading

causes of weather-related deaths in the U.S. Climate experts are particularly confident that climate change will bring increasingly frequent and severe heat waves and extreme weather events, as well as a rise in sea levels. These changes have the potential to affect human health in several direct and indirect ways, some of them severe.



The pesticide exposure data now available on the Tracking Network come from poison control centers in the U.S. The American Association of Poison Control Centers (AAPCC) works with the nation's poison control centers to monitor poisonings and their sources. These sources include chemicals found in household products, the workplace, at home, and in the environment, as well as poisonings from foods, beverages, drugs and medicines, and animal and insect bites. Poison control centers offer a free, confidential 24-hour telephone line where people can get medical advice on poisonings.

The pesticide exposures data available in the Tracking Network provide information for all 50 states about the rate and number of reported exposures to different kinds of pesticides and the illnesses related to the exposures.



The *Reported Pesticide Exposures* indicator shows the number and rate (number of cases per 100,000) of exposures to different types of pesticides by state and by year reported to poison control centers. Pesticides are categorized according to their functional class: disinfectants, fumigants, fungicides, herbicides, insecticides, repellents, and rodenticides. Data can be used to identify trends and patterns of reported pesticide exposures over time and in different geographic regions. The advanced options allow you to explore patterns related to the presence and severity of health outcomes from the reported exposure, type of pesticides involved with reported exposures, and where people are exposed to pesticides. In addition, you can select advanced options for the data that provide critical information on the location where people are exposed, such as home or at work; and the reason for the exposure, such as unintentional exposure from air or soil, improper or incorrect use of a pesticide, and work-related activities.

The *Pesticide-Related Illness* indicator shows the rate and number of illnesses that resulted from the reported pesticide exposure and the severity of the health effects. The health effects range from minor effect to death. The health effects data groupings are defined by the AAPCC (Intergovernmental Panel on Climate Change [IPCC], 2013). This indicator has the same advanced viewing options as *Reported Pesticide Exposures*.

70 Years of Extreme Heat Predictions



When temperatures rise in the summer time, extremely hot weather can cause sickness or even death. Extreme heat can also make some types of air pollution worse in the summer, and air pollution can affect your health. Higher temperatures and

heat waves also increase demand for electricity. Planning for electricity demand and power outages is an important component of public health preparedness. Having modeled data to project heat patterns could help inform climate adaptation strategies.

In addition to 40 years of historical temperature data, the Tracking Network now has modeled data projecting temperature patterns for the next 70 years. These new data show the estimated number of days and nights of projected extreme heat, available as rolling 30-year averages, through the year 2084. Overall, the data show an increase in the projected number of days and nights of extreme heat over the next seven decades. This is consistent with the Intergovernmental Panel on Climate Change (IPCC), which projects with “virtual certainty” (99%–100%) that climate change will cause more frequent, more intense, and longer heat waves (IPCC, 2013).

These new heat projection data were originally published as part of the recently released National Climate Assessment (Melillo, Richmond, & Yohe, 2014). CDC’s Climate and Health Program transformed the data to county level and made them available on the Tracking Network. These county-level data estimates can be used to understand trends in heat over time and focus preparedness plans to lessen the health effects of extreme heat. The new calculations were made from 1/8th-degree-contiguous U.S. Daily Downscaled Climate Projections dataset by Katharine Hayhoe (2013). Extreme heat days were identified for each combination of the following parameters (1) absolute (e.g., 90°F, 95°F, 100°F) or relative (e.g., 90th, 98th, 99th percentile values) threshold and (2) a high- or low-emissions scenario. Extreme heat nights were also identified for each combination of the following parameters (1) absolute (e.g., 65°F, 75°F, 85°F) or relative (e.g., 98th percentile values) threshold and (2) a high- or low-emissions scenario.

The Tracking Network, in collaboration with other CDC programs, provides data and tools that you can use to see how extreme heat may affect your health. The Tracking Network also contains data on historical heat-related deaths and illnesses from 23 states and provides information to help you protect yourself from heat-related deaths or illnesses. You can use the Tracking Network to see if heat-related deaths and illnesses are rising or declining in your state or county.



Heat-related health and climate data can be used to

- identify populations and areas with high risk for heat-associated death,
- gain a better understanding of trends in heat-related deaths over time,
- plan interventions for those at risk, and
- plan preparedness activities to mitigate the effects of extreme heat.

Visit the Tracking Network Today

These two new datasets and the others available on the Tracking Network have very practical applications for city, county, and state environmental health professionals. You can view these data in maps, charts, and tables for easy analysis. In the mapping section, there are a variety of tools you can use to view the data including county maps, animated timeline maps to show multiple years of data, and the ability to view complementary data such as sociodemographic county characteristics.

The New York City Tracking Program used poison control center data from its city’s system to pursue restricting bug bombs to the public after evidence showed that they were causing injuries and illness from inappropriate use (Centers for Disease Control and Prevention, 2008). The Minnesota Tracking Program analyzed data on heat-related illnesses and deaths. The results were used to develop and update maps showing areas with at-risk populations who may need support to prepare for heat waves and used to inform health professionals about groups most at risk during extreme heat events. On the Tracking Network, you can find more stories and examples of how other health departments are using the data available at www.cdc.gov/ephtracking. 🗺️

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Corresponding Author: Youlanda R. Outin, Health Communications Specialist, Environmental Health Tracking Branch, National Center for Environmental Health, CDC, 4770 Buford Highway, MS F-60, Atlanta, GA 30341. E-mail: youtin@cdc.gov.

References on page 36

continued from page 35

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Did You Know?

A new report from the White House's Council of Economic Advisors states that delaying action on climate change by 10 years will cause the costs of such policies to rise by as much as 40%, which will offset any short-term savings.

Source: *Time Magazine*, <http://time.com/3049465/report-not-acting-on-climate-change-could-have-serious-economic-impact/>.

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