TRACKING PROGRESS, IMPROVING HEALTH

SUCCESS STORIES FROM
ASTHO’S ENVIRONMENTAL PUBLIC HEALTH TRACKING:
PEER-TO-PEER FELLOWSHIP PROGRAM

2009-2013
The Association of State and Territorial Health Officials (ASTHO) is the national nonprofit organization representing the state and territorial public health agencies of the United States, the U.S. territories, and the District of Columbia. ASTHO’s members, the chief health officials of these jurisdictions, are dedicated to formulating and influencing sound public health policy and to ensuring excellence in state-based public health practice.

ASTHO’s tracking fellowship five-year report, “Tracking Progress, Improving Health,” was made possible through ASTHO’s Cooperative Agreement with the Centers for Disease Control and Prevention (Award #U38HM000454). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.

Graph image on the cover is courtesy of the Colorado Department of Public Health and Environment. Colorado’s environmental public health tracking efforts are supported by funding from the U.S. Centers for Disease Control and Prevention Environmental Public Health Tracking Program, Cooperative Agreement Number 5U38EH000613-04.
“At the dawn of the 21st century, America is facing an environmental health gap. This is a gap in critical knowledge that hinders our national efforts to reduce or eliminate diseases that might be prevented by better managing environmental factors.”


“Approximately one-quarter of the global disease burden, and more than one-third of the burden among children, is due to modifiable environmental factors.”

— World Health Organization, 2006
# TABLE OF CONTENTS

Map of ASTHO Tracking Fellowship Participants and CDC Grantees ........................................... v

Introduction ........................................................................................................................................ 1

An Investment in Prevention: CDC’s National Tracking Network ..................................................... 3

The ASTHO Tracking Fellowship Experience ................................................................................ 4

Tracking Progress: Meet ASTHO’s Environmental Public Health Tracking Fellows ....................... 5

  2009 Fellows. .................................................................................................................................. 5

  2010 Fellows. .................................................................................................................................. 7

  2011 Fellows. .................................................................................................................................. 11

  2012 Fellows. .................................................................................................................................. 15

  From Radon to West Nile: The 2013 ASTHO Tracking Fellows ...................................................... 19

Tracking Matters. ............................................................................................................................. 21

Endnotes. ............................................................................................................................................. 21
ENVIRONMENTAL PUBLIC HEALTH TRACKING

Map of ASTHO Tracking Fellowship Participants and CDC Grantees

- CDC State Grantees
  - City Grantee: New York City

- ASTHO State Tracking Fellows
  - City and County Tracking Fellows:
    - Cincinnati
    - Washington, DC
    - Fairfax County, Virginia
    - Dayton & Montgomery County, Ohio

Success Stories from ASTHO’s Environmental Public Health Tracking: Peer-to-Peer Fellowship Program, 2009-2013
Our health and the environment are intricately linked. Whether it’s the air we breathe, the water we drink, the food we eat, or the manmade structures in which we spend our days, environment is a key determinant in human health across our lifespans. Air pollution, lead-based house paint, and asbestos are just a few examples of well-known and well-studied environmental health threats. However, there are many more environmental threats about which little is truly known. Without this kind of knowledge, it is considerably more difficult to protect people’s health and avert preventable and costly disease and disability.

That’s where tracking comes in. At its core, environmental public health tracking is surveillance that collects data for analysis to discover trends and patterns of disease and exposure that can inform successful public health interventions and policies. This may sound simple, but creating a system to track environmental exposures and their related health effects—a system that can seamlessly cross state and regional borders as easily as environmental hazards do—is an immense undertaking.

A little more than a decade ago, no such national tracking system existed in the United States, and the few existing, local tracking efforts weren’t linked together. According to a landmark Pew Environmental Health Commission report released in 2000, “America’s Environmental Health Gap: Why the Country Needs a Nationwide Health Tracking Network,” America was “facing an environmental health gap ... a gap in critical knowledge that hinders our national efforts to reduce or eliminate diseases that might be prevented by better managing environmental factors.” The commission called on policymakers to invest in a nationwide environmental public health tracking network to close that information gap. In 2002, Congress authorized funds so CDC could begin building this network and strengthening environmental public health capacity within state and local health departments.

Today, CDC’s National Environmental Public Health Tracking Program has built a national tracking network. CDC maintains the National Tracking Network and funds 24 state and local health departments to develop local tracking networks that feed data to the national system. However, funding is limited and not every state can participate in the tracking program. In addition, some data on the CDC’s National Environmental Public Health Tracking Network can only come from states that are funded to participate. This leaves critical gaps in our current surveillance system.

CDC works closely with a diverse group of partners and stakeholders to disseminate tracking lessons and data, as well as build the capacity for a truly nationwide tracking network that has the potential to improve health, save lives, and reduce medical spending. Among those partners is the Association of State and Territorial Health Officials (ASTHO). Since 2009, ASTHO has partnered with CDC to offer an innovative mentoring project that builds relationships between state and local health departments that are funded by CDC to participate in the tracking program and those that are not.

The ASTHO Environmental Public Health Tracking: Peer-to-Peer Fellowship Program is bridging the gap between health departments with experience in tracking and those just starting out. This mentoring program is expanding the state and local capacity needed for a nationwide tracking network as envisioned by the Pew Environmental Health Commission. To date, 23 state and local health departments that are not funded as CDC tracking program grantees have participated in the Peer-to-Peer Fellowship Program. This level of interest demonstrates the desire and need to expand the National Environmental Public Health Tracking Program to all 50 states.

As part of the fellowship program, participants are paired with a compatible CDC tracking grantee, develop a pilot project to advance environmental public health tracking activities in their communities, and work closely with their mentors to gain firsthand knowledge and experience in tracking. (More in-depth details on the fellowship program are on page 4.)

ASTHO’s Peer-to-Peer Fellowship Program is building true mentor-mentee relationships and fostering a cycle of continuous learning around environmental public health and the tracking methods needed to shape effective interventions and reach priority populations. ASTHO’s work means that as CDC’s Tracking Program and Tracking Network grow and if additional funding becomes available, more state and local health departments will have the capacity to build effective local tracking networks and contribute to the nationwide environmental public health tracking effort.
The fellowship program is nurturing that crucial transfer of knowledge and experience that will allow for an expedited expansion of the National Tracking Network when new funding opportunities arise.

This report highlights the progress and future of ASTHO’s Peer-to-Peer Fellowship Program and chronicles success stories from state and local health department participants. Since the fellowship program began five years ago, state and local public health fellows report significant growth in their tracking-related work and capacity. Project focus areas are diverse, including using tracking data to increase blood lead testing among at-risk children in Delaware, studying the relationship between air pollutants and chronic disease in Kentucky, and more seamlessly merging weather and heat-related illness data in Arizona to reduce disability and death related to extreme heat events.

CDC’s Tracking Network is one of a kind—it was the first system to integrate environmental and health data in one place. In the process, the nation’s top public health agency not only launched dozens of localized tracking efforts nationwide, but transformed the ability of public health workers to use data and surveillance to produce better health outcomes. This is no small step forward. Environmental conditions are major contributors to health status, and the Tracking Network means public health workers are better equipped than ever before to make a positive difference.

At the end of the day, CDC’s and ASTHO’s tracking efforts are an investment in our nation’s health and resiliency. Environmental public health tracking provides state and local health officials with the data, tools, and knowledge needed to address health issues related to environmental hazards and exposures. And, most importantly, tracking provides the data needed to direct our limited resources toward a common goal: prevention.

ASTHO’S ENVIRONMENTAL HEALTH PROGRAM

ASTHO’s Environmental Public Health Tracking: Peer-to-Peer Fellowship Program is part of its Environmental Health Program, which helps state and territorial public health agencies build their capacity to respond to and address known and emerging environmental public health challenges. The Environmental Health Program offers resources on a variety of environmental health issues, convenes and jumpstarts dialogues, and works to ensure that public health practitioners and their perspectives are considered in environmental health policymaking.

In addition to the tracking fellowship program, ASTHO’s Environmental Health Program is working to enhance environmental health communication between experts and the public, improve food and water safety, strengthen public health’s capacity to combat vector-borne and zoonotic diseases, and convene state environmental health directors to share lessons learned and best practices. To learn more about ASTHO’s Environmental Health Program, visit www.astho.org/Programs/Environmental-Health.
AN INVESTMENT IN PREVENTION: CDC’S NATIONAL TRACKING NETWORK

Every year in the United States, chronic disease is responsible for seven out of 10 deaths and billions of dollars in healthcare spending. A medical model can only do so much to address this rising toll. Outside the walls of the doctor’s office or hospital, patients will continue to face environmental conditions that are out of their individual control and at odds with good health. Indeed, environmental hazards and exposures directly affect and complicate many chronic diseases, such as heart disease, asthma, and cancer. This is just one of many reasons why CDC’s Tracking Network and its ongoing efforts to fill the knowledge gap between exposure and disease are key to both managing health and preventing illness.

The CDC Tracking Network is an integrated system of health, exposure, and hazards data from national, state, and local sources. Policymakers, public health practitioners, and the public can access the Tracking Network to view maps, tables, and charts that illustrate the relationship between hazardous environmental exposures, geography, and facts on chronic disease and other health conditions.

With the help of the CDC-funded state and city health departments that funnel data into the growing National Tracking Network, CDC is able to provide a clearer, more informative picture of the intersections between human health and the environment. Local and state health officials can then use this information to shape more effective interventions, bring them to communities most at risk, and stay one step ahead of preventable health risks. In addition, residents have direct access to the Tracking Network and can use the information to take healthy actions on their own. The National Tracking Network provides data on numerous health conditions, including cancer, developmental disabilities, birth defects, heart attacks, and childhood lead poisoning.

For example, anyone can visit the CDC Tracking Network and run an instant data search on the geographic distribution of asthma. Asthma is a chronic respiratory disease that can severely affect a person’s quality of life and costs the nation billions in medical care and lost productivity every year. Users can then run another search to explore the geographic distribution of states that frequently experience days with above-average ozone pollution. Because ozone pollution is a known trigger for serious asthma complications that can lead to emergency room visits or hospitalizations, public health officials can use these data to more precisely target prevention interventions where they will have the greatest impact.

At a local level, tracking networks can provide even richer data. Using asthma as an example again, the New York City Tracking Network, which was developed with CDC funding support, allows users to view which neighborhoods have high numbers of homes with cracks or holes in the building. Such housing conditions can increase the risk of pest infestations, a known asthma trigger. Users can then run another search on asthma-related emergency room visits among children by neighborhood. By examining these data together, local public health officials can more accurately identify problem areas and those most at risk, focus education and intervention efforts, and help prevent costly or potentially fatal respiratory complications.

These examples are just the tip of the iceberg. Environmental public health tracking creates continuous opportunities for improving and protecting people’s health, evaluating progress, and enhancing the quality of public health services. However, the opportunities that open up with a truly nationwide tracking network are even more promising.

You can see more examples of tracking in action and learn more about the tracking program at www.cdc.gov/nceh/tracking/successstories.htm and www.cdc.gov/ephtracking. Also, visit CDC’s “Tracking in Action” video series, http://ephtracking.cdc.gov/showTrackingInAction.action, for a look at how health departments across the country are using tracking to improve the health of their communities.
THE ASTHO TRACKING FELLOWSHIP EXPERIENCE

The ASTHO Environmental Public Health Tracking: Peer-to-Peer Fellowship Program acts as a stepping stone for states and localities without CDC funding to gain valuable tracking experience and put that knowledge to work building healthier communities. From 2009-2013, 23 state and local health agencies have taken part in the intensive six- to nine-month fellowship program, each conducting a pilot project, participating in national tracking workshops and conferences, and working closely with mentors within a CDC-funded tracking program.

Activities don’t end with the official conclusion of a fellowship project. Past fellowship participants not only continue to build on their tracking experience and work with their mentors, but also receive ongoing support from ASTHO. In 2012, ASTHO launched its Phase II Capacity Building Grants Program for Environmental Public Health Tracking, which is open to fellowship program alumni. With the support of CDC, Phase II provides funds for fellowship alumni to further their tracking capacity, implement a tracking demonstration project, attend national tracking workshops and meet with tracking mentors, and convene technical advisory groups to oversee the alignment of an agency’s tracking activities with CDC’s national tracking program guidelines. Health departments in Washington, DC, Kentucky, and Cincinnati were the first recipients of the Phase II fellowship funding.

Also, ASTHO welcomed the support of technology provider Esri to offer data visualization training and geographic information system, or GIS, technology to its Peer-to-Peer Fellowship Program participants. For the first time, in 2013, fellowship participants received hands-on training with GIS tools, an essential component of tracking. GIS allows users to track, analyze, and integrate data geographically, often resulting in the easily-accessible maps that have come to be a cornerstone of state tracking websites. Fellowship program alumni also have access to the Esri technology.

Like tracking itself, ASTHO’s efforts are always on the move. Today, ASTHO’s Peer-to-Peer Fellowship Program staff are working to make sure the organization’s tracking programs continually evolve and adapt to the needs of state and local public health workers and the communities they serve.
The following are success stories and progress reports from the 23 state and local health departments that have participated in ASTHO’s Peer-to-Peer Fellowship Program. To learn more about the program or to read more about health departments’ experiences, visit www.astho.org/programs/environmental-health-tracking-environmental-health-hazards.

2009 FELLOWS

FROM ASTHO FELLOW TO CDC TRACKING GRANTEE

MENTEE: LOUISIANA
MENTOR: MISSOURI

Fishing and seafood are big business in Louisiana, but was the daily catch putting residents’ health at risk? It’s a question Louisiana public health workers set out to answer.

With support from ASTHO’s Peer-to-Peer Fellowship Program and guidance from their tracking mentors in Missouri, Louisiana public health workers used tracking techniques to map the relationship between blood mercury levels in residents and mercury levels in fish tissue. The outcomes could tell public health workers where local seafood consumption was contributing to elevated blood mercury levels and pinpoint communities in need of interventions. Fish and shellfish are major sources of human exposure to mercury, which at high levels can adversely impact the brain, heart, kidneys, lungs and immune system. Mercury exposure can be especially dangerous in young children, affecting the nervous system and causing intellectual disabilities.

While previous work had found a relationship between eating local fish and blood mercury levels, the geographic distribution of the problem wasn’t known. The goals of the ASTHO pilot project were to assess the quality of current data sources, evaluate the use of mapping technologies (GIS) in surveillance, identify vulnerable populations and communities, and use the findings to take action.

THE RESULTS

• Using existing data sources, Louisiana public health workers reviewed more than 2,000 blood mercury test results collected between 2007 and 2009 and more than a dozen years of fish tissue mercury data. While the pilot project had many limitations, it was able to identify areas where fish consumption may be contributing to worrisome blood mercury levels. The project also revealed gaps in data and data standardization as well as communities that could benefit from additional blood-mercury testing. The experience led public health workers to conclude that long-term use of GIS-based surveillance could help reduce human mercury exposure and its related health effects.

• Findings from the pilot project were used to inform a public health action plan that included finding and analyzing new data, developing an effective approach to assessing risk according to geographic location, and designing a prevention campaign that targeted vulnerable residents and translated tracking data into information anyone could use to protect their health.

• Building on its ASTHO experience, the Louisiana Department of Health and Hospitals successfully applied and became an official CDC tracking program grantee in August 2009 shortly after its fellowship experience. Since then, state public health workers have used tracking to face a variety of health challenges, such as tracking health problems tied to imported drywall in the wake of Hurricane Katrina and tracking health complaints and environmental exposures in the aftermath of the 2010 BP oil spill. In addition, Louisiana’s tracking staff continue to partner with their ASTHO mentors in Missouri as they continue to expand their own robust tracking program.
UNDERSTANDING THE IMPORTANCE OF TRACKING
MENTEE: MICHIGAN
MENTOR: MAINE

Thanks to its fellowship experience, Michigan is taking an active role in national tracking efforts and leveraging its experience to build new environmental health partnerships and attract additional funds.

Although the Michigan Department of Community Health’s Division of Environmental Health staff had long been involved in assessing environmental exposures and their health effects, it wasn’t until the fellowship that they fully realized the crucial role that tracking networks play in CDC’s environmental health efforts. With support from ASTHO’s fellowship program, an environmental epidemiologist with Michigan’s environmental health division had the opportunity to attend CDC’s national tracking conference in 2009. There, the fellow met epidemiologists from around the nation to discuss ways that CDC-funded and non-funded states could work together on tracking.

The fellow also had the opportunity to visit tracking mentors in Maine. The two states share similar tracking interests, such as carbon monoxide poisoning, arsenic contamination of groundwater, and air pollution’s health effects. During a three-day visit with Maine’s Environmental & Occupational Health Programs, Michigan’s tracking fellow learned about Maine’s Tracking Network and its active surveillance system for carbon monoxide poisoning. The fellow discussed ways Michigan could strengthen education and outreach related to carbon monoxide poisoning and unintentional death. Other issues highlighted during the visit included Maine’s work on the relationship between arsenic exposure and low birth weights, as well as its study of the intersections between ozone pollution and asthma-related emergency room visits.

THE RESULTS

• The ASTHO fellow returned to Michigan with a deeper understanding of tracking and the knowledge needed to better collaborate with CDC-funded states. Maine continues to support Michigan’s efforts in tracking, and Michigan continues to rely on Maine’s experience and tracking knowledge.

• The ASTHO fellowship experience not only strengthened an environmental health partnership between Michigan and Maine, it also facilitated stronger working relationships among Michigan health agency staff working on asthma, environmental toxicology, and information technology. The fellowship facilitated Michigan’s involvement in national workgroups that helped with addressing two important issues in their state: the State Environmental Health Indicators Collaborative (SEHIC)’s Climate Change and Asthma Work Groups, which include CDC tracking grantees. The Climate Change Work Group developed a set of indicators related to the health effects of climate change, while the Asthma Work Group created indicators related to pollen-monitoring data.

• Michigan public health officials continue to collaborate with CDC-funded and non-funded states on tracking projects. Through contacts made from the ASTHO fellowship and through SEHIC, Michigan is an active participant on the CDC National Tracking Network’s climate change content workgroup and pollen workgroup.

THE BUILDING BLOCKS OF TRACKING
MENTEE: WASHINGTON, DC
MENTOR: UTAH (2009)
MENTOR: MARYLAND (2012, PHASE II)

As a CDC-funded state, Utah is home to a dynamic tracking network that offers data on birth defects, cancer, poisonings, heart disease, injury, lead, arsenic, hospitalization, air quality, and other hazards and exposures. The system maps disease distribution, assesses exposures, detects disease clusters, and provides critical information to staff for conducting risk analyses. Utah public health officials can use tracking data to estimate risks to residents’ health at a local level, advance environmental health research, and shape effective public health responses.
As an ASTHO fellow, a representative from the District of Columbia Department of Health’s Center for Policy, Planning, and Epidemiology got a firsthand look at Utah’s tracking efforts and technology and has since used that knowledge to begin building a tracking network in the nation’s capital.

THE RESULTS

- The DC Center for Policy, Planning, and Evaluation (CPPE) accessed data sources for a proposed DC tracking network. Indicators include air quality hazards, hospitalizations for heart attacks, water contamination, birth defects, cancer, childhood lead poisoning, reproductive health outcomes and carbon monoxide. Health department staff also established relationships with environmental hazards and exposure data collectors and engaged them in the tracking development process.
- CPPE launched a project with public health students at George Washington University to study tracking systems in other states and highlight additional indicators that should be included in the DC tracking network. Students also developed metadata for carbon monoxide, birth defects, childhood lead poisoning, asthma, water quality and cancer.
- DC health officials engaged in discussions with neighboring states about environmental health data sharing and combining resources to confront regional environmental health challenges.
- DC health officials began developing a web query system based on the Utah model and entered 10 years’ worth of data on five health conditions. With these basic building blocks in place, DC applied for the ASTHO Environmental Public Health Tracking: Phase II Capacity Building Grants Program to continue the development of its tracking system and to better position itself to join the nationwide tracking network and meet the requirements to become a CDC grantee if more tracking funds become available.
- In 2011, the DC Department of Health successfully competed for the ASTHO Phase II Capacity Building Grants Program and began a collaborative relationship with the Maryland Department of Health and Mental Hygiene. The new partnership means DC will be able to continue to build a robust tracking network of its own and join a regional network promoted by the Maryland Tracking Program.
- DC also established a collaborative partnership with Georgetown University to examine the relationship between ambient air quality and various health outcomes. They continue to partner with Georgetown in the development of metadata for the DC tracking network. Because of its fellowship experience and ASTHO’s support, DC health officials will be able to effectively track local environmental hazards and health outcomes for the first time. (More information on ASTHO’s Phase II Capacity Building Grants Program can be found on page 4.)

LEVERAGING TRACKING KNOWLEDGE FOR BETTER HEALTH

MENTEE: DELAWARE
MENTOR: NEW YORK CITY

Delaware environmental health staff are using insights they gained from New York City’s Tracking Program to implement healthier housing in Delaware and mediate indoor health hazards. During a visit with New York City tracking staff, Delaware environmental health staff learned about the tracking system’s overall operations and technology, especially zeroing in on its “rat portal.” The rat portal is a perfect example of tailoring local tracking systems to local needs, and Delaware staff found that its innovative design could serve as a good model for Delaware’s own healthy housing efforts.

Rats and rodents in the home can pose serious hazards to human health, including disease and food contamination. The rat portal maps geographic patterns in New York City’s rat population, providing health officials and the public with the latest information on rat trends. Additionally, the portal is another avenue for local public health officials to speak directly with residents; it offers educational materials on how to prevent rat infestations and information on what’s being done about rat problems, including the number of inspections conducted and property violations issued.

New York City’s use of tracking to not only track environmental hazards but also to reach out to and educate residents turned out to be a perfect match for Delaware’s healthy homes activities.
THE RESULTS

• Since 2010, Delaware’s Healthy Homes Initiative, a program of the Delaware Division of Public Health to reduce housing-based health hazards, has been working with residents to mediate indoor air quality’s effects on asthma and reduce the risk of an asthma emergency. However, the program had been mostly reactive, responding to individual complaints or referrals. By applying tracking techniques, health officials could take a more proactive approach—identifying regions most at risk and reaching out with education and assistance to prevent health problems from happening in the first place. Since completing the fellowship program, Delaware has used lessons learned from its asthma tracking pilot project to drive the state’s long-term goal of establishing its own tracking network.

• Lessons learned are also being applied to the state’s Lead Poisoning Prevention Program and state radon program. For instance, to increase childhood lead poisoning testing, the Delaware Lead Poisoning Prevention Program is tracking birth records in relation to blood lead level testing rates. The resulting analysis will highlight which communities are ripe for outreach on the importance of such testing. Similarly, the state radon program is tracking and mapping radon tests throughout the state to determine regions of concern.

• The lead and radon projects not only strengthen the department’s environmental health capacity, but also provide evidence for the value of public health tracking in Delaware.

In North Carolina, health officials decided to use their ASTHO fellowship experience and tracking knowledge to tackle the problem. While there are no reports of North Carolina residents becoming sick due to blue-green algae, it can cause skin and respiratory irritation and contaminate drinking water.

Building on lessons learned during a site visit to the Maryland Tracking Program and applying an environmental public health tracking framework, North Carolina workers examined the state’s history of algal blooms and considered how tracking drought indicators could help them predict such blooms and target appropriate prevention messages and public advisories. In the past, complaints and concerns about algal blooms and their health effects often coincided with periods of drought. This provided an opportunity for researchers to study a possible correlation.

THE RESULTS

• In studying climate indicators and previous algal bloom events, as well as testing water samples, public health workers found that more algal bloom events involving a toxin occurred during drought. Thus, they were able to identify regions most at risk.

• In addition to the algal project, North Carolina workers gained substantial insight into the resources needed to build and implement their own tracking network. The fellowship experience and Maryland site visit offered lessons on pitfalls to avoid, new networking contacts for collaboration and information sharing, and a basis for identifying North Carolina’s tracking strengths and weaknesses.

• Since its ASTHO fellowship, North Carolina has incorporated tracking indicators into its health objectives for 2020, including goals to improve air and water quality and reduce the mortality rate from work-related injuries. The North Carolina Department of Health and Human Services also developed a website on private well water quality, inventoried possible data sources and systems that could feed into a tracking system, and identified heat-related emergency room visits as a health event that is regularly reported and tracked.

MEET ASTHO’S TRACKING FELLOWS

TRACKING ALGAL BLOOMS
MENTEE: NORTH CAROLINA
MENTOR: MARYLAND

Toxin-containing algal blooms are not a public health issue that typically makes headlines, but they are an issue that can be avoided with the right information and education.
LINKING CHRONIC DISEASE AND THE ENVIRONMENT

MENTEE: KENTUCKY
MENTOR: FLORIDA (2010 and 2012, Phase II)

In Kentucky, there was little infrastructure to study the link between environmental chemicals and chronic diseases. Many of the required surveillance systems were in place, but the linkages just weren’t there. However, tracking could certainly fill that gap. In turn, the Kentucky Department for Public Health decided to explore the feasibility of using a tracking network to help examine the issue.

Kentucky’s ASTHO fellow visited Florida’s Tracking Program, where discussions centered on the state’s tracking website, data-sharing agreements, metadata creation, mapping applications, data analysis, and specific environmental health topics. As a result, Kentucky public health staff decided to base much of Kentucky’s emerging tracking activities on lessons learned in Florida. The fellow also shared experiences from the Florida visit with public health officials and decisionmakers back home to illustrate how Kentucky would benefit from tracking.

To demonstrate tracking’s importance, Kentucky public health workers embarked on a pilot project to examine the link between three air pollutants and mercury and higher levels of chronic disease, such as asthma, lung cancer, and chronic obstructive pulmonary disease. Using tracking techniques, they linked air quality data with area health outcome and hospitalization data.

THE RESULTS

• The pilot project found significant links between the air pollutants and the chronic diseases studied, except for lung cancer and nitrogen dioxide. The project results were used to illustrate the benefits of environmental public health tracking and support the development of Kentucky’s own tracking network.

• A Kentucky tracking workgroup formed and continues to meet regularly. The workgroup consists of representatives from a variety of tracking data stewards, such as schools of public health, the Kentucky Regional Poison Control Center, the Kentucky Department for Environmental Protection, and the Kentucky Department for Public Health. The group is creating a plan to collect standardized tracking indicators for birth defects, asthma, carbon monoxide poisoning, and heart attacks. A long-term goal is to develop a web-based data system similar to one in Florida that tracks community health indicators.

• Kentucky has submitted community drinking water data for 1999-2012 to the National Tracking Network.

• Kentucky was selected to participate in ASTHO’s Phase II Capacity Building Grants Program for Tracking (see page 4 for more information). In Phase II, the Kentucky fellowship recipient worked on another data linkage project to examine the relationship between asthma and exposure to flooding in Western Kentucky and will continue to build peer networks to nurture and support Kentucky’s tracking progress.

CREATING A ONE-STOP SHOP FOR ENVIRONMENTAL HEALTH

MENTEE: GEORGIA
MENTOR: WASHINGTON

Georgia health officials already had a robust system for collecting, querying, analyzing, and mapping health outcomes in the communities they serve. However, there was no general and accessible repository for data on environmental hazards and exposures. It was a gap in the public health system that Georgia public health workers decided to tackle via the ASTHO fellowship program.

To learn how to effectively fill that gap, Georgia’s ASTHO fellow traveled to Washington to learn from a state experienced in tracking. During the visit, the Georgia fellow received a thorough overview of Washington’s tracking program, including tracking...
topics of particular relevance to Georgia residents, such as air pollution, water contamination, and fish consumption advisories.

With the lessons from Washington in hand, along with information gathered from other state tracking grantees, Georgia public health staff got to work on their ASTHO fellowship pilot project: a new tracking information website.

**THE RESULTS**

- The Georgia Department of Public Health organized the first interagency meeting of entities that collect relevant environmental data with a goal of introducing the tracking network and encouraging participation.

- Staff created a web page (http://dph.georgia.gov/chemical-hazards-links) within its Chemical Hazards Program site that makes a variety of environmental health information easily accessible to the public. Among its features, the site links to the state’s Hazardous Site Inventory, Ambient Monitoring Program, Water Quality Database, and Healthy Homes and Lead Poisoning Prevention Program as well as to more generalized information sites, such as various EPA databases and the U.S. Geological Survey. In other words, Georgia residents now have access to a one-stop shop for environmental hazards and data.

- Georgia continues to use its tracking and environmental health knowledge to study and identify environmental health hazards and develop public awareness messaging. For example, since the ASTHO fellowship, Georgia public health personnel and their partners investigated elevated uranium and radium levels in private well water and collaborated with the University of Georgia to encourage residents to test their homes for uranium and radon contamination; provided residents with information about reducing exposure to radioactive contaminants in well water and indoor air; and partnered with EPA to sample well water for radionuclides and evaluate historical groundwater data to find communities that may be affected by uranium and radium levels associated with cancer risks. Georgia public health workers continue to monitor new well water and indoor air data and provide services to residents exposed to elevated uranium, radium, and radon levels.

- With a re-energized focus on environmental health hazards, Georgia workers investigated hundreds of private well water sample results and determined that more than 40,000 people in south Georgia are potentially being exposed to dangerous arsenic levels. In response, Georgia public health staff conducted a physician education program in eight counties, among other public health outreach activities.

- Georgia staff routinely evaluate cancer incidence data to respond to reports of cancer clusters near hazardous waste sites and spills. They also investigated noncancer cluster indicators, including miscarriages, respiratory disease, and kidney disease, and use the tools compiled during the ASTHO fellowship to evaluate all data and map the distribution of results.

**COMMUNICATING THE BENEFITS OF TRACKING**

**MENTEE: WEST VIRGINIA**
**MENTOR: UTAH**

Communication and information sharing are key when it comes to tracking. And the more seamless the communication channels, the more robust the localized tracking network. In West Virginia, the tracking fellow took that message to heart, deciding to focus the ASTHO fellowship experience on developing an effective, computer-based communication system between environmental health data stewards.

During the mentor-mentee site visit at the Utah Department of Health, the West Virginia fellow learned about Utah’s information-sharing activities and how such activities allow Utah health officials to compare their progress against other states and regions while ensuring quality standards and maintaining security.

In developing a fellowship project and in initiating plans for a West Virginia tracking program, the fellow took many cues from Utah while still tailoring the details to West Virginia’s unique health needs and communities. Some of the environmental health issues of particular importance in West Virginia are radon mitigation, drinking water quality, lead exposure, and the health effects of methamphetamine-contaminated structures.
THE RESULTS

• The West Virginia fellow began identifying potential data stewards and those with an interest in tracking as well as assembling a workgroup of representatives from key departments and agencies. Workgroup members include representatives from the Department of Health and Human Resources, Department of Environmental Protection, and the state Health Care Authority, as well as information systems experts. The group was eventually charged with leading the development of a tracking program in West Virginia.

• The ultimate goal for West Virginia is to develop a robust environmental health communication network between community stakeholders, local health agencies, and the West Virginia Department of Health and Human Services in support of tracking.

• With ASTHO’s support, the West Virginia fellow was able to impart to colleagues and decisionmakers the value of tracking to people’s health and the benefits of raising public awareness about environmental health risks. Now, when additional CDC grant funding or state funding becomes available, West Virginia will be ready to move forward.

2011 FELLOWS

ADAPTING TO THE HEALTH EFFECTS OF CLIMATE CHANGE

MENTEE: VIRGINIA
MENTOR: NEW YORK

During the state’s ASTHO fellowship, Virginia public health officials decided to take on one of the emerging public health challenges of our time: climate change and its effects on human health.

But first, the Virginia fellow visited New York’s tracking program for advice. In New York, discussions focused on a variety of tracking issues, such as tracking technologies and communications tools as well as data management and information sharing. New York’s Tracking Program has been particularly successful at partnering with data sources and creating a tracking system that responds to public concerns. For example, New York public health workers use data from the state’s cancer registry to generate maps that people can use to view the overlay of environmental facilities and cancer incidence by ZIP code, census tract, and street level. The Virginia fellow also learned about New York’s climate change-related tracking activities and discussed how to tailor a tracking approach that would address Virginia’s needs and fit within its existing infrastructure.

For the fellowship project, the Virginia fellow explored the intersections between weather-related changes and respiratory health outcomes. In fact, for the first time in Virginia, the project compared weather patterns and asthma-related hospitalization data from the metro Richmond area, which is historically home to higher rates of asthma-related hospitalizations than the rest of the state. Tracking such patterns boosts the capacity of Virginia public health workers to reach residents with timely messaging that could help prevent serious and costly asthma complications.

THE RESULTS

• The project, which analyzed data from 2005 to 2009, found that daily fluctuations in temperature can be associated with a higher risk of asthma-related hospitalizations, though the relationship requires more in-depth exploration and additional tracking efforts.

• The project also exposed gaps in data quality and provided a foundation for future environmental epidemiological investigations.

• The ASTHO fellowship sparked new dialogues across Virginia Department of Health divisions on sharing tracking-relevant data and using existing resources and avenues to put tracking to work to serve Virginia residents. For example, while the Virginia Department of Health already communicates with the public during extreme weather events and heat waves, the department is now considering whether asthma information should be integrated into weather-related health advisories.

• Since the state’s fellowship experience, Virginia public health workers continue to make progress on adopting tracking-based techniques to improve environmental health outcomes among state residents.
BREATHING EASIER WITH TRACKING

MENTEE: OHIO
MENTOR: MASSACHUSETTS

Asthma can be triggered by a variety of environmental exposures, from household pests and common cleaners to seasonal pollen and air pollution. In Ohio, ASTHO fellows decided to use tracking to examine the relationship between the exacerbation of asthma and chronic lower respiratory disease and climate change indicators such as extreme heat and poor air quality.

Informing Ohio’s tracking pilot project were insights and lessons learned during a site visit to Massachusetts, which has been a CDC tracking grantee since 2002. During the three-day visit, Ohio fellows learned about building data-sharing partnerships, designing a user-friendly tracking website, and forming a collaborative relationship with information technology staff. They also discussed the barriers Massachusetts has encountered along the way, such as collecting pertinent tracking data while abiding by health information privacy laws.

Back in Ohio, the ASTHO fellows narrowed the parameters of their pilot project to Montgomery County, an area located on the lower portion of the Ohio River Valley with a record of poor air quality. The project’s goal was to identify populations and regions more vulnerable to the serious respiratory complications that come with variations in air quality and temperature and then target appropriate prevention strategies.

THE RESULTS

• Building on already established partnerships with the regional air quality authority and other health organizations, Ohio tracking fellows gathered years of data on hospital and emergency room discharges, air quality, temperature, and heat indices. Although analysis and findings for the pilot project thus far are inconclusive, there have been a number of positive outcomes.

• Internal partnerships among Ohio Department of Health bureaus and programs have been strengthened as a result of the fellowship project and have expanded into other weather-related and environmental collaborative efforts. During the past two years, public health messages have been featured on the health department homepage for seasonal events—such as severe weather, flooding, power outages, and extreme heat—and their related health hazards.

• Externally, the Office of Vital Statistics and environmental health surveillance staff have partnered with local coroners’ offices and the Ohio State Coroners Association to develop and pilot a rapid reporting mechanism for fatalities in an emergency or disaster. The mechanism would expedite and enhance surveillance for event-related fatalities, thereby allowing rapid risk analysis and relevant preventive measures and messages to be implemented in a timely fashion. While funding for a dedicated tracking program or staff is not currently available, the ASTHO fellowship opened the doors and set the stage for establishing these climate-related collaborative health efforts.

• Additionally, state health department staff met with representatives of Cincinnati’s local Environmental Public Health Tracking Committee as well as representatives from Columbus Public Health to develop new partnerships and ideas for developing tracking websites. All involved agreed that if a request for proposals were to be presented for new tracking states, Cincinnati, Columbus, and the state of Ohio would have a stronger application if all applied together as a group.

PREVENTING HEAT-RELATED DEATHS

MENTEE: ARIZONA
MENTOR: CALIFORNIA

Gathering data on health issues affected by environmental factors isn’t new for Arizona state health officials. However, they didn’t have the capacity to link health and environmental data sets in the effective way that tracking does.
But in early 2011, Arizona ASTHO fellows visited California’s Tracking Program to learn how to begin that process. The two states were a perfect match, as they both face challenges with heat-related morbidity and mortality, a problem expected to worsen with climate change. Heat is the top weather-related cause of death in the United States, resulting in more deaths than hurricanes, tornadoes, lightning, and floods combined. In Arizona, average temperatures are on the rise, and nearly 1,500 heat-related deaths occurred between 1992 and 2009.

In response, Arizona’s tracking pilot project focused on identifying at-risk residents in Maricopa County, which already had a strong heat surveillance system. The project results would help fill a data gap in recent heat-related hospitalizations and deaths and allow public health workers to target interventions and prevention messaging where it’s needed most. Without tracking capacity, it will be increasingly difficult for Arizona to predict and prepare for a future with more frequent and severe heat events.

THE RESULTS

• Using tracking techniques to examine heat-related hospital and death certificate records, Arizona fellows created an enhanced form of surveillance completely new to the state. The results not only help Arizona’s public health workers improve their heat response plans, but offer National Tracking Network grantees an innovative way to strengthen their heat-related surveillance methods as well.

• In working with local partners and the state’s mentors in California, Arizona health officials now have a better understanding of how to overcome the challenges of creating a tracking system for heat-related morbidity and mortality. For example, one challenge is the inconsistency of hospital discharge data, which leads health officials to hypothesize that heat-related deaths in Arizona are probably underreported.

• Since the state’s ASTHO fellowship, Arizona public health workers continue their work to link weather and health outcome data to create maps of communities most at risk. The state is working closely with the National Weather Service, and the collaboration may be able to improve the timeliness of heat alerts and prevention messaging.

• Arizona health staff developed methods to assign appropriate weather data from areas with or without a nearby weather station to geocoded health outcome data. Staff learned to link daily maximum and minimum temperature values from the National Climatic Data Center with heat morbidity and mortality data for each county in the state. In addition, increased collaboration with National Weather Service Forecast Offices in Arizona allowed staff to examine trends regarding dates of excessive heat warnings with county level heat morbidity and mortality data. The linked data has been used for improved epidemiological surveillance. Staff are currently expanding this work by connecting historical weather data from the National Climatic Data Center with additional climate-related health risk factors/health outcomes, such as vector-borne diseases, air quality, and extreme weather events.

India State
Department of Health

TRACKING VULNERABILITY, TARGETING PREVENTION

MENTEE: INDIANA
MENTOR: WISCONSIN

Public health plays a key role in helping residents adapt to and prepare for a changing environment. Tracking is key to pinpointing those communities most vulnerable to extreme environmental changes and with the least capacity to respond to and prevent adverse health effects.

Indiana’s ASTHO pilot project zeroed in on this issue, developing a vulnerability map to identify pockets of residents most susceptible to extreme heat events—a weather phenomenon expected to happen more often due to climate change. To first become more familiar with tracking, Indiana’s tracking fellow spent several days with the Wisconsin Tracking Program, learning about all aspects of the program and attending a meeting of its Technical Advisory Group. During the visit, discussions turned to the challenges of building a comprehensive tracking network that continuously gathers data from multiple sources and creates the linkages that expose human health risks.

Exposing such risks was at the heart of Indiana’s fellowship project. With the help of partners at Indiana University, Indiana’s tracking project utilized NASA...
images of geographic surface temperatures as well as Census Bureau data, such as age, income and education, to map out heat vulnerability for each census tract.

THE RESULTS

• Using tracking techniques, Indiana researchers created a statewide map pinpointing populations particularly vulnerable to heat-related health risks. The map is the result of overlaying social indicators known to increase vulnerability, such as age and income, with historical heat data. Around the same time, and quite unfortunately, Indiana recorded two deaths officially attributed to heat—one on the edge of the medium-high heat-health risk zone and another close to a high-risk zone within Indianapolis. The deaths corroborated the hypothesis put forth by the mapping project.

• Following the pilot project, Indiana public health workers took action to make the heat maps accessible to the public and translated the data into information people could easily use to protect their health and prepare for extreme weather events.

• In 2012 and with the support of another ASTHO capacity-building project, Building Partnerships for Climate and Health Programs, Indiana hosted a Forum on Climate and Health to engage local officials in planning for the effects of climate change. Also, Indiana public health workers continue to work with university partners to create vulnerability maps and develop an online community for sharing information on climate and human health.

• In the hope that more CDC funding becomes available, Indiana continues to engage the stakeholders essential to creating a statewide tracking network.

also illuminates which populations or neighborhoods may bear a disproportionate burden of such risks and whether environmental conditions are contributing to larger health disparity gaps. In Cincinnati, Ohio, staff from the Cincinnati Health Department used their ASTHO fellowship opportunity to lay the foundations of a tracking network that will eventually help health officials ensure equity in health service and health protection.

Two members from the Cincinnati Health Department Tracking Committee visited the New York City Department of Health and Mental Hygiene—a CDC grantee that has developed a rich and multi-layered tracking program. In New York City, Cincinnati fellows picked up a wealth of information on creating a successful tracking network, including four overriding recommendations: integrate tracking in the agency’s mission, start with low-hanging fruit, build partnerships around a shared vision, and don’t underestimate the power of a visually-appealing tracking website.

For its pilot project, Cincinnati decided to narrow its initial focus and first reach for the low-hanging fruit—vital statistics data linked to birth certificates. Because such data and related expertise was readily available and the work could provide the foundation for various other tracking efforts, it was a natural place to begin.

THE RESULTS

• A tracking committee met every other week to discuss activities and progress. In discussing the pilot project, Cincinnati ASTHO fellows became more familiar with the necessary components of building an effective tracking network, such as data-sharing, cross-agency cooperation, the legal considerations of data sharing, and compatibility with CDC’s National Tracking Network.

• As a result of this work, the Cincinnati fellows developed a pilot website (www.cincinnati-oh.gov/noncms/health/epht/fast_facts.cfm) from which residents can access data on the total number of births in Cincinnati, low-birth-weight births, and percentage of births to mothers aged 40 and older. The website also offers fun facts, such as the most popular newborn names. In the long-term, the Cincinnati fellows hope to create the capacity to compare maternal and child health, vital statistics, and chronic disease data between neighborhoods and populations to discover patterns in infant mortality as well as cancer, asthma, and other chronic diseases.
• The Cincinnati Health Department was awarded the ASTHO Phase II Capacity Building Grant and worked to expand its tracking network and add new health indicators and data sources. The health department also convened a technical advisory group, met with the Ohio Department of Health about advancing tracking locally, sought out new tracking partners, and welcomed New York City tracking staff to Cincinnati to help raise awareness about the power of a robust tracking network. (More information on ASTHO’s Phase II Capacity Building Grants Program can be found on page 4.)

2012 FELLOWS

TRACKING & DISASTER MITIGATION
MENTEE: ALABAMA
MENTOR: SOUTH CAROLINA

In the wake of the massive 2010 BP oil spill in the Gulf of Mexico, the Alabama Department of Public Health provided concerned residents with tips and information on protecting their health as well as links to assistance and recovery resources. However, the department’s oil spill website didn’t include air and water quality data. It was a gap that Alabama public health workers recently filled thanks to an ASTHO tracking fellowship.

First, Alabama’s tracking fellow spent a few days with the state’s mentor, South Carolina. During the visit, participants discussed messaging and outreach, partnership building, data collection, information technology, and much more. They also discussed barriers and challenges. One challenge, in particular, was that the Alabama Department of Public Health needed a better partnership with the state environmental monitoring and regulatory agency. Developing data-sharing agreements and mechanisms could take considerable time because the partnership was not in place.

Fortunately, that did not stop Alabama public health workers from gathering already available data and creating a single website where residents could learn more about environmental conditions along Alabama’s coast.

THE RESULTS
• In collaboration with fellow state agencies, such as the Marine Resources Division of the Alabama Department of Conservation and Natural Resources and the Air and Water Divisions of the Alabama Department of Environmental Management, state public health workers began aggregating data resources on environmental coastal conditions and developing a public-friendly website. In addition to local data, the website also links to national data on pollen counts, weather, water and tidal conditions. In March 2012, the resulting Coastal Conditions website (www.adph.org/epi/index.asp?id=5622) was officially launched. As of September 2012, the site had welcomed nearly 2,205 visitors.

• In the future, Alabama public health workers hope to customize the Coastal Conditions website with drop-down menus and mapping functions, which would bring it more in line with CDC’s Tracking Network. They also plan to add hurricane safety tips as well as links to hurricane preparedness and tracking agencies.

• Alabama public health workers plan to work with regional peers and CDC tracking grantees, such as Louisiana and Florida, as they build up the state’s tracking capacity and program. Such efforts mean Alabama will be ready to apply when additional CDC tracking funds become available.

KEEPING A GROWING POPULATION HEALTHY
MENTEE: FAIRFAX COUNTY, VIRGINIA
MENTOR: MASSACHUSETTS

Fairfax County is the most populous jurisdiction in the state of Virginia. As of 2009, it was home to more than 13 percent of Virginia’s residents, just more than 1 million people, and its population is expected to continue to rise.

While researchers have ranked Fairfax as the healthiest county in the state, the county’s physical environment
was ranked last due to poor air quality. Officials with
the county’s Division of Environmental Health convened
a group of stakeholders to discuss environmental
public health issues and eventually completed a local
environmental public health system assessment. The
assessment, which identified future challenges the
local environmental health system would face due to
continued growth, found that the most pressing need
was for a tracking system. With a tracking system,
Fairfax County health officials could more precisely
monitor environmental conditions, pinpoint populations
at higher risk, and better protect people’s health.

With the support of an ASTHO tracking fellowship,
a Fairfax County health officer traveled to
Massachusetts to learn what it takes to develop an
effective tracking network. With tracking lessons in
hand, Fairfax County public health workers embarked
on a fellowship project to track the geographic
dispersion of elevated blood lead levels among
children in Fairfax County and find methods for
increasing screening rates among those at high risk.

THE RESULTS

• Fairfax public health workers and their community
partners began reviewing elevated blood lead level
cases from 2005 to 2010 and comparing those
cases against screening data. Cases were grouped
by census tract and mapped for easy comparison.
The outcome will help public health workers and
partners clearly see which populations are at
greatest risk for lead poisoning and would most
likely benefit from outreach activities.

• In addition to the fellowship project, Fairfax health
officials also hosted an environmental public health
tracking symposium to offer potential data stewards
and partners an overview of the value that tracking
brings to Fairfax County. The symposium featured
local, regional, and national tracking experts.

• Fairfax health officials continue to reach out to
potential tracking partners. For example, they met
with the Data Strategic Implementation Team of
the Partnership for a Healthier Fairfax, a diverse
coalition of partners dedicated to improving
community health. If talks continue, the two data
efforts could be combined into a single initiative.

• Looking toward the future, Fairfax health officials plan
to build a tracking network that can be sustained via
local resources and off which the Virginia Department
of Health can build a statewide tracking system.

CREATING HEALTHIER HOMES

MENTEE: IDAHO
MENTOR: WASHINGTON

Lead-based paint was used in millions of homes before
it was banned in the late 1970s. Many older houses
and dwellings still have remnants of the hazardous
substance, which can be especially toxic for children
and can cause brain and nervous system damage. In
Idaho, the ASTHO tracking fellow and her colleagues
used the fellowship opportunity to map communities
at high risk for lead-based paint exposure and in need
of proactive prevention messaging.

In fact, lead poisoning prevention was a top learning
priority during the Idaho fellow’s visit to Washington. In
addition to learning about the technology, data gathering,
and collaboration methods involved in Washington’s
Tracking Program and network, discussions also centered
on Washington’s Childhood Lead Poisoning Prevention
Program and the predictors public health workers use to
find children and families at risk for lead poisoning.

Back in Idaho, the ASTHO fellow and colleagues used
this newly-acquired knowledge to inform their tracking
pilot project. Workers focused on Ada County, the most
populated county in Idaho, which also has the highest
percentage of children younger than 5. The goal of
the project was to link childhood blood lead levels and
older housing stock to create a map that pinpoints
high-risk areas. The map would allow decisionmakers
to easily view the breadth of the problem and help
public health workers target interventions.

THE RESULTS

• Idaho public health workers gathered relevant
data from a variety of sources, such as the U.S.
Census Bureau and tax collector’s office, and
used GIS technology to map the lead poisoning
risk in Ada County. The final map, which provides
information at the individual block level, found that
older neighborhoods in the downtown Boise area
had the highest risk for childhood lead poisoning.
The map was shared with fellow agencies. As this
example shows, tracking techniques are helping
Idaho public health workers and their partners
employ their limited resources in the most
effective and efficient manner.
• Encouraged by the ASTHO tracking project results, Idaho public health workers published an article in the peer-reviewed CDC journal *Preventing Chronic Disease* (available at www.cdc.gov/pcd/issues/2013/12_0273.htm).

• To keep up the momentum, Idaho public health staff convened an Idaho Department of Health and Welfare GIS group, which is using the national environmental public health tracking guidelines as a model to create standardized guidelines for developing GIS maps. In the near future, Idaho is planning to convene a tracking workgroup within the department as well. Its goals will include identifying technology needs as well as examining the benefits of environmental public health tracking for various ongoing programs. Next steps are to engage with other agencies that are willing to share environmental data. The ongoing work means Idaho will be ready to join the CDC National Tracking Network when additional funding opportunities arise.

**LINKING ENVIRONMENTAL EXPOSURES AND CANCER RISK**

MENTEE: NEBRASKA  
MENTOR: MISSOURI

To illustrate the value of tracking, Nebraska’s fellows decided to dig deeper into the relationship between residential radon and lung cancer. The radioactive gas is among the leading causes of lung cancer in the United States and is linked to thousands of lung cancer deaths every year. Using tracking techniques, Nebraska public health workers hoped to create a template for the continuing study of radon as well as other environmental hazards.

To begin, Nebraska fellows traveled to Missouri to meet with their tracking mentors. During the two-day site visit, discussions focused on how to build a successful tracking program and the partnerships necessary to sustain tracking.

Back in their home state, Nebraska health staff dug into their radon-focused tracking project. Specifically, they set out to generate maps linking data from the Nebraska Radon Program radon database and the state cancer registry. The final results would help fellow health department staff pinpoint populations at risk of radon exposure and more precisely target interventions and outreach. The tracking project would also help demonstrate the value of adding radon to the National Tracking Network.

**THE RESULTS**

• Nebraska health staff used GIS software to create maps plotting a variety of indicators, such as number of residences tested for radon by county, average radon levels by county, and the overlap of radon levels and cancer occurrence. Using tracking methods, public health workers could easily see which counties were home to a high percentage of residences with radon levels that pose a serious health risk. In fact, of the more than 30,000 residences tested for radon throughout the state between 2005 and 2009, more than half tested positive for levels at which EPA recommends action be taken.

• The map linking radon and cancer data found that six Nebraska counties with an average radon level of more than twice EPA’s action level had a lung cancer incidence rate more than 10 percent higher than the overall state average. Because radon-associated cancer is often preventable, this map and others helped Nebraska health workers identify priority populations for outreach and education.

• In the future, the Nebraska public health staff plan to build on the radon tracking project and include more specific information about lung cancer patients, such as radon exposure and tobacco use. In addition, Nebraska health staff continue to build their overall tracking capacity so they will be ready to join the National Tracking Network when the opportunity arises.
BRIDGING CRITICAL DATA GAPS

MENTEE: OKLAHOMA
MENTOR: NEW MEXICO

During an in-depth visit with tracking mentors in New Mexico, the ASTHO fellow from Oklahoma learned about every aspect of creating an informative and responsive tracking program. Discussions ranged from technology needs to partnership building to how New Mexico public health workers can integrate public health messaging into their tracking website. New Mexico also had an interest in examining the links between arsenic in drinking water wells and cancer risk, which was the focus of Oklahoma’s fellowship project.

While the Oklahoma Central Cancer Registry already offers rich geocoded data, many rural communities—which have a higher probability of depending on well water and exposure to arsenic contamination—couldn’t be geocoded with confidence. That meant that hundreds of cancer cases were excluded from previous research exploring the links between well water contamination and cancer risk. To try to rectify the issue, the ASTHO fellow identified a team of students from the University of Oklahoma College of Public Health as well as online resources to improve the accuracy of Oklahoma’s data on rural cancer registry addresses.

With more accurate geographic coordinates, the ASTHO fellow hoped to improve the Oklahoma Central Cancer Registry’s capacity to investigate the links between the environment and cancer risks.

THE RESULTS

• The tracking project enhanced the quality of geographic information associated with cancer cases, which means researchers are better able to examine links between potential environmental hazards and cancer clusters. During the process, Oklahoma public health workers and their partners discovered a variety of new ways to gather accurate geographic coordinates.

• Oklahoma health workers developed a solid partnership with students at the College of Public Health that will continue to benefit the health department. In fact, the ASTHO fellow plans to continue engaging public health students in environmental health efforts.

• Oklahoma Central Cancer Registry officials want to continue using the techniques employed during the ASTHO fellowship to enrich the registry’s geographic data. The ASTHO fellow is already planning to conduct another spatial analysis using the improved geographic data to re-examine the possible links between arsenic in well water and incidence of bladder cancer.
FROM RADON TO WEST NILE: THE 2013 ASTHO TRACKING FELLOWS

MENTEE: TENNESSEE
MENTOR: MISSOURI
To find populations particularly vulnerable to childhood lead poisoning, Tennessee’s ASTHO fellow is integrating existing data on early childhood elevated blood lead levels and indicators of social vulnerability, such as living below the poverty level. In addition to strengthening Tennessee’s tracking capacity, the project is expected to help public health workers find children at high risk for lead poisoning and target appropriate interventions.

MENTEE: TEXAS
MENTOR: LOUISIANA
Located in the southern tip of Texas, Hidalgo County is home to the highest asthma-related hospitalization rate in the state. The asthma problem is one example of a serious and costly disease that is significantly affected by environmental conditions. With the support of an ASTHO tracking fellowship, Texas’ tracking fellow is convening state and local stakeholders to identify environmental health issues facing residents along the Texas-Mexico border. The ultimate goal is to develop an implementation plan for building a bi-national tracking network.

MENTEE: ILLINOIS
MENTOR: SOUTH CAROLINA
Illinois’ ASTHO tracking fellow is using GIS technology to strengthen reporting and surveillance of West Nile virus cases at the county and local levels. In 2012, the mosquito-borne disease reached epidemic levels in parts of Illinois. The tracking fellow is mapping reported West Nile cases alongside relevant temperature and rainfall patterns, both of which affect the lifecycle of the mosquito that transmits West Nile virus. The results can help public health workers as well as mosquito control officials more precisely locate mosquito hotspots and populations in need of prevention messaging.
MENTEE: DAYTON/MONTGOMERY COUNTY, OHIO
MENTOR: CALIFORNIA

In 2010, Ohio was home to the 11th worst infant mortality rate in the nation, with a rate of 7.7 deaths per 1,000 live births. In Montgomery County alone, the rate was 7.4 per 1,000 live births, with black residents experiencing an infant mortality rate of 12.4. While a number of efforts are ongoing to prevent such deaths, the ASTHO fellow from Public Health – Dayton & Montgomery County is working to add the benefits of tracking to the mix. The tracking pilot project involves linking infant mortality data and associated risk factors and locating communities that could benefit from additional outreach and education.

MENTEE: WYOMING
MENTOR: COLORADO

Using Wyoming’s comprehensive radon database, the ASTHO tracking fellow at the Wyoming Department of Health is mapping 22 years of radon test results to illustrate pockets of low, medium, and high radon risk within each county and ZIP code. The results will allow officials with the Wyoming Radon Program to strengthen their ability to study the association between radon levels and lung cancer incidence. Of the thousands of home radon measurements collected in Wyoming, more than a third were above the EPA action level.
TRACKING MATTERS

State and local public health officials are charged with the complicated task of protecting our health from environmental hazards. They often work with incomplete and imperfect information. The CDC National Environmental Public Health Tracking Network can help fill those gaps in information. And information matters. It’s the foundation on which health officials deploy limited resources, develop interventions, locate particularly vulnerable residents, create the conditions that afford healthy opportunities to all, and ultimately improve people’s health.

All of this work is done within the context of ever-changing natural and manmade environments—environments that play a central role in human health and sometimes mean the difference between life and death. CDC’s and ASTHO’s tracking efforts give public health workers the opportunity to keep up with those critical changes, appropriately adapt their response systems, keep the public informed, and prevent costly health complications. Tracking and its focus on geographic visualization means public health workers can literally map out routes to better health for all.

The ASTHO Peer-to-Peer Fellowship Program and its nearly two dozen fellows are key players in this movement toward a truly nationwide environmental public health tracking network. With ASTHO’s help, every step that state and local health agencies take in building their capacity to address environmental health problems via tracking translates into the potential for healthier people, healthier communities, and lower medical spending. Just as important, tracking provides public health workers with the tools to raise public awareness about environmental hazards as well as help people protect and manage their own health. Thanks to CDC, ASTHO, and the dedication of the ASTHO tracking fellows, America’s environmental health gap grows narrower every day.

To learn more about the ASTHO Environmental Public Health Tracking: Peer-to-Peer Fellowship Program as well as the work of its fellows, visit www.astho.org/programs/environmental-health/tracking-environmental-health-hazards.

END NOTES