Environmental Health/Occupational Health

Description:

The CSTE Epidemiology Fellow will participate in a wide variety of applied epidemiology experiences within the Chronic Disease and Environmental Epidemiology (CDEE) Section of the Minnesota Department of Health (MDH). The CDEE Section includes four major program areas:

(1) the Minnesota Cancer Surveillance System;
(2) the Center for Occupational Health and Safety;
(3) the CDC-funded state asthma program and other activities primarily related to chronic respiratory diseases; and
(4) the CDC-funded and state-funded Environmental Public Health Tracking and Biomonitoring programs.

CDEE currently includes about 48 staff, including six staff with doctoral degrees and 14 with masters degrees. The section enjoys a unique relationship with the nearby University of Minnesota School of Public Health. Four section staff are adjunct professors in the School of Public Health and many section staff have obtained master's or doctoral degrees while working at MDH (currently we have two PhD candidates). Also, many students at the School of Public Health are able to serve internships at the MDH. MDH staff and University faculty frequently serve as co-investigators on a variety of studies and projects. More information about the activities of the CDEE section can be found at our web page at: http://www.health.state.mn.us/divs/hpcd/cdee/index.html

Day-to-Day Activities:

The Fellow will have an opportunity to participate in a variety of section activities, depending on background and interests. The three major areas of study will include the following:

1. Development and Utilization of Occupational Health Indicators
    a. CSTE and NIOSH have previously developed a set of occupational health indicators to be used in monitoring trends and identifying priorities for occupational health and safety interventions. These occupational health indicators include such items as workplace injuries and illnesses reported by employers, work-related hospitalizations and deaths for specific conditions such as pneumoconiosis, asbestos-related cancer, and elevated adult blood lead. These data will be obtained from existing sources such as the state labor department, hospital discharge data, state cancer registry, state mortality records, and other sources as required. CDEE has applied for a NIOSH surveillance grant to support these activities. While the specific opportunities for a Fellow will depend in part on the outcome of the NIOSH grant application , the Fellow will have opportunities to collaborate with other CDEE epidemiologists to: (a) collect and analyze Minnesota data for 19 specified occupational health indicators using existing data systems based on criteria established by CSTE (2009); (b) identify and maintain relationships with agencies, organizations, groups, and individuals who can provide and/or utilize

appropriate surveillance data; (c) develop and implement strategies to disseminate and publish surveillance results, their interpretations, implications, and conclusions; (d) review Minnesota's and other state statutes regarding the reporting of occupational diseases and hazards and develop recommendations as to the feasibility and utility of occupational disease reporting systems; (e) update and revise MDH's "Work Safe Work Smart" curriculum targeted to adolescents entering the workplace.

2. Development, Evaluation, and Implementation of Environmental Public Health Indicators
    a. Since 2007, CDEE has been funded by the state legislature to conduct the Environmental Health Tracking and Biomonitoring (EHTB) program. The EHTB program consists of two major program areas: (1) the development and implementation of environmental public health indicators (consistent with CDC/CSTE guidelines), and (2) the design and implementation of four pilot biomonitoring projects. In 2009, CDEE successfully applied for a five-year CDC implementation grant to become part of the national Environmental Public Health Tracking (EPHT) program. These additional resources will allow the MDH to greatly expand the development and implementation of the indicators and to develop a web portal for access and dissemination of environmental public health data and information. The Fellow will have an opportunity to develop and implement an existing indicator and/or to identify and evaluate a new environmental public health indicator. Through an EPA grant, CDEE is also evaluating the use of environmental health indicators (such as hospitalizations for cardiovascular disease and asthma) to monitor measurable health impacts of changes in environmental quality, such as reductions in fine particulates due to conversions of coal-fired power plants and reduced sulfur in diesel fuel. A current (2008 class) CSTE Epidemiology Fellow is utilizing software developed by CDC to facilitate analysis of ambient environmental data and health outcome data (case-crossover analysis) and the Fellow will have an opportunity to learn these cutting-edge analytic techniques and assist with the analyses for this project.

3. Other Activities

The candidate will have additional opportunities to collect, examine, and interpret public health data sets and/or participate in implementation strategies. Three focus areas include:

(a) Asthma: Several asthma related opportunities exist in CDEE for an epidemiology Fellow. CDEE has had a CDC-funded asthma initiative since 2001. In 2009, CDEE was again awarded a 5-year CDC Asthma Implementation Grant. The Fellow will work closely with an asthma epidemiologist in examining BRFSS asthma data along with other sources of asthma surveillance data. In addition, the Fellow will have an opportunity to work with Asthma program staff and other stakeholders to develop and implement a strategic plan for work-related asthma.

(b) Adolescent work and injury data: Through a previous NIOSH-funded surveillance grant, data are available from a longitudinal study of work experiences and injuries among 14,000 rural Minnesota adolescents. In addition to work and injury experiences, this data set also contains items such as BMI, smoking, alcohol use, sleep hours, seat belt use, etc. The Minnesota Student Survey also

provides a significant data set of behavioral and health indicators for Minnesota adolescents. Many additional analyses and issues could be addressed with these datasets.

(c) Linkage and follow-up studies of occupational cohorts: CDEE has three historical occupational cohorts that can be examined by a Fellow through linkage studies or classic follow-up protocols. The iron mining cohort includes approximately 70,000 individuals ever employed in Minnesota's iron mining industry. CDEE staff are currently collaborating with Univ. of Minnesota faculty on a series of studies of this cohort. The Conwed cohort consists of 5,700 individuals previously employed at a ceiling tile manufacturing plant during the years in which asbestos was used in the manufacturing process. A previous respiratory morbidity study demonstrated a high prevalence of radiographic abnormalities among this cohort. The Highway Maintenance Worker cohort consists of 5,200 workers employed by the MN Dept. of Transportation between 1945 and 1989. Previous follow-up studies of this cohort have been published

Potential Projects:

As described in the Anticipated Day-to-Day Activities, there will be many opportunities for data analysis utilizing many existing surveillance data sets as well as data sets developed from previous or ongoing studies. The Fellow will have opportunities to develop and evaluate indicators as part of the environmental public health tracking program or as part of occupational health surveillance. For example a current CSTE Fellow compiled and evaluated various sources of data for carbon monoxide poisonings. A previous CSTE Fellow (now employed in CDEE) compiled and evaluated surveillance data from the birth defects information system at MDH. And as previously described, there will be opportunities to develop additional analytic skills such as case-crossover and time-series analyses examining the impact of particulate matter reductions on respiratory and cardiovascular hospitalizations.

Emergency Preparedness Role:

CDEE is currently engaged in planning activities with the MDH Office of Emergency Preparedness to develop plans for long-term surveillance activities as part of the State All-Hazards Emergency Response Plan. The candidate will participate in the emergency planning activities and discussions related to occupational, environmental, and chronic disease surveillance. All CDEE staff are expected to complete a series of training classes (live or web-based) related to emergency preparedness. A current CSTE Fellow participated in table top exercises for radiological emergencies and it is highly likely that many opportunities will exist for a Fellow to actively participate in wide range of emergency preparedness activities and planning.

Assignment Location: St. Paul, MN

Primary Mentor: Allan Williams, MA, MPH, PhD
Epidemiologist and Supervisor, Center for Occupational Health and Safety Program

Minnesota Department of Health

Secondary Mentor: Jean Johnson, MS, PhD
Principal Epidemiologist and Director of Environmental Public Health Tracking and Biomonitoring
Minnesota Department of Health