

ID: 46656984

**Environmental Health, Occupation Health - Host Site Description
California Department of Public Health**

Assignment Location: Richmond, US-CA
California Department of Public Health
Environmental Health Investigations and Occupational Health Branches

Primary Mentor: Robert Harrison, MD, MPH
Chief, Occupational Health Surveillance and Evaluation Program
California Department of Public Health

Secondary Mentor: Michelle Pearl, PhD, MPH
Research Scientist
California Department of Public Health

Work Environment

Hybrid

Assignment Description

Both EHIB and OHB will directly involve the Fellow “hands on” with project teams that are working on public health research, epidemiological surveillance and case-based investigations:

- Perform environmental and occupational epidemiological studies utilizing existing data sets
- Respond to case-based outbreaks of injury and disease in the environment and workplace, including development of survey methods and tools, field visits, and data collection and analysis
- Provide expert consultation and advice about environmental and occupational health issues to local county health officers, public health professionals, health care providers, employers and workers
- Collaborate with community, employer and worker organization partners to develop and disseminate information about scientific findings, and translate public health information for prevention and intervention efforts
- Participate in technical and scientific meetings with OHB, EHIB and other CDPH Centers and Programs to gain experience in State public health goals and operations
- Attend local, State and National meetings to refine public speaking and presentation skills

Describe Statistical and Data Analysis Support, Such as Databases, Software, and Surveillance Systems Available to the Fellow

The fellow will have access to various spreadsheet, database, statistical, and graphics programs (Microsoft Office, SAS, Stata, R, Epi Info, etc.). For statistical support, the programs have epidemiologists and data analysts proficient in the use of SAS, Stata, and R for complex statistical analysis of epidemiologic surveys, environmental monitoring data, census data, vital records, etc. For additional epidemiologic methods discussion, there are two monthly meetings that the fellow could attend, the EHIB Epidemiology Collaborative and Epi Journal Club. There is also a major investment in GIS (Geographical Information Systems) infrastructure, with dedicated workstations, servers, CDPH geocoding service, a large format color printer, and staff members who are specialists in the use of GIS software.

The State of California maintains a large number of health and environmental databases. Besides the specific study datasets, the state offers vital statistics data (births, fetal deaths, deaths), statewide cancer registry, birth defects monitoring program, hospitalization and emergency department data, Medicaid claims, electronic workers compensation data, pesticide use reporting, and childhood lead poisoning surveillance. Additionally, the California Department of Public Health currently participates in electronic reporting to NIOSH of surveillance data for elevated blood lead, asthma, pesticides, and work-related fatalities.

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Projects

Surveillance Activity Title: California Acute Work-Related Heat Illness

Surveillance Activity Description:

Over 600,000 injuries and illness occur at work annually in California and are reported by employers through the California workers' compensation claims system. We have developed specific criteria to identify, extract and code approximately 1,500 acute work-related heat illness cases each year. CDPH also routinely collects and analyzes data from hospital discharge data based on payor source (workers compensation), and receives monthly data from CalOSHA for all employers who have reported an employee with a hospitalization. In conjunction with a new Climate and Health Surveillance program focused on the surveillance of occupational heat-related illness, the fellow will conduct a major data analysis project that will can lead to establishment of a new surveillance system will target interventions to specific groups, make the case for vital public health funding, and advocate for effective programs and policies.

Surveillance Activity Objectives:

The objective of this activity is to prepare a comprehensive analysis of work-related heat illness in California, with a focus on high risk worker populations (agriculture, construction, indoor warehouse, etc). The analyses should link the data findings to outreach and intervention activities that are part of a Department wide initiative on climate and heat mitigation, with special attention to outdoor workers. California is one a few states with a specific OSHA standard for heat related illness, and this analysis will also be critical to support regulatory enforcement.

Surveillance Activity Impact:

This activity will lead to establishment of a new surveillance system will target interventions to specific groups, make the case for vital public health funding, and advocate for effective programs and policies.

Surveillance System Evaluation Title: Occupational Lung Disease Reporting Using Electronic Health Records

Surveillance System Evaluation Description:

With support from CDC/NIOSH, we are testing the use of Reportable Conditions Knowledge Management System (RCKMS) for the rapid case ascertainment of silicosis and other occupational lung diseases. The overall goal is to develop a model for an efficient and rapid for early case detection as a model for occupational lung disease reporting in the US. This can help make the case for vital public health funding, and advocate for effective programs and policies for finding unknown and ongoing sources for silica and other occupational exposures.

Surveillance System Objectives:

The overall objective is to evaluate the use of the RCKMS for collection and analysis of occupational lung disease including silicosis. California has the largest data set for silicosis cases that have been reported through physician case reports that require intensive follow-up and outreach. The goal of RCKMS is to develop and implement a much more efficient and less resource intensive system. In California, RCKMS has been used for COVID-19 reporting, and this is the first effort to use this system for a chronic occupational disease.

Surveillance System Impact:

This evaluation will be extremely useful for the CDC and other states who may be able to use RCKMS for a national occupational disease surveillance system.

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Major Project Title: Predictors of Pollutant levels in California Residents

Major Project Description:

Biomonitoring California collects data on exposures to various pollutants (e.g., metals, per- and polyfluoroalkyl substances [PFASs], and phenols) and is charged with establishing trends in the levels of these chemicals in Californians' bodies over time and assessing the effectiveness of public health efforts and regulatory programs to decrease exposures of Californians to specific chemical contaminants. The fellow would design and conduct analyses to identify predictors of profiles of biological levels of various pollutants in residents in different regions of California. The project would entail examining the wealth of information from surveys of biomonitoring study participants, including diet, hobbies, occupation, housing characteristics, and demographics, as well as geocoded address, to identify impacts from and opportunities for individual and societal interventions.

Major Project Objectives:

The fellow would be expected to create a study plan; descriptive tabular data of participants and exposure characteristics and their relationships; a written summary for internal use; and if appropriate, a manuscript for peer-reviewed journal and accompanying lay summary for our website and public presentations. Fellow could also use this work for a conference presentation, if desired.

Major Project Impact:

The desired public health impact is to decrease exposures of Californians to harmful chemical contaminants. Biomonitoring data supports this goal by establishing trends in chemical exposures, validating modeling and survey methods, supporting epidemiological studies, identifying highly exposed communities, addressing the data gaps between chemical exposures and specific health outcomes, informing health responses to unanticipated emergency exposures, assessing the effectiveness of current regulations, and helping to set priorities for reform.

Additional Project #1 Title: Population Effects of Large Wildfires: Health Burdens in Vulnerable Subgroups

Project #1 Type: Major Project

Project #1 Description:

An area of active study within EHIB is characterizing the burden of wildfires and prescribed fire smoke on public health. EHIB staff have analyzed modeled per day wildfire smoke concentrations, using a combination of data from air monitors and satellite images, to understand its effects on respiratory, cardiovascular, and other health outcomes as measured by impacts to the health care system in hospitalizations, emergency department and others. However, investigation of potential disproportionate impacts from wildfire smoke among various vulnerable populations have yet to be well-characterized. This follow-up investigation would involve more detailed analyses to characterize excess smoke-related health burden by different demographic subgroups, geographic areas, and other characteristics. Time-series methods would be used to evaluate emergency department visits covering the more recent wildfire years which experienced many significant wildfires with substantial smoke exposures (e.g. 2017-2022).

Project #1 Objectives and Expected Deliverables:

- Identify excess health burden by demographic, geographic and other subgroups
- Characterize disproportionate burdens by subgroups
- Publication of findings in peer-reviewed manuscript
- Presentation of findings to stakeholder groups and/or scientific audiences at conference(s)

Project #1 Impact:

Public health agencies and agencies concerned with air quality will gain greater understanding of the impact of wildfire smoke which will allow more informed and targeted response and intervention activities (e.g. local health jurisdictions

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and air pollution management agencies). California is implementing legislation (AB619) which requires development of plans to identify measures to protect public health during significant wildfire smoke events. Some populations and areas are anticipated to be at greater risk, and identification of these target audiences will allow agencies to improve responsiveness in order to safeguard the health of exposed populations.

Please Describe the Fellow's Anticipated Role in Preparedness and Response Efforts – Include Activities and Time Allocation (Required Competency of Fellowship)

The interdisciplinary Emergency Preparedness (EP) Team, led by Jason Wilken, PhD, MPH (EIS 2012), directs the overall emergency planning and preparedness efforts for the Center for Healthy Communities and enhances our response capacity by mobilizing occupational, environmental, and laboratory expertise. The EP Team works with local, state, federal, and tribal agencies to identify and reduce risks from chemical and hazardous material incidents. The EP Team responds to and investigates noninfectious disease outbreaks (e.g., vaping-related lung injury), acute chemical releases (e.g., chlorine), and natural disasters (earthquake, wildfire, drought); these can include conducting community-based household surveys, patient surveys, and hospital surveys following CDC-developed sampling protocols.

Projects for a CSTE Fellow include: chemical and hazardous material release incidents surveillance program evaluation, identification of geographic areas of high hazardous material incidents, education material development for populations vulnerable to potential hazardous facilities threats, field investigations using disaster epidemiology tools such as Community Assessment for Public Health Emergency Response (CASPER) or Assessment of Chemical Exposures (see: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6435a4.htm>), pilot an Emergency Responder Health Monitoring and Surveillance project with a local jurisdiction in California.

Please Describe the Fellow's Anticipated Role in Cluster and Outbreak Investigations – Include Activities and Time Allocation (Required Competency of Fellowship)

The Occupational Health Branch has a robust and long standing capacity and commitment to workplace cluster and outbreak investigations. The OHB has unique statutory access to workplaces for investigation, which gives the fellow the opportunity to conduct and/or participate workplace visits, interview workers, review records and analysis data. Over the past decades, we have investigated many occupational diseases with innovative and leading public health impact. While these outbreaks cannot be predicted with certainty, all fellows have taken a leading role in cluster and outbreak investigations over their two years.

Please Describe the Fellow's Anticipated Role in the COVID-19 Response – Include Activities and Time Allocation

Our Branches have established one of the largest State-based COVID-19 response teams in the country, with a combination of both State and Federal funding. The fellow will have the opportunity to participate in the COVID outbreak and investigation team, as well as collaborate with an ongoing CDC-funded analysis of "long COVID" among workers.

Please Describe Opportunities for Fellows to Work in Health Equity as well as Incorporating Diversity, Equity, and Inclusion into their Work

The CDPH Environmental and Occupational Health Branches have a long standing commitment to serving communities and workplaces that are disproportionately impacted by toxic chemicals, air pollution, wildfires, climate change and occupational injuries and diseases. This ethic is reflected by CDPH leadership (Tomas Aragon, MD) that has made this a central principle of CDPH activities.