

Environmental Health, Infectious Diseases

Illinois Department of Public Health, Division of Environmental Health

Springfield, Illinois

Assignment Description

The fellow would be assigned to the Illinois Department of Public Health (IDPH) Division of Environmental Health in Springfield, Illinois. The Division is part of the IDPH Office of Health Protection, and is comprised of nearly 80 staff in Springfield and six regional offices (Rockford, Peoria, Edwardsville, Marion, Champaign and W. Chicago).

The Division is responsible for enforcing numerous State environmental laws relating to drinking water, private sewage disposal, plumbing, recreational areas (swimming pools, bathing beaches, and campgrounds), lead and asbestos abatement, childhood lead poisoning prevention and structural pest and vector control. The Division also conducts non-regulatory program activities related to hazardous waste sites and incidents, indoor air quality, illegal drug labs, fish consumption advisories, and harmful algal blooms.

The fellow's primary supervisor and mentor would be Dr. Ken Runkle, the current Vector Control Program Manager. The fellow would also work closely with the Division's Environmental Toxicology and Lead Programs.

Day-to-Day Activities

The fellow will work with Dr. Runkle, Dr. Layden and other Environmental Health staff on assigned projects and surveillance activities. The fellow will participate in meetings, training conferences, emergency response exercises, and outbreak investigations. If possible, the fellow will accompany environmental health specialists and engineers and provide epidemiological support during onsite investigations. The fellow will also receive training in environmental risk assessment, investigating outbreaks or clusters of non-infectious diseases, surveillance reporting and evaluation, public health outreach and education, scientific literature review, and scientific writing. The fellow will potentially have opportunities to work with staff in each of the Division of Environmental Health's programs and regional offices, and a variety of partners, including Division of Infectious Disease Communicable Disease Control Section staff, local health departments, and the IEPA.

Potential Projects

Surveillance Chemical Poisoning and non-Infectious Disease Surveillance Activity

Currently, chemical poisonings and other non-infectious health conditions that can be caused by exposure to environmental hazards are not reportable in Illinois (carbon monoxide, mercury, arsenic, and pesticide poisonings, for example), but there are several data sets available that could be used to establish an environmental surveillance system: Vital Records – Death Certificates, Hospital Discharge Data, Emergency Department Data (may be included with outpatient hospital discharge data), Essence Syndromic Surveillance Data and Illinois Poison Control Center Exposure Call Data. The fellow will establish partnerships with programs that collect and maintain these data, and develop sustainable methods and procedures for querying, analyzing and reporting surveillance data. The fellow would be expected to complete a major project based on this activity, including an annual surveillance report, and present at a workshop or conference for local environmental health officials.

Ultimately, the fellow's surveillance activities will inform Division policy decisions, where to target health education and outreach activities, and program evaluation.

Surveillance Mosquito Surveillance System Evaluation Evaluation

The Division of Environmental Health has two major surveillance systems: the West Nile Virus (WNV) Mosquito Surveillance System and the Illinois Lead Program's childhood lead poisoning surveillance system. The former has been in use since West Nile virus first emerged in Illinois in 2001 and is used by local health departments for dead bird and mosquito identification reports. In 2016, to enhance the Department's preparedness for Zika virus disease and better characterize the distribution of Aedes mosquitoes in Illinois, the Division updated this surveillance system to accommodate Aedes mosquito identification reports. The system has not been formally evaluated.

The fellow will undertake an evaluation of the WNV Mosquito Surveillance System to determine:

- 1) What, if any, are the stated goals of the system and are they being met?
- 2) Who are the stakeholders for this surveillance data and are they sending or receiving surveillance reports in a timely fashion?
- 3) Are the weekly WNV Environmental Surveillance Summaries useful and informative?
- 4) Are there opportunities for improvement?

Major Project Carbon Monoxide Poisoning Surveillance

Develop a Carbon Monoxide (CO) Annual Surveillance Report and monthly burden briefs (from October to March) that summarize the incidence, risk factors and costs associated with unintentional, non-fire-related CO poisoning in Illinois by obtaining and analyzing all available data sets: Vital Records – Death Certificates, Hospital Discharge Data, Emergency Department Data (may be included with outpatient hospital discharge data), Essence Syndromic Surveillance Data and Illinois Poison Control Center Exposure Call Data.

Additional Water Lead Levels in Illinois Schools Project

Effective January 17, 2017, all Illinois schools constructed prior to January 2000 are required to test for lead in water. Each source of potable water must be tested and schools are required to use accredited laboratories that provide a minimum reporting limit of 2 parts per billion. Further, schools are required to submit data electronically to the Department. With more than 6,000 schools required to test, there is an opportunity to characterize children's exposure to water lead levels in Illinois schools. The data could be used to estimate blood lead levels using the Integrated Exposure Uptake Biokinetic or similar models that have been used by others to assess the risk of lead in tap water.

Preparedness Role

The fellow will be expected to participate during waterborne and other infectious disease outbreak investigations by assisting environmental health specialists and engineers with onsite investigations, conducting epidemiological studies to help identify exposure sources and risks, liaising with communicable disease epidemiologists in other IDPH programs to improve intra-agency communication. Also, IDPH has made an investment in disaster epidemiology training for State and local health department staff. Ideally, the fellow would have training in disaster epidemiology in order to assist with completion of a Community Assessment for Public Health Emergency Response (CASPER) following a State declared disaster or localized emergency.

Additional Activities

- Complete an analysis of data that Illinois Lead Program nursing case managers collect on home visit forms during elevated blood lead level investigations. In addition to data relevant to lead, nursing case managers also ask about asthma diagnoses, the presence of various asthma triggers, carbon monoxide detector usage, and other environmental safety factors. A 3-year pilot evaluation of these data from 81 homes visited by IDPH Nursing Case Managers from 2011 to 2013 has been performed, but ongoing, routine analysis of statewide home visit data does not occur. The fellow could build a data collection tool to analyze these data, collect data from delegate agencies, evaluate and revise the home visit forms, and prepare a summary report.

- Collaborate with the Communicable Disease Control Section and IEPA with respect to harmful algal blooms in recreational waters, including assisting with human illness reports and case follow up, environmental monitoring of cyanobacterial toxins and development of public health messages and advisories.
- Develop and implement follow up surveys of community members that live near hazardous waste sites to determine whether site-related recommendations have adopted, and evaluate their awareness of the health hazards posed by the sites.
- With the recent CMS guidelines for water management systems to help prevent Legionella in health care facilities, there is a need for education and awareness, consultation and guidance to facilities, and, potentially, development of a surveillance system for environmental testing data that can communicate with the Department's existing electronic disease surveillance system.

Mentors

Primary Ken Runkle DPHA, U of I; MA, U of I; BS, MacMurray College
 Vector Control Program Manager/Toxicology Sepecialist

Secondary Jennifer Layden MD, PhD D
 Chief Medical Officer and State Epidemiologist