



Training Environmental Public Health Leaders

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From childhood lead poisoning in Philadelphia to tank barge emissions in Memphis, from food safety in Portland, Maine, to air quality in the San Joaquin Valley of California, local and state environmental health (EH) specialists address a wide variety of public health issues across the United States and around the world.

Although EH risks are often thought to be the result of exposure to toxic substances and natural or man-made disasters, they occur frequently in everyday life—in homes, in schools, in water supplies, at food markets, and in restaurants. Local EH practitioners are essential in protecting the public health from these environmental threats. As Henry Falk, MD, MPH, acting director of the National Center for Environmental Health/Agency for Toxic Substances and Disease Registry (NCEH/ATSDR), confirms, “The solutions to many of our environmental problems, as they have always been, are at the state and local level.”

Decline in Environmental Public Health Workforce

Alarming, in light of the scope of its mission, the local EH workforces is facing a budget and personnel crisis. The US Department of Labor’s Bureau of Labor Statistics reports that the environmental health workforce plummeted between 1980 and 2004—from 235,000 to 30,934 employees. And an estimated 40 percent to 50 percent of local and state EH employees may be eligible to retire in the next five years. In the current economic climate, state and local public budgets are strained and hiring is restricted. Potential EH workers can find the same kind of work in the private sector with higher pay and more opportunities for advancement. In addition, EH program managers are being asked to do more with fewer resources.

Perhaps even more troubling, the National Association of County and City Health Officials reported in 2005 that nearly 80 percent of the current EH workforce had no formal education in public or environmental health. A February 2009 CDC report, [“Strategic Options for CDC Support of the Local, State, and Tribal Environmental Public Health Workforce,”](#) confirmed this, documented the workforce issues facing the EH sector of public health, and presented possible solutions.

The shortage of qualified EH leadership is not a new development. More than 20 years ago, the Institute of Medicine (IOM) identified a crisis in leadership development in the public health workforce. This 1988 landmark report, “The Future of Public Health,” reaffirmed that local public health agencies are “the final delivery point for public



John Sarisky, (CAPT, USPHS), director of EPHLI and Mike Welch (CAPT, USPHS) environmental health chief professional officer and keynote speaker at cohort 5 graduation.



Environmental Public Health Leadership Institute Graduation Class of 2009–2010.



Henry Falk, MD, MPH speaks at EPHLI cohort I graduation, 2005-2006.

health efforts.” The report called for policy development and leadership that would foster local involvement and meet local needs, stating, “Today, the need for leaders is too great to leave their emergence to chance.” (For more, visit [IOM’s report](#)).

Then, in 2000, the Pew Environmental Health Commission released “[America’s Environmental Health Gap](#),” a report that identified “a national leadership void, resulting in little or no coordination of environmental health activities.” Because of this void, the commission found, prevention efforts were fragmented and ineffective in reducing chronic and disabling diseases and conditions.

Training Leaders in Environmental Public Health

Following the Pew report, CDC released in 2003 “[A National Strategy to Revitalize Environmental Public Health Services](#).” This strategy emphasized the need to enhance environmental public health services and address EH issues at the state and community level.

Joe Henderson, MPA, senior advisor to the director, NCEH/ATSDR, who also teaches public health leaders at Harvard University’s National Preparedness Leadership Initiative, recognizes that developing sound leadership is essential to improving EH practice. He says, “Leaders are needed at every level of our public health system, and our collective strength of leadership is only as strong as our weakest link. We must build leaders and value lifelong leadership development if we are to assure the strongest possible chain of environmental health leaders across the United States and the globe.

To address leadership development and workforce issues in EH, NCEH’s Environmental Health Services Branch (EHSB) developed the Environmental Public Health Leadership Institute (EPHLI) in cooperation with the National Environmental Health Association, the Louisville Metro Health Department, and the National Public Health Leadership Development Network (NPHLDN). EHSB piloted EPHLI in 2004–2005 and launched the program in 2005. John Sarisky (CAPT, USPHS), environmental health scientist with EHSB and coordinator of the EPHLI program, affirms the value of training local EH practitioners because these frontline service providers supply “the right services to the right people at the right time.”

EPHLI is coordinated through a partnership between CDC and NPHLDN, the hub that connects all of the CDC-supported public health leadership development programs. NPHLDN helps create and provide the EPHLI curriculum, connects EPHLI with the latest theories on leadership development, and provides instructors experienced in working with public health professionals. Each year, 35 fellows are chosen for the year-long institute from about 120 applicants. On February 23, 2010, the fifth EPHLI cohort graduated from the year-long institute, and the sixth cohort began, bringing the total number of participants to 177. (For a list of all fellows, visit <http://www2a.cdc.gov/nceh/ehs/EPHLI/fellows.asp>.)



EPHLI graduation 2010 poster presentation by John McVeigh, director of public health, Randolph, MA.



Robert S. Hasenyager, director of environmental health, Summit County Health District, OH, presents his systems thinking project at 2010 EPHLI graduation: “A Local Health District’s Role in Building a Sustainable Community.”



Max Zarate explains his project to EHSB’s Brian Hubbard.

Using Systems Thinking to Solve Environmental Health Problems

Systems thinking is the cornerstone of the EPHLI curriculum, and the basis for each participant's capstone project. Although corporations have used the systems thinking model to solve problems for more than 30 years, the process is relatively new to public health. Environmental public health, especially, often uses a "firefighting" model of problem solving—moving from issue to issue as quickly as possible. Frequently, this method provides only a temporary solution because the root cause of the problem often remains unaddressed. The systems thinking model, based on the work of Peter Senge, offers a more logical and efficient way of addressing complex environmental health issues.



Greg Kearney, senior service fellow in NCEH's Environmental Health Tracking Branch, EPHLI fellow, 2007-2008.

EH fellows learn to use systems thinking to understand how the independent but interrelated parts of their organizations come together to form a complex system. In breaking down problems to their basic elements, practitioners identify the root causes of complex and chronic issues. EPHLI fellows learn to ask the right questions, to develop and test possible solutions, and to anticipate multiple possible consequences of an action. By using this method, fellows can foresee unintended negative consequences and avoid decisions that not only can backfire but sometimes create more problems. In addition, solutions developed by systems thinking are usually more effective and can be more easily explained and sustained.

At the first EPHLI graduation in 2005, Falk affirmed the benefit of systems thinking in solving both present and future EH problems. "Issues keep changing. All of us have to think about how the solutions will change over time," he said. The kinds of principles you come away with from a leadership institute like this will enable you and us to approach problems conceptually as they evolve."



Incoming Environmental Public Health Leadership Institute Class of 2010-2011.

For their capstone projects, EPHLI fellows apply systems thinking to a real EH issue, typically one found in the fellows' jobs or at the community, state, or national level. Some fellows complete their projects by the end of the program, but others are so broad in scope that fellows continue to work on them after the course.

Each cohort presents its projects at a graduation held annually at CDC's Chamblee campus. Projects for the 2010 graduating class included educating Minnesota food workers on sanitary practices, using geographic information systems in EH work in Kentucky, improving the quality of childhood lead poisoning investigations in Michigan, and developing an annual EH report for the Oneida Nation of Wisconsin. Many of the projects actually are implemented and improve EH practice. EPHLI offers one of the few leadership development programs in environmental health and does indeed equip leaders in environmental health with new knowledge and skills that better enable them to take on the challenges they face each and every day," Henderson observed.

Systems Thinking at Work: Street Feeding in St. Petersburg, Florida

The effectiveness of systems thinking in solving a public health problem was showcased by Gayle Guidash of the Pinellas County (Florida) Health Department in "Street Feeding in St. Petersburg: A Tale of Two Cities." The temperate St. Petersburg climate attracts both tourists and the homeless, and the two groups compete for space in parks and other green spaces. Even though the city passed strict ordinances to eliminate the presence of homeless people, local churches and humanitarian groups continue to provide food for them in public places and at shelters.

The City of St. Petersburg pressured the Pinellas County Health Department to use food safety regulations to eliminate the practice of feeding the homeless. Systems thinking showed Guidash and her team that using food safety regulations to stop the feeding would likely backfire. The homeless would still be present, hungry, and forced to find less safe food sources like garbage cans and restaurant dumpsters. Even if the homeless moved to other locations to find food, the health department would only shift the burden of responsibility without solving the problem.

Working with organizations that feed the homeless, Guidash's group used systems thinking to explain the problem and possible solutions. As a result, partnerships formed and accidental adversaries began working together to address the hungry homeless problem. This new coalition supported the need to prepare and serve food from health department-regulated facilities. The team agreed that all facilities and persons who provide food to the homeless should be licensed and regulated and that food providers, as well as the homeless, should receive training in basic food hygiene. Other partners joined the team, and the coalition is now addressing housing, health care, employment, job training, and child care. By using systems thinking, Guidash led the Pinellas County Health Department not only to manage the issue of feeding the homeless but also to create a coalition to ensure the overall health and safety of a frequently overlooked segment of the population. (To view this and other projects, visit <http://www2a.cdc.gov/nceh/ehs/ephli/projects.asp>.)

CDC Staff Recall EPHLI Fellow Experience

Former EPHLI fellows Max Zarate-Bermudez, MS, MPH, PhD, and Greg Kearney, DrPH, MPH, RS, who both now work for CDC, say that the process of systems thinking was the most important skill they learned during the training. Kearney, senior service fellow in NCEH's Environmental Health Tracking Branch, explains that, during the first EPHLI session, a week of training in systems thinking was compressed into one day and was a bit overwhelming at the time. He and Zarate agree that "processing systems thinking is like eating an elephant one bite at a time." Zarate adds, "And you have to chew a lot!"

At the time of his EPHLI training, Kearney was the principal investigator for the environmental public health tracking program for the Florida Department of Health, Division of Environmental Health. Accurate, complete, and accessible data are essential for tracking programs, but Kearney was having difficulty streamlining the data sharing process with another health agency. He focused his EPHLI project on this challenge and found that systems thinking helped him to identify hidden obstacles. He continued to work on the project after graduation and ultimately resolved the data sharing problem.

Zarate, now an epidemiologist with EHSB, was an assistant professor of environmental health at East Carolina University (ECU) where he taught courses in safe water and wastewater management. In addition, he was researching the fate of nutrients in wastewater treatment systems and developing a methodology to evaluate septic systems in coastal North Carolina. Zarate wondered why^o with strict regulations and top technology, scientists, engineers, and resources^o wastewater issues still occurred in the United States. He collaborated with EH specialists from Georgia and North Carolina to use systems thinking in challenging the exclusion of performance evaluations from the current definition of malfunctioning septic systems. Hired at EHSB, Zarate continues in partnership with ECU colleagues to develop a methodology to assess the overall performance of septic systems.

Kearney and Zarate attest to other valuable lessons from their EPHLI training. A goal of the training is development of leadership skills, and both men say they learned about themselves, both as leaders and as collaborators. Zarate added with a laugh, "I always thought I was a good listener, but I learned that I could listen better." They also formed valuable collaborations with EH professionals from other states who were dealing with issues similar to theirs.

EPHLI Mentors

Frequently, EPHLI graduates remain involved with the program after graduation. Many of them return to serve as mentors to new fellows. In fact, Kearney was actually Zarate's mentor. Kearney says he learned as much from the EH professionals that he mentored as they did from him. Zarate said the most important thing he learned from Kearney was focus. In the midst of discussions, Kearney would always ask, "How

are you addressing the research question?” “Being a mentor in EPHLI offers one the opportunity to contribute and be a part of something really great in environmental health; it is definitely rewarding, both personally and professionally,” Kearney said.

One of the many valuable results of EPHLI training is the growing network of former fellows. EPHLI graduates remain in close contact with each other. “You find out that the field of EH is really a small world, and, at some point, your work crosses paths with many other EH professionals whom you have met somewhere during your career,” Kearney noted. When facing difficult problems, graduates use the EPHLI network to find expert advice, support, and rapid access to various resources. Kearney and Zarate agree that lasting friendships like theirs develop along with strong professional relationships and networks. (Past and current EPHLI mentors are listed at <http://www.cdc.gov/nceh/ehs/EPHLI/mentors.htm>.)

EPHLI Is Making a Difference

In 2008, Kearney joined with two other Florida EPHLI graduates—Lisa Conti, DVM, MPH, and Charles Henry, RS, MPA—to assess the effect of the EPHLI experience on Florida fellows and graduates. The article, documenting their research process and the results, appeared in the *International Journal of Prevention, Practice and Research* in 2009. They found that, overall, respondents continue to use skills they learned in the course. All graduates who had changed jobs said that EPHLI had increased the skills and confidence they needed to move into their new positions. More important, when asked if the program met their expectations and if they would recommend EPHLI to colleagues, 100 percent of the graduates responded, “Yes.” Kearney has since been in discussions with Sarisky and NPHLDN about expanding the evaluation to a long-term project that would include all EPHLI graduates.

Other measures of EPHLI effectiveness are graduate success stories sent back to the branch. For example, 2007 fellow Palak Raval-Nelson, MPH, PhD, director, Department of Public Health, Environmental Health Services, studied existing breast cancer research policies to determine how and why they exclude significant funding for research into the role of environmental carcinogens on breast cancer incidence. She expanded her project into a book, published in 2008. In a letter to EHSB, Raval-Nelson commented, “It is just another example of the tremendous role that EPHLI can have on the field of environmental public health and the fellows who take part in the institute. If I did not mention it before, I am grateful for the opportunity to have been a part of EPHLI.” Several other EPHLI graduates have used their projects to make a real difference in state and local EH programs. Read about more of them at http://www.cdc.gov/nceh/ehs/Docs/Factsheets/EPHLI_Factsheet.pdf.

EHSB is proud to be a partner in strengthening the grass roots level of EH and improving public health practice. EPHLI not only develops local and state EH leadership, but also increases resources. The program builds and strengthens networks among local, state, tribal, and federal agencies and connects universities and nongovernmental organizations to practitioners. In addition, because leaders directly affect policy change and implementation, EPHLI graduates influence local, state, and national EH policy.

Ultimately, says Sarisky, the EPHLI program and, indeed, the entire practice of environmental health are about “assuring conditions in which people can be healthy.” He adds, “It’s about people; it’s all about people.”

For more information about EPHLI, including the application process, please visit <http://www.cdc.gov/nceh/ehs/EPHLI>.

EHSB is in NCEH’s Division of Emergency and Environmental Health Services. For more information about EHSB and the division, visit <http://www.cdc.gov/nceh/eehs>.

This *Inside Story* by Sarah (Sally) Zimmerman.