

Environment Health/ Occupational Health

Assignment Description

The CDPHE aims to ensure that public needs in environmental health, occupational health and toxicology/risk assessment are served on a sustained and comprehensive basis, but there is a tremendous amount of work that needs to be done.

A primary duty of this fellowship will be to help develop a new program for acute toxic substance exposure and health effects surveillance, including adverse effects of legal marijuana. This will include a comprehensive surveillance system capable of timely identification of potential cases, conducting data analysis, summary and reporting of findings, developing intervention plans, and identifying community partners and stakeholders who can assist in prevention and control activities. In addition, the Fellow will support the Occupational Health and Safety Surveillance Program by using public health surveillance data to identify, describe and ultimately prevent disparities and inequities in the health and safety status of Colorado's workforce. These two projects will provide the ideal setting for a CSTE Fellow to develop and implement public health programming from the ground up.

Toxic Exposure Program Description: With the passage of Amendment 64 in November 2012, Colorado became only the second state in the nation to create laws allowing the legal propagation and personal use of marijuana. In the past year, much debate and discussion has ensued to develop regulation and policy for this new industry. In November 2013, citizens of Colorado approved a bill which allows for state revenue from marijuana excise and sales taxes. Through previous legislation, this revenue has been earmarked in part for public health agencies to develop monitoring systems to track health impacts and outcomes.

This new legislation calls upon CDPHE to provide "data on emergency room visits related to the use of marijuana and the outcomes of those visits, including information from the Colorado Poison Control Center", to monitor "changes in drug use patterns...and the emerging science and medical information relevant to the health effects associated with marijuana use", and to "appoint a panel of health care professionals with expertise in cannabinoid physiology to monitor the relevant information." This panel will, at minimum, provide a report that 1) establishes criteria for studies to be reviewed, and 2) reviews studies and other data, and 3) makes recommendations for policies intended to protect consumers of marijuana or marijuana products and the general public.

The CSTE Fellow will play a key role in preparing CDPHE to respond to the duties outlined in this new legislation. This will include identifying surveillance data sources, collecting and compiling data into a comprehensive report, establishing data use and sharing agreements to support on-going surveillance, and potentially defining new reportable conditions for the state. The Fellow will also be involved identifying partners within CDPHE and other agencies who can provide expertise on marijuana use and toxicity, and develop collaborations to support our efforts in health effect monitoring, outreach and education.

In addition, because many of the data sources used for marijuana surveillance are the same as those we would use for general toxic exposure surveillance, we will use this opportunity to further develop surveillance of other environmental toxic or hazardous exposures. This might include exposures from pesticide use and drift, oil and natural gas extraction activities, and acute impacts of wild-fires. The Fellow will have the opportunity to develop new surveillance data and resources for these issues of public concern.

Occupational Health and Safety Program Description: Approximately 2.4 million individuals are employed in Colorado, and nearly 20% of our workforce is employed in higher-risk occupations, such as Farming/Forestry, Installation/Maintenance/Repair, Production, Transportation, and Construction/Extraction. Every year in Colorado, approximately 112 workers are killed on the job, the equivalent of one worker fatality every three to four days. Hispanic workers are disparately affected by occupational fatality, accounting for 20% of fatalities, but only 16% of the workforce. Workplace injuries and illnesses can be physically, emotionally and financially devastating for the workers, employers, and, their families. Every year in Colorado, there are about 2,500 work-associated injuries serious enough to cause hospitalization. Workers' compensation benefits paid in Colorado for these and other injury/illness events average \$810 million per year.

Disparities in work-related injuries, illnesses and fatalities arise from the overrepresentation of racial and ethnic minority workers in occupations with higher risk for occupational injury (i.e. construction, agriculture) and from the incomplete penetration of occupational health and safety interventions to certain worker populations due to social, cultural, and economic issues including language, literacy, and marginal economic status.

To begin to address occupational health disparities in Colorado, this fellowship assignment will conduct activities in occupational health surveillance, with the aim to comprehensively describe occupational health disparities using existing data sources. This includes collecting and analyzing the NIOSH/CSTE Occupational Health Indicators measures through the lens of disparity identification, disseminating surveillance results, developing public education materials, informing and assisting with policy development, as well as interacting with all levels of government (city, county, state, and federal), industry, labor and academia to identify and pursue common goals for occupational safety and health. State programs with effective surveillance of work-related illness and injury have demonstrated that collection, analysis, interpretation and dissemination of occupational health data allows for a direct link between these data and prevention and control activities. Becoming part of this relatively new state surveillance program will provide first-hand experience in leveraging surveillance information to develop and implement plans for prevention and intervention.

Day-to-Day Activities

The CDPHE Environmental Epidemiology Occupational Health and Toxicology (EEOHT) Section offers a rich opportunity to study the epidemiology of injuries and illnesses associated with exposure to toxic substances or hazardous conditions, and work with a network of partners to identify and implement prevention strategies. Numerous collaborations, contacts, and administrative logistics are necessary to

collect, compile, and interpret the appropriate data and implement various program elements. The Fellow will work in a collaborative effort with key partners to ensure that analysis and projects are not conducted in isolation from intersecting efforts within the department and state-wide.

The Fellow will have the opportunity to take on numerous, challenging roles including:

- Collecting, analyzing, summarizing and disseminating health indicator data to better describe toxicological hazards, inequities in work related injuries, illnesses and fatalities, and other environmental/occupational health issues in Colorado;
- Writing surveillance data reports, and presenting findings to internal and external audiences;
- Researching and compiling existing education materials and resources, as well as developing new materials relevant to the project and tailored to the needs certain populations or audiences;
- Interacting and collaborating with multiple state agencies, other state environmental/occupational health programs, industries, and professionals;
- Evaluating program components and strategic planning for program development;
- Assisting with developing environmental/occupational health reportable conditions and policies; and
- Identifying and pursuing funding to support sustainable efforts in state-based environmental/occupational health activities.

Potential Projects

ORIENTATION – The first objective of this assignment will be familiarization with personnel and functions of the CDPHE. This will include:

- Attending the department's half-day new employee orientation session;
- Meeting with Building Operations and Information Technology staff to obtain proper network access, identification badges, and become familiar with existing systems and resources;
- Completing our division's on-boarding requirements, which include brief in-person meetings with various administrative staff, program managers, and the division director;
- Participating in online and in-person trainings required or identified for professional growth available through CO.TRAIN (www.co.train.org), the learning resource portal for Colorado state employees;
- Attending quarterly division staff meetings, monthly EEOHT Section meetings, and bi-weekly program meetings.

Both mentors and other EEOHT Section staff will work closely with the Fellow to ensure that he/she receives an appropriate orientation to the organization.

TOXICOLOGY RESEARCH & SURVEILLANCE – In the late summer 2013, our Disease Control and Environmental Epidemiology Division (DCEED) launched a public health investigation of a sudden, large increase in emergency room visits related to synthetic marijuana use. Over 263 ER visits were reported to the division, some requiring hospitalization and ICU care. This was one of the largest drug intoxication outbreaks ever identified in the U.S. and was DCEED's debut into acute-response epidemiologic investigation of a toxic exposure. This experience, paired with new marijuana use legislation and the anticipated expansion of the EEOHT Section under new leadership, defines the need for a functional surveillance system which can capture and describe health impacts of toxic exposures. The CSTE Fellow is expected to spearhead some of this work, include the following activities:

- Identify and explore the utility of various health outcomes and other data sources for this purpose (poison center exposure reports, hospital discharge, toxic substance use registries, etc.). The Fellow will conduct a significant amount of research and think creatively about various data sources that can inform this new program. We expect that data sources within CDPHE as well as those maintained externally by other agencies will be considered for inclusion in this new surveillance system.
- Identify national, state and local partners and collaborators for this effort, and develop working relationships and committees to help steer project activities. Some potential partners may be:
 - Marijuana legalization groups (e.g. NORML, Just Say Now)
 - Denver's Epidemiology Work Group
 - Colorado Division of Behavioral Health
 - Public School Systems
 - Law Enforcement/Parole Officers
- Develop working relationships with data stewards inside and outside CDPHE and establish appropriate MOU's or Data Use Agreements to obtain necessary data.
- Develop case definitions for marijuana-induced and other environmental toxic exposure induced illnesses.
- Analyze various data sources to describe overall trends in Colorado for environmental toxic exposures. Publish these findings in a written public health report.
- Consider opportunities for expanding Colorado's reportable conditions lists, and work with the Board of Health to amend regulations as appropriate.

The end result of this work will be a report detailing Colorado-specific data on reports of adverse health events involving toxic exposures (including marijuana) from the All Payer Claims Database (APCD), poison center data, hospital discharge data, Behavioral Risk Factor Surveillance Survey (BRFSS) data, and other data sources as identified by the Fellow. The Fellow will also document the methods, tools, and protocols necessary to sustainably implement this surveillance system.

OCCUPATIONAL DATA ANALYSIS – Surveillance data monitored by the EEOHT Section include the Occupational Health Indicators (OHI), defined by the CSTE and NIOSH. The OHI consist of an employment demographic profile and 20 measures describing fatal and non-fatal injuries, occupational diseases, lead and pesticide poisonings, workers' compensation, as well as safety and health resources and activities of the state. OHI data come from a variety of existing public health data sets, including vital statistics, workers' compensation claims data, hospital discharge records, and labor and census statistics.

We plan for the CSTE Fellow to actively participate in the routine annual collection, analysis and reporting of these OHI data. The Fellow will also independently take on a project to use these data to describe evidence of disparities and inequities in the magnitude, distribution, and trends in occupational injuries, illnesses, and hazards in Colorado. Following a model previously established and shared by the Michigan Department of Community Health, the Fellow will prepared a comprehensive public health report describing this issue. As part of this work, the Fellow will have the opportunity to work with the CDPHE Office of Health Equity to develop occupational health and safety indicators suitable for publication in Colorado's Health Equity Report.

REPORTABLE CONDITIONS SURVEILLANCE – The EEOHT Section is responsible for collecting, analyzing, and following up with elevated blood lead level (BLL) tests in Colorado, one of many lab-reportable conditions designated in the Colorado Revised Statutes 25-1.5-105. On average there are approximately 20,000 blood lead tests reported to CDPHE each year. CDPHE follows up with elevated adult blood lead exposures and works with local county health departments to follow up with childhood lead exposures. All adult BLL results ≥ 10 $\mu\text{g}/\text{dL}$ are reportable to the CDPHE. Our surveillance system captures 75-100 individuals per year age 16 and older with a BLL ≥ 10 $\mu\text{g}/\text{dL}$. The Fellow will have the opportunity to participate in case ascertainment, follow-back, and data analysis and summarization. The Fellow will be part of the team developing targeted prevention efforts for this well-known health hazard.

Additionally, efforts are underway in our division to centralize and streamline surveillance data collection and management for all reportable conditions, including communicable diseases, food-borne illnesses and vaccine-preventable illnesses. If interested, the Fellow will have the opportunity to participate in this systems improvement process and potentially conduct a formal, comprehensive evaluation using the CDC Framework for Program Evaluation.

FUNDING PROCURMENT – The Fellow will be encouraged to apply for and, if funded, carry out a pilot research project in the environmental/occupational safety and health fields. Small grants are provided annually by the Mountain and Plains Education and Research Center (MAP ERC) and the High Plains Intermountain Center for Agricultural Health and Safety (HICAHS). The focus of the projects will be based on interest of the Fellow and needs of the EEOHT Section.

OUTREACH, EDUCATION and RESOURCE DEVELOPMENT - The Fellow will have the opportunity to assist with further development and maintenance of the EEOHT Section web-pages, which serve to publish annual environmental/occupational health data, fact sheets about toxic exposures, resources for dealing with related health concerns and community issues, as well as scientifically sound information about

issues in the state and nationally. Anticipated development of this site will include new and updated data resources and fact-finding pages.

STRATEGIC PLANNING/ADVISORY COUNCIL FACILITATION – Both the Occupational Health and Safety Surveillance Program and the Environmental Public Health Tracking Program are guided by technical advisory committees, comprised of internal and external experts and stakeholders. These groups meet approximately quarterly, and the CSTE Fellow will be invited to actively participate and/or lead these meetings, which typically include strategic planning for state activities. Having a role in these meetings will contribute to development of skills in leadership, team building and public speaking. Further, the Occupational Health Surveillance Advisory Committee will soon be conducting comprehensive program evaluation and strategic planning for our next competitive grant application. This fellowship will overlap with implementation of that plan, thus providing the Fellow hands-on experience with activity tracking, measuring program success, and outcome evaluation.

Preparedness Role

The CDPHE operates a comprehensive training program in emergency preparedness through the Emergency Preparedness and Response (EPR) Division, and is equipped to implement a full-scale command center response in the event of a public health or environmental disaster. All permanent CDPHE personnel are expected to respond in the event that the emergency response plan is activated. As a contract worker, the CSTE Fellow is exempt from this requirement, but will be invited to attend trainings and seminars on emergency preparedness.

Additionally, the EEHOT Section has on-going interest in assisting the EPR Division to promote and protect the health and safety of emergency responders throughout the state. In partnership with EPR, we will soon develop education materials and campaigns around the environmental/occupational issues of wild-fire preparedness and response. Our Section is also vested in ensuring Colorado is meeting the CDC's Public Health Preparedness Capability #14, which describes the state's ability to protect public health agency staff responding to an incident and the ability to support the health and safety needs of hospital and medical facility personnel. If the Fellow has interest in this area, he/she could seek and develop opportunities for our Section to support the ERP Division in this work.

Assignment Location: Colorado Department of Public Health and Environment
Denver, CO

Primary Mentor: Mike Van Dyke, PhD, CIH
Section Chief

Secondary Mentor: Meredith Towle, MPH
Program Coordinator/Epidemiologist