Assignment Description
The Fellow will be placed in the Occupational and Environmental Epidemiology Branch (OEEB), which identifies and assesses the impact of environmental and occupational conditions and hazards that may pose a risk to human health, as described previously. The Fellow’s primary assignment will be to help implement a new Environmental Public Health Tracking (EPHT) program for the state of North Carolina. The Fellow will also have the opportunity to complete a variety of additional projects focusing on environmental and occupational health, climate and health, chemical releases, pesticide poisonings, and well water surveillance. Past CSTE fellows in DPH have had extensive experience conducting epidemiologic investigations in collaboration with OEEB as well as the Communicable Disease and Chronic Disease and Injury Prevention Branches. As applicable, the Fellow will assist with response to emerging public health threats such as hurricanes, chemical spills, and harmful algal blooms. We have several potential projects in each of these areas that can be customized to the Fellow's interests.

Day-to-Day Activities
Most of the fellow's time will be dedicated to gathering, organizing, and mapping data for the NC Environmental Public Health Tracking Portal. Available surveillance data include adult blood lead levels, pesticide poisonings, chemical releases, occupational carbon monoxide poisonings, and private well water. Day-to-day activities can involve managing and analyzing data on these exposures and related health outcomes, creating reports, identifying incidents that require response and communicating findings to stakeholders. The Fellow will also help with the OEEB’s routine surveillance and response work with a focus on occupational carbon monoxide poisoning surveillance. The fellow will play an active role in epidemiologic and outbreak investigations, which may include developing a line list of exposed or ill persons, coordinating response activities with local and state partners, writing situation reports, conducting patient interviews, abstracting medical records, and analyzing data. The Fellow will have opportunities to collaborate with other Branches and Divisions if interested; for example, the Fellow may work with the Communicable Disease Branch on an outbreak investigation for environmentally-related disease such as legionellosis or with the Injury and Violence Prevention Branch on drug-related investigations such as vaping and severe lung disease. The Fellow will participate in professional development activities, including presentations and opportunities to network at conferences, trainings, and other professional meetings, as well as writing and contributing to scientific publications.
Potential Projects

Surveillance Activity  Occupational Carbon Monoxide Surveillance

Carbon monoxide (CO) poisoning is a preventable cause of morbidity and mortality. To identify cases, OEEB epidemiologists review data provided weekly by the Carolinas Poison Center and monitor data sources including NC DETECT, daily emergency management reports, and media reports. The Fellow will have the opportunity to conduct surveillance activities, make appropriate referrals, and develop evidence-based prevention messaging focused on the major causes of occupational exposure in North Carolina.

Surveillance Evaluation  Occupational Carbon Monoxide Reporting

This project will evaluate the impact of the implementation of the occupational CO surveillance reporting rule on quality of CO data and participation in reporting, by analyzing CO data collected before and after implementation of this reporting rule. Occupational carbon monoxide poisoning became a reportable condition in North Carolina in mid-2017. The first complete year of data was 2018.

Major Project  Implementing the NC Environmental Public Health Tracking Dashboard

Our branch has begun building a NC Environmental Public Health Tracking (EPHT) Dashboard and has created a plan for developing an NC EPHT program. Since we have surveillance data on well water testing, chemical spills and incidents, occupational carbon monoxide poisonings, pesticide related poisonings, and adult lead poisoning, as well as heat related illnesses and wildfire smoke information, we would like to create a public-facing portal for community members to use to access the data through interactive maps and reports. We have strong relationships with the Childhood Lead Poisoning Prevention Program and the State Center for Health Statistics and are planning to incorporate data from these programs into our portal.

Additional Project  Private Domestic Well Water Surveillance and Outreach

Approximately one quarter of North Carolinians (~2.4 million people) rely on private wells for their drinking water. The NC Well Water and Health program is working to monitor contaminated well water in these federally unregulated systems and minimize exposure to contaminants. The Fellow support several projects related to the NC Well Water and Health program, which focuses on four areas: 1) outreach to and engagement with vulnerable populations (e.g., tribal communities, migrant/seasonal farm workers), 2) well water contaminant surveillance system, and 3) development of effective communication techniques for well owners. The Fellow would have the opportunity to work within the scope of the Well Water and Health Program to develop a project of their own. For example, the Fellow could develop an interactive well water map program for well users or assess factors that lead to well owner testing and remediation.

Additional Project  Health Effects of Flooding

Community members have expressed concern to our partners at the NC Sea Grant Program at NC State University and the North Carolina Office of Recovery and Resiliency about an increase in “flesh-eating bacteria” infections, possibly due to flooding during the recent hurricanes. The Fellow could search hospital admission data in NCDETECT and Vibrio surveillance data in NCEDSS to explore trends in the incidence of Vibrio vulnificus and other skin infections flooding events. Record reviews and patient
interviews could also be performed if more clinical information is needed. Exposure assessment could be estimated by collecting flood gauge data, climate data, and number of buildings damaged during storm from county emergency management reports. Other hurricane-related outcomes that could be explored through emergency department and hospital data include acute outcomes such as injuries, cardiovascular events, and asthma attacks and chronic outcomes such as mental health and respiratory health.

**Preparedness Role**

The Fellow will participate in joint monthly preparedness meetings between the Occupational and Environmental Epidemiology Branch and the Public Heath Preparedness & Response Branch to receive training in Incident Command Structure and discuss ongoing chemical, nuclear, and radiological incident responses. The Fellow will also have the opportunity to participate in large-scale NC DHHS responses such as to hurricanes, flooding, and large chemical contamination events. The Fellow will also participate in meetings, trainings, table top and full exercises at our state Emergency Operations Center in coordination with our partner agencies (Emergency Management (EM), Department of Transportation (DOT), Department of Environmental Quality (DEQ), Federal Emergency Management Agency (FEMA), etc.).

**Additional Activities**

The Fellow will have the opportunity to assist the Communicable Disease Branch with infectious disease outbreak investigations, which may include maintaining a line list of cases, interviewing cases and controls, creating a database, analyzing data, and participating in site visits. There may also be an opportunity to assist our Chronic Disease and Injury Prevention Branch with recreational drug related illness investigations. The Fellow may additionally have the opportunity to collaborate with community agencies and coalitions when project-related community-science data is available.

**Mentors**

**Primary**

Kim Gaetz, PhD, MSPH  
Epidemiology Supervisor

**Secondary**

Virginia Guidry, PhD, MPH  
Branch Head