

Waterborne-Great Lakes Health Initiative, Environmental Health

New York State Department of Health, Center for Environmental Health Bureau of Water Supply Protection

Albany, New York

Assignment Description

The fellow will be placed in the Bureau of Water Supply Protection and is expected to work with several other units in New York State Department of Health. The BWSP is responsible for the drinking water program in New York State and has several staff working on epidemiology of current drinking water health issues such as harmful algal blooms and legionella. It is expected the fellow will too. Harmful algal blooms and legionella will be the focus of the fellow's work, but as demonstrated in our current fellow's experience, we fully expect the fellow to be involved in other issues as they arise.

The current fellow participated in New York's Ebola response, investigations of giardia, cryptosporidium, and private well contamination events associated with activities like manure spreading. The BWSP collaborates with many other DOH units as well as outside entities to deal with contamination and failure of drinking water systems, as well as working with a sister bureau (BCEHFP) on recreational water uses too.

Day-to-Day Activities

- Harmful algal Blooms (HABs)
 - Continue and potentially expand surveillance activities started by current CSTE fellow
 - Help with outreach to communities with history of HABs to provide education materials and solicit information on reports of illness
 - Review DOH databases for illness signals potentially associated with HABs;
 - Participate in and understand the data gathering needs of the CDC National Outbreak Reporting System (NORS)
 - Interact with Regional Offices, local health departments and water operators including participating on conference calls and collaborating with other scientists on HAB (and legionellosis) issues;
- Legionella (10 NYCRR Part 4)
 - Tower registration and analysis of registration data
 - Help with program implementation for publicly owned cooling towers and sampling plans for regulated healthcare facilities
 - Help with health surveillance and outbreak response
 - Help with training specialists (engineers, scientist and sanitarians) in protocols for the environmental response to legionellosis in healthcare facilities and in the community

- Other Day-to-Day activities
 - Working with CSTE Fellowship Primary Mentor and Secondary Mentor and others as relationships develop on most work days, with regular scheduled meetings to foster progress and collaborations
 - Participating in CDC agreement on private wells and small water systems including participation in update conference calls
 - Participating in weekly regional epidemiology summaries (statewide)
 - Working with local health departments, hospitals, and nursing homes
 - Become familiar with and use, when appropriate, the NYSDOH Outbreak Management Solution (OMS) for logging and tracking outbreaks in New York State
 - Become familiar with the laboratory methods used for the particular task or sub-tasks that are chosen and developed
 - Statistical data analysis related to primary project/interests
 - Preparing scientific and public presentations, including material for conferences
 - Developing/presenting scientific posters

- Potential and Corollary activities (select mutually agreeable tasks as opportunities arise):
 - Attending training classes on public health emergency preparedness
 - Attending training classes on Project Management and statistical packages
 - Direct Albany graduate student work to assist in CSTE Fellow projects
 - Provide lectures to UAlbany public health graduate courses
 - Interacting with scientists and engineers on special projects or tracking that requires geographic information systems (GIS)
 - Writing reports, scientific papers, and material for newsletters
 - Work with the State Drinking Water Information System (SDWIS)
 - Participate in Interagency meetings coordinating programs
 - Participate in stakeholder groups (water management advisory council)
 - Attend training for water operator certification courses
 - Opportunity to attend sanitary survey courses for ground water and surface water
 - Attend regularly scheduled Bureau meetings
 - Participate in a Comprehensive Performance Evaluation (CPE) to assess the performance of a drinking water treatment plant
 - Attend training designed to give Professional engineers involved in public health Continuing Education credits
 - Learn and participate in Federal/State rulemaking process
 - Review draft legislation
 - Participate in watershed protection meetings
 - Participate in Agency Poster Day, Participate in School of Public Health Poster Day
 - Attend scientific conferences within NYS, and the region including the annual Northeast Epidemiology Conference

- Our current CSTE fellow also had supervisory responsibilities or paid temporary staff and student interns. If funds permit, and there is a need and desire, we anticipate doing so again.

Potential Projects

Surveillance Activity Harmful Algal Blooms

The fellow is to build on the systems that Ms. Mary Figgatt has established. The fellow is to continue with outreach activities to local medical providers in areas with an occurring HAB to solicit information about cases. The fellow is to review our SPARCs database for cases reported and should there be a need to reach out to these facilities for patient records. The database is to be reviewed to the ICD-9 code specific to HAB exposure. Ms. Figgatt established contact with New York poison control centers and received reports of illness through this method.

Lastly, the fellow is to monitor our syndromic surveillance data for several health outcomes (e.g. rash, gastrointestinal) in areas where a bloom is occurring. All of this is expected to be summarized in a report if not also in a journal publication. .

Surveillance Evaluation Epidemiologic and Environmental Surveillance Evaluation of Legionellosis in New York State

NYS just passed legislation to help prevent Legionellosis and our current CSTE fellow, prior to this legislation, reviewed our surveillance systems. She reported her findings in a poster at the June 2015 CSTE conference. The legislation is going to significantly increase our data sets and surveillance activities especially in regards to community acquired disease. For this reason we think this will be a very good evaluation to repeat with refinement.

Major Project Harmful algal blooms and Legionella

The focus of the proposed fellowship is to work specifically on the harmful algal bloom issue to continue building on the surveillance activities undertaken by Ms. Mary Figgatt, current CSTE fellow. Ms. Figgatt spent considerable time doing outreach to enhance surveillance activities for detecting HAB related illness and we would like to see that continue. She received many reports of illness and evaluated different datasets to detect illness. Her work clearly indicates that there is a health signal related to the occurrence of harmful algal blooms and exposure through drinking water and recreational use of surface waters.

The fellow will be responsible for continuing and expanding this work as appropriate. The fellow is also expected to use their epidemiological expertise to help in methodology development on how a signal may be detected and is expected to complete such. Dr. Wilson and Dr. Dziejewski have interacted with many epidemiologists in the Department of Health and will work with the fellow to collaborate with them if the fellow so desires. The fellow will also have the opportunity to participate in environmental sampling to characterize potential exposures. Given the fellow will be located in the Division that is a fully functioning regulatory program overseeing public drinking water and recreational water use, the fellow will have the opportunity to learn and explore many different aspects of regulatory programs.

We believe our position is very unique in that we reside in a core public health regulatory program and we have the expertise, resources and opportunity to interact with health staff in the field and with peers in academia /research. In short, we are offering placement in an organization that has expertise in many different fields and we are used to working collaboratively among units, increasing the potential for a very fulfilling fellowship.

The NYSDOH in 2011 formed an internal workgroup, chaired by Dr. Wilson, that produced a protocol for responding to HABs at regulated beaches and an interactive self-guided software program was developed for use by Local Health departments for implementation of the protocol. The program has developed response protocols that are continually evolving and one area that was missing until MS. Figgatt's fellowship is the linkage of human health to HABs. Her work showed that there is a health signal. The proposed fellowship is to continue the work started by Ms. Figgatt which would provide a 2nd year health assessment to begin an assessment of the trend.

The proposed fellowship also offers the opportunity to participate in monitoring and surveillance of HABs in support of the on-going NYSDOH efforts that were previously funded by CDC. New funds for monitoring have been obtained through the Epidemiology and Laboratory Capacity cooperative agreement between our NYSDOH epidemiology partners and CDC. The focus will be to look at HABs in the Great Lakes Basin and the associated toxin microcystin (maybe anatoxin and others too). This work could continue our efforts related to the development of response protocols for drinking and recreational waters as it relates to identifying toxin risks, monitoring priorities, treatment needs and optimization, and the potential use of qPCR and other novel laboratory methods in this work.

Another potential output is related to characterizing the role of HABs in creating disinfection by-product (trihalomethanes and haloacetic acids) risks in potable water supplies. NYS is well suited to do this work in that there are over 400 public water supplies using surface water, and that about 45% of the state is within the Great Lakes Basin.

There has been a growing concern about climate change and water quality including increased eutrophication, taste and odor issues, HABs and their toxins, and more disinfection by-products in treated (disinfected) drinking water. This project will provide data to help water supplies, beach operators and the NYSDOH address these concerns. The work requires expertise in many fields and good analytical equipment, all available at NYSDOH.

**Additional
Project****Legionella**

In addition to a focus of working on the HAB surveillance the fellow is to help with surveillance, outreach, training, sampling, and data analysis associated with program activities to prevent Legionnaire's disease. In August 2015 New York State passed emergency regulations to prevent Legionnaire's disease coming from contaminated cooling tower waters and also potable water in hospitals and regulated long term care facilities. This regulations have created a state-wide database of cooling towers and environmental data from sampling for Legionella. The specific tasks that the fellow will get to participate in include:

- Tower registration and analysis of registration data
- Mapping of towers and cases during community clusters/outbreaks of Legionnaire's Disease.
- Program implementation
- Development/refinement of an environmental guidance item instructing local health departments on response protocol
- Updating training materials and assisting in training sessions involving sampling for cooling towers and for State regulated health care facilities (hospitals and nursing homes)
- Evaluating surveillance and response measure during program implementation
- Assistance in the oversight of Legionella sampling plans for Article 28 facilities (i.e., hospitals, nursing homes and other assisted living facilities or rehabilitation facilities that are regulated by New York State)
- Response to nosocomial legionellosis events and/or outbreaks

**Surveillance
Activity****Other**

The fellow will be encouraged to participate in health surveillance activities through out the NYSDOH as the need arises and for the fellow to gain experience. The current fellow through collaboration with other DOH units did surveillance of giardia and cryptosporidium. The current fellow also became lead on an investigation of illness associated with private well contamination associated with manure spreading. We anticipate such work and opportunities for the proposed fellow.

Preparedness Role

The CSTE Fellow will also have the opportunity to complete FEMA study courses on the Incident Command System and participate in drills and exercises that occur periodically throughout the state. BWSP staff work on emergency preparedness in coordination with the State Office of Emergency Management along with the Office of Health Emergency Preparedness within the Office of Public Health (see organization chart).

The CSTE Fellow will have the opportunity for training and assisting with preparedness projects. Activities may include tabletop exercises with local officials, emergency responders and water suppliers. We have not had a significant emergency (natural disaster) since the current fellow has arrived, but if there had been we expect that that she would have been involved in the response. She was involved in our responses to Ebola, and currently is working on some aspects of the legionella emergency regulations and outbreak response.

Additional Activities

See third project listed. What we can say is that the past fellow became involved in occupational clinic data review as well as NYS Ebola response. These type of opportunities will likely occur again but we can not predict exactly what they will be.

Mentors

Primary	David Dziewulski, Ph.D. Research Scientist IV
Secondary	Lloyd Wilson, Ph.D. Research Scientist IV