COVID-19
NC Department of Health and Human Services, Division of Public Health City
Raleigh, North Carolina

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 assess trends of work-related COVID-19 outbreaks in the state of North Carolina. This will be accomplished through three objectives:

1) Assist in the collection and quality assurance of industry and occupation data for recorded cases of COVID-19 as part of active, state-wide NC COVID-19 surveillance.

2) Assist in the production and provision of guidance for local health department (LHD) officials on how to collect industry and occupation data for cases of COVID-19

3) Summarize trends of work-related COVID-19 outbreaks, assist the occupational epidemiologist in compiling and disseminating periodic reports to internal partners, and respond to data requests associated with work-related COVID-19 outbreaks.

The Fellow will also have the opportunity to complete a variety of additional projects focusing on environmental and occupational health and chemical releases that can be customized to the Fellow’s interests. 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. Fellow will work with the NC DHHS COVID-19 response task force that spans multiple programs, Branches, Divisions and Sections and agencies.

Day-to-Day Activities
Fellow will be provided access to the North Carolina Electronic Disease Surveillance System (NCEDSS), North Carolina’s centralized data source for statewide reports of facilities, outbreak events and patient cases associated with COVID-19. North Carolina is one of the few states with the capacity to collect case industry, occupation and work-related exposure information in-full as part of its COVID-19 surveillance efforts, as recommended by the CSTO Occupational Health Subcommittee. Fellow will also be trained to use the NIOSH Industry and Occupations Computerized Coding System (NIOCCS) to code free-text employment data available in NCEDSS for COVID-19 cases.

Daily activities are grouped by project objectives below:

1) Collection and quality assurance of employment and work-related exposure information for COVID-19 case data - Query NCEDSS daily to assess the completion frequency of information related to employment and work-related exposure for reported cases of COVID-19. - Perform follow-back calls for cases and reporting local health officials to obtain missing data.
2) Produce & provide guidance for LHD officials on how to collect employment and work-related exposure data for cases of COVID-19. - Work with occupational epidemiologist to develop communication products that provide guidance to LHD officials for reporting information associated with employment and occupational exposure when reporting data for cases of COVID-19. - Review background literature and published information issue briefs and white papers related to COVID19, use this information to compile references as appropriate and to develop communication products. - Participate in daily and weekly calls as appropriate to assess data quality and training needs of LHD officials and to keep up to date on relevant response efforts and provide technical assistance to any COVID-19-related response teams as needed.

3) Summarize trends of work-related COVID-19 outbreaks & assist the occupational epidemiologist in compiling and disseminating periodic reports to internal partners and responding to data requests associated with work-related COVID-19 outbreaks. - Perform NCEDSS data queries up to three times per week to compile demographic and employment information for work-related COVID-19 cases and prepare written reports with tables, charts, graphs and short narratives to be disseminated within relevant COVID-19 working groups as part of required periodic updates. - Query NCEDSS to prepare reports and fulfill data requests from branch, division and department management involving industry and occupation information for COVID-19 cases as needed.

Potential Projects

Surveillance Activity

**Work-Related COVID-19 Outbreak Surveillance**

Fellow will use available employment and work-related exposure data for COVID-19 cases in NCEDSS to summarize trends in COVID-19 outbreaks by industry and occupation, compare trends in workrelated and non-work-related exposures, and develop trend models to predict potential outbreaks by industry sector and characterize COVID-19-related exposure hazards by occupation. Results will be disseminated via periodic brief data summaries to relevant COVID-19 response work groups, and via full report summarizing findings.

Surveillance Evaluation

**Quality Assurance of Employment & Occupational Exposure-Related Data for COVID-19 Case Surveillance**

This project will evaluate the completeness and quality of employment and occupational exposure related information collected for reported cases of COVID-19. NCEDSS is one of the few state-wide surveillance systems in the country to feature the capacity to collect, as part of its COVID-19 surveillance efforts, case industry, occupation and work-related exposure information in-full as recommended by the CSTE Occupational Health Subcommittee. Fellow will analyze NCEDSS COVID-19 data for completion rate of answers to questions recording employment-related data, such as employer name, occupation, if the case worked in a healthcare/clinical laboratory setting, if the case was involved with childcare, and what setting the case was likely exposed. Fellow will also analyze completion rate of new employment-related questions, including employer business/industry sector type and whether case worked 14 days prior to
onset of illness. Fellow will then address gaps in data collection through multiple strategies, including follow-back and training for LHD officials performing data collection. Fellow will then provide a final follow-up report summarizing findings of efforts to address gaps in data collection and reporting.

**Major Project**

**Produce and Provide Guidance to LHD Officials to Collect Employment & Occupational Exposure-Related Information for Reported Cases of COVID-19**

Fellow will produce at least three communication products that can be used to instruct and assist LHD officials collecting data on reported cases of COVID-19 on how to collect employment and occupational exposure-related information as part of case reporting. Communication products include:

a. A one-page quick-reference user guide highlighting employment and occupational exposure information to be collected that includes simple instructions on how to enter data for associated questions.

b. A comprehensive reference packet including background justification and explanation of the relevance for collection of employment and occupational exposure information for when reporting data for cases of COVID-19.

c. A short online webinar/training session that can be made available on a regular, periodic basis (e.g. weekly) or upon special request to state and LHD officials providing real-time instruction, technical guidance and training on how to properly enter employment and occupation exposure information in NCEDSS for cases of COVID-19.

Fellow will coordinate with occupational epidemiologist and COVID-19 response taskforce for best methods for distribution of information and training.

**Additional Projects**

**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 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. The Fellow will also have opportunities to conduct surveillance activities, make appropriate referrals, and develop evidence-based prevention messaging focused on the major causes of occupational exposure in North Carolina.

**Implementing the NC Environmental Health Data 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.

**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 "flesheating 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 Health 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 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 Occupational and Environmental Epidemiology Branch with chemical release incidents, which may include maintaining a line list of cases, interviewing cases, 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**  
Gialana Dang, BS, MPH, DrPH, CPH  
Occupation Epidemiologist

**Secondary**  
Kim Gaetz, BA, MSPH, PhD  
Epidemiology Supervisor