Occupational Health, Environmental Health

California Department of Public Health, Occupational Health Branch/Environmental Health Investigations Branch

Richmond, California

Assignment Description

The Fellow will be assigned to the Division of Occupational and Environmental Disease Control (DEODC) of the California Department of Public Health. This Division is the largest state-based program for the study and prevention of occupational and environmental health problems through epidemiology, toxicology, prevention, surveillance, emergency preparedness, biomonitoring, and extensive laboratory capabilities. More information about the Division can be found at https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/

Our offices are located on the San Francisco Bay at the Department's Richmond Laboratory Campus, along with the Department's many public health laboratories (environmental, genetic, food and drug, viral, etc.). A short video about our state-of-the-art green office building can be found at https://youtu.be/s0se3BJRPII

A culturally rich and diverse region, the San Francisco Bay Area is home to the University of California campuses at Berkeley and San Francisco, Stanford University, and is 70 miles from the state capital, Sacramento.

The Fellow's time will be divided between two of the programs: the Occupational Health Branch (OHB) and the Environmental Health Investigations Branch (EHIB). These two programs have a broad public health practice that encompasses investigations of outbreaks, surveillance, emergency response, analysis of big datasets, and working with interdisciplinary teams. Extensive information about these programs and their many projects can be found at https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB , and at https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHIB/ .

Day-to-Day Activities

At the beginning, Fellows are invited to attend various project meetings to learn about the many on-going activities. Depending on project need and interest of the Fellow, they can be integrated into the effort. Most projects in the branches are multidisciplinary, and may involve epidemiology, toxicology, community participation, etc., so that staff typically work in teams. There are approximately 60 staff members within OHB, comprised of occupational medicine physicians, epidemiologists, health educators, industrial hygienists, and toxicologists. EHIB also has approximately 60 staff, including epidemiologists, toxicologists, environmental health specialists, health educators, geographic information specialists, and community relations specialists. Former CSTE Applied Epidemiology Fellows are also on staff to help orient the new Fellow.

Working with their preceptors, Fellows map out a plan of activities to meet their needs and the needs of the programs for the two-year cycle. Usually during the first year, a topic for a major project emerges, and the second year is devoted mainly to that, involving data collection, statistical analysis, and report writing.

Throughout their tenure, Fellows attend regular staff meetings in both Branches, learning about and understanding the administrative and political issues in a large state health department. In addition, there are frequent opportunities to attend presentations, seminars, brown bag lunches, etc., on various topics, both in the Division and elsewhere on the Richmond Laboratory Campus, where staff members and outside guest speakers present new work or emerging issues. Fellows are also encouraged to share their work by giving presentations and seminars.

Potential Projects

Surveillance Activity **Work-related injuries and diseases**

A major surveillance project will be selected from a range of potential data sources on work-related injuries and diseases available for analyses in the OHB. Over the past 30 years, CDPH has gained access to hospital discharge, ambulatory surgery, physician reports, poison control center, electronic death certificate and workers compensation data sets; these rich sources of information that can be used for a surveillance project. Previous CSTE-funded projects have focused on pesticide illness, asthma and other respiratory diseases (silicosis, asbestosis, mesothelioma), acute traumatic fatalities, and musculoskeletal disorders. A major surveillance project can be selected from these endpoints, or from other conditions such as heat-related illness, acute traumatic hospitalizations, occupational infectious disease, amputations, and lead poisoning. In recent years, California has promulgated standards for aerosol transmissible diseases, safe patient handling and work-related violence, and aforementioned databases can also be used to evaluate the public health impact of these standards. Working with these large, administrative datasets provides a valuable addition to any epidemiology toolkit, and assistance with this type of programming is available.

Surveillance Evaluation **California asthma surveillance evaluation**

Over 5 million Californians have been diagnosed with asthma, resulting in nearly 200,000 ED visits and 30,000 hospitalizations annually. In addition, disparities in asthma prevalence, health care utilization, and/or deaths have been associated with race/ethnicity, sexual orientation, and birthplace. To understand the burden of asthma in California and identify trends, CDPH routinely collects and analyzes data from hospital discharge datasets, statewide telephone surveys, and vital statistics. Asthma surveillance data are then summarized and made publically available through reports and fact sheets. An evaluation of CDPH's asthma surveillance system would identify: 1) Which stakeholders are using CDPH's asthma surveillance data? 2) For what purposes are data being used? 3) What formats (e.g., short report, fact sheet, info graphic, interactive website dashboard, slide set) are most accessible? 4) What additional asthma topics would stakeholders like CDPH to report on? Improvements to CDPH's asthma surveillance system will make data more relevant and accessible to stakeholders, enabling them to target interventions to specific groups, make the case for vital public health funding, and advocate for effective programs and policies.

Major Project **Using life course data for studying the effects of environmental exposures**

EHIB is conducting research into the social and environmental determinants of health using a geocoded California-wide life course database for inter-generational and inter-pregnancy studies. We welcome creative ideas that can maximize the benefits of this unique database in understanding trends in and influences of environmental exposures from early childhood, pregnancy, or previous pregnancies on sensitive health endpoints. We have a particular interest in very fine air pollutants, contaminated water, tobacco exposure, radiation and large wildfires, and outcomes such as asthma, autism, cancer, and reproductive outcomes like fetal growth and preterm birth.

Major Project **Population effects of large wildfires**

An area of active study within EHIB is to characterize the burden of large wildfires on public health, assessing respiratory, cardiovascular, and other health outcomes in vulnerable populations and their impacts to the public health care system in outpatient visits, emergency and urgent care visits, and hospitalizations, based on modeled smoke concentrations. Future analysis goals include expanding the outcomes of interest to reproductive outcomes, including birth outcomes (e.g. birth weight and prematurity), and maternal pregnancy outcomes such as gestational hypertension and pre-eclampsia.

Surveillance Evaluation **Occupational health surveillance evaluation**

One of our major surveillance systems for work-related injuries and illnesses will be used as an evaluation project. This will be of practical significance to our ongoing work to improve and sustain our data systems to identify trends and target high-risk occupations and industries for prevention activities. In recent years, we have pilot-tested surveillance of work-related acute traumatic hospitalizations, carpal tunnel syndrome, valley fever (coccidioidomycosis), heat-related illness, and musculoskeletal disorders. These could be further evaluated and codified into routine surveillance. We also perform routine surveillance for pesticide poisoning, asthma, lead, and fatalities, and these could also be used for a surveillance evaluation project.

Preparedness Role

DEODC maintains a multi-disciplinary Division-wide Emergency Preparedness Team (EPT), which is integrated with the Department's emergency preparedness and response infrastructure. Among many tasks, the EPT mobilizes DEODC resources in the event of an occupational or environmental emergency, provides technical support to other agencies, conducts surveillance of chemical releases in California, and carries out public health investigations of hazardous material incidents. OHB and EHIB staff participate in EPT activities, including serving as rotating Duty Officers, members of Incident Response Groups, and Subject Matter Experts for environmental and occupational emergencies and other disasters.

Some of the current EPT activities include assessment of community vulnerabilities to chemical threats through identification of high hazard facilities and nearby population demographics; ongoing statewide surveillance of chemical incidents; application of GIS to understanding of chemical incidents and their burdens on human health; public health investigations of hazmat releases; and first responder health and safety. Previous CSTE Fellows have created databases for capturing incident information, conducted surveys of local capacity, participated in drills and exercises, served as Duty Officers triaging emergency calls, and taken part in community surveys in the field using the tools for Community Assessment for Public Health Emergency Response (CASPER).

In a large and diverse state like California, CSTE Fellows have the opportunity to serve in a variety of emergency situations. In the Department-wide response to the 2009 H1N1 influenza outbreak, our CSTE Fellow participated in several phases of California's effort. Another CSTE Fellow took a major role in response to the 2012 hantavirus outbreak at Yosemite National Park. A recent CSTE Fellow joined the field team for an assessment of the 2014 Napa earthquake, creating survey instruments, training and supervising interviewers, and conducting data analysis. Her co-authored article was published in the Morbidity and Mortality Weekly Report.

The EPT has a number of potential projects for CSTE Fellows, including public health investigations following acute hazmat incidents, evaluating the ongoing chemical spill surveillance system, data mining the incident data base to create consistent coding and categorization of chemical reports, Duty Officer Program participation; geographic analysis of hazardous material releases; and demographic analysis of communities near high hazard facilities.

Mentors

Primary	Robert Harrison MD, MPH Chief, Occupational Health Surveillance and Evaluation Program
Secondary	Martin Kharrazi PhD, MPH Chief, Environmental Epidemiology Section