Environmental Health

Alaska Department of Health and Social Services, Division of Public Health/Environmental Public Health Program

Anchorage, Alaska

Assignment Description

The CSTE fellow will work with the Environmental Public Health Program (EPHP) within the Alaska Section of Epidemiology, to evaluate human health hazards posed by the presence of toxic substances in the environment. Environmental exposure to toxic substances may occur as a result of emergency events, improper hazardous waste disposal, global transport and deposition, naturally occurring deposits (e.g. metals), or increased mobilization due to climate change. The EPHP team conducts surveillance activities, epidemiological investigations, and toxicological risk assessments to identify and characterize health risks associated with exposure to toxic substances.

Our program objectives are to develop intervention strategies to reduce or eliminate exposures, foster two-way communication with affected communities, and to provide the public with information about the health risks associated with hazardous substances. Current program priorities include responding to groundwater contamination by toxic substances (including per- and polyfluoroalkyl substances, sulfolane, and abundant naturally-occurring arsenic), childhood lead exposure prevention and surveillance; and developing a protocol to ensure child care facilities are free of environmental hazards.

Within the aforementioned program priorities, we have a number of potential projects for fellows to choose from and we will tailor specific aims and projects to the interests of the incoming fellow. Additionally, because the EPHP is located within the Section of Epidemiology, fellows here have opportunities to participate in outbreak investigations, public health preparedness, and surveillance activities, and will work with experienced epidemiologists from several subject areas.

Alaska’s geography and demographics make this site unique. Fellows may be asked to travel to small communities in the state—some of which are accessed only by small airplane—for outreach activities or exposure/outbreak investigations. Living in Anchorage provides an opportunity to explore Alaska, with world class state and national parks accessible from town, and a unique and challenging place to practice public health and epidemiology.

Day-to-Day Activities

Responsibilities and activities will vary according to the specific projects chosen and the experience desired by the fellow. General position functions may include managing and analyzing surveillance data, public outreach and educational campaign activities, assisting in investigations, and communicating findings, conclusions, and/or risk through a variety of mediums to a diverse range of audiences. The fellow will attend team meetings, as well as regular meetings with mentors.
**Potential Projects**

**Surveillance Activity**

Alaska Lead Surveillance Program Improvement

The EPHP oversees Alaska’s Child Lead Poisoning Prevention activities, which include a cooperative agreement with the Centers for Disease Control and Prevention to address and prevent childhood lead exposure. The EPHP receives all blood lead level test results in the state for both adults and children, and maintains a large surveillance database of these reports. This wealth of data provides many analytical opportunities for a fellow interested in surveillance, data linkage, and data analysis. The objectives of child lead poisoning prevention are to increase blood lead testing, educate the public and health care providers on the health effects and hazards of lead exposure, and prevent and mitigate childhood exposure to lead. For this work to be successful, it will be important to bolster blood lead testing in the areas and populations with the highest risk of lead exposure. The CSTE fellow will support this effort by conducting data linkage and analysis of risk factors and blood lead levels. This may include mapping of testing coverage, linkage with Medicaid data, or surveillance for higher-risk populations such as immigrants, occupationally-exposed workers, or students in schools with lead-containing water pipes or fixtures. Alaskans are exposed to lead in many ways different from other states, such as through mining, subsistence hunting, and leaded aviation gas. The EPHP hopes to address the risk of these exposure sources through thoughtful analysis of data, public education, and partnership with local and state agencies.

**Surveillance Evaluation**

Evaluation of the Alaska Blood Lead Surveillance System

Water resources (used for drinking, recreation, irrigation, and other purposes) can become contaminated by a wide variety of pathogens, chemicals, pharmaceuticals, and other toxic materials. Contamination sources include wastewater and home septic systems, domestic and wild animals and their waste products, pesticides and herbicides, and chemicals and fuels used in urban and industrial environments. Other contaminants may be found naturally in the environment. Both heavy precipitation and drought can increase the risk for contamination of surface and ground water. Continued warming and changes in precipitation patterns as a result of climate change are expected to increase the risk for water contamination and associated disease.

The fellow will be responsible for utilizing historic weather data, drinking water quality data (public water systems and private wells), recreational water quality data, and reportable disease data to assess the impacts of temperature and precipitation patterns on the contamination of water sources and subsequent outbreaks of diseases like cryptosporidiosis and giardiasis. Once the historic relationship between these factors has been established, climate projection data will be used to assess potential increases in water contamination events and waterborne disease outbreaks in the future. The fellow will also explore using geospatial risk factor data to identify and map locations in Vermont that may be particularly vulnerable to climate-related impacts on water quality.
Major Project  
**Addressing PFAS Contamination in Alaska**

Since 2015, groundwater contamination with per- and polyfluoroalkyl substances (PFAS) has been a major issue in Alaska. There are multiple known PFAS plumes in Alaska that the Environmental Public Health Program (EPHP) is involved with. The EPHP attends community meetings when they occur for each of these plumes to help answer questions on the health effects of PFAS and also to do presentations on the health effects of PFAS. Our group also produces education materials in the form of fact sheets for each site to inform the public about PFAS issues in their area. For this project, the fellow would help with all aspects of our work on the PFAS sites. They would participate in the creation of education materials and attend community meetings to learn about public involvement in environmental issues. Eventually, the fellow would learn enough of the issue that they could assist in the public’s inquiries to our office about PFAS contamination.

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Additional Project  
**Syndromic Surveillance Project Opportunities**

Syndromic surveillance is a system that allows public health to keep in touch with the health of the community in real time. It can allow for rapid identification of possible outbreaks and problems, help public health keep track of ongoing issues, and provide situational awareness about the community. The EPHP regularly interfaces with syndromic surveillance data for issues related to Environmental Health, such as looking into increased hospitalizations resulting from exposure to wildfire smoke and using findings to better develop health education materials. The fellow will have the opportunity to lead a syndromic surveillance project and/or assist our state, local, or tribal partners in such a project.

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Additional Project  
**Choose Safe Places for Early Care and Education**

The EPHP has undertaken the Choose Safe Places for Early Care and Education initiative funded by the Agency for Toxic Substances and Disease Registry. This project aims to ensure that new childcare facilities are located in areas free of environmental hazards. The fellow would join our program in as we begin to work on changing regulations to better identify potential environmental hazards near proposed childcare facilities. The fellow will engage with our partners as we test and adjust the program in order to make it the most effective model for a statewide program.

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**Preparedness Role**

The EPHP participates in preparedness activities related to chemical spill and exposure response, which the fellow will participate in. The fellow will also be able to participate in infectious disease outbreak response in collaboration with the Section of Epidemiology's Infectious Disease program.
**Additional Activities**

One goal of the EPHP is to develop its Environmental Public Health Tracking capability. The CSTE fellow will have access to mapping software and environmental public health data that could form the basis of Environmental Public Health Tracking efforts. The fellow will also help to write and publish Epidemiology Bulletins, which inform Alaska’s public and health care providers on issues of public health concern.

**Mentors**

**Primary**

Joseph McLaughlin MD, MPH
State Epidemiologist

**Secondary**

Sarah Yoder MS
Environmental Public Health Program Manager