



# ANNUAL REPORT

July 2020 - June 2021

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**Heartland** CENTER FOR OCCUPATIONAL  
**Health & Safety**

# Summary

THE VISION OF THE Heartland Center for Occupational Health and Safety is to be the leading educational and outreach resource for workplace safety and health in the states of Iowa, Kansas, Missouri and Nebraska (Region VII). Its mission is to reduce injuries, illnesses, and fatalities of workers by expanding and strengthening the occupational health and safety workforce with well-trained and well-informed professionals.

The Heartland Center serves as a resource for Federal Region VII and other regions of the US by providing interdisciplinary graduate-level training as well as continuing education and outreach for practitioners and researchers in professions related to occupational health and safety (OHS). The Heartland Center is well positioned to address OHS issues unique to the region by preparing trainees with knowledge and experience in

the discipline areas most relevant to the needs of workers in this region. Heartland Center strengths include: a rigorous planning and evaluation structure; the productive research capacity of its faculty; a commitment to interdisciplinary training and research, active continuing education and outreach programs, and institutional support of Center activities.

The Heartland Center has six graduate-level academic training programs focusing on industrial hygiene, occupational safety, agricultural safety and health, ergonomics, occupational epidemiology, and occupational injury prevention. The Center's active continuing education and outreach programs reach thousands of practitioners, utilizing both traditional educational methods as well as innovative distance-education technology.

# Key Personnel

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The major rationale for the Heartland Center is to address OHS problems unique to Federal Region VII, in particular a demand for trained OHS professionals and the high rates of occupational disease and injury among the rural population in this region.

The Heartland Center trains over 35 graduate-level students each year, which directly influences the number of trained OHS professionals available to Federal Region VII and elsewhere in the country. Our graduates obtain jobs directly related to their training in industry, academia, and government agencies.

The Center's continuing education program, which serves nearly 1200 professionals annually, improves their ability to reduce the high regional rates of occupational disease and injury. The Center also reaches out to over 13,000 regional businesses through an outreach program that provides consultation and current information to increase awareness of occupational health and safety issues in Region VII.

# Symptoms of Depression Among Cooperative Dairy Farmers

FARMING IS AN OCCUPATION with high rates of depression and suicide. To understand whether organizational resources and social support impact farmers' depression risks, Yanni Liang, Agricultural Safety and Health Program, PhD 2021, surveyed dairy farmers who belonged to agricultural cooperatives. Farmers who had access to cooperative resources such as educational opportunities and mentorship programs reported decreased symptoms of depression. In addition, farmers who had someone to listen to, consult with about farm operations, and assist with farm chores reported decreased symptoms of depression. Interestingly, farmers who were involved in governing cooperatives such as participating in policy discussions reported increased symptoms of depression. Our findings suggest that organizational resources and social support influence mental health risks among farmers. This study was published in the International Journal of Environmental Research and Public Health.

## Heartland Center Trainees Participate in Hazard Mapping Exercise

IN THE REQUIRED COURSE, Occupational Health, Heartland Center trainees work in interdisciplinary teams to develop skills in identifying occupational hazards, developing OSH intervention strategies and evaluating intervention effectiveness. Most recently, trainees participated in a hazard mapping exercise where they were asked to draw their current or a recent workplace and provide an illustration of traditional occupational hazards (e.g., physical, biological, chemical) as well as nontraditional hazards (e.g., stress, discrimination, violence).



This exercise was included in a lecture delivered by Dr. Diane Rohlman, Director of the Agricultural Safety and Health program. Students presented their teams' hazard maps of a university lab, farm, pediatrician's medical office, shipyard loading dock and outdoor work.

# Agricultural Safety and Health Alumni Receives Outstanding Alumni Award



DR. DWIGHT FERGUSON WAS awarded the Outstanding Alumni Award from the College of Public Health at the University of Iowa. Dr. Ferguson graduated from the Agricultural Safety and Health Program in 2012.

His research examined zoonotic diseases among veterinarians, farmers, and poultry handlers and the effectiveness of control methods to protect workers from methicillin-resistant *Staphylococcus aureus* (MRSA). After graduation he worked as a safety and health manager at West Liberty Foods, a meat processing facility. He also worked as a consumer safety officer with the Food and

Drug Administration and has conducted inspections of human and animal food producing facilities.

Dr. Ferguson is currently with the Office of the Assistant Secretary for Preparedness and Response in the Department of Health and Human Services. In his role he plans and coordinates response to federal emergencies. These have included recovery efforts in Puerto Rico after Hurricane Maria, assessment of wildfires in California, and safety and infection control at a nursing home and an Indian Health Service Medical Center. In 2018 Dr. Ferguson presented some of his experiences with students in the College of Public Health.



# Trainee Identifies Motor Vehicle Safety for Law Enforcement as a Public Health Priority

Occupational Injury Prevention trainee, Hope Tiesman, graduated with a PhD in Epidemiology from the University of Iowa in 2007. For nearly 15 years since graduation, she has worked as a Research Epidemiologist with the Division of Safety Research at NIOSH, where she identified motor vehicle incidents to be the leading cause of on-duty death among law enforcement officers in the U.S. and established motor vehicle safety as an occupational safety and health (OSH) priority for law enforcement.

Hope has used multiple national and state surveillance systems to identify the magnitude and circumstances of motor vehicle incidents, and her work has been highly cited by researchers and practitioners, including the International Association of Chiefs of Police where she serves on the board as a research advisor. In an interview conducted by the UI Injury Prevention Research Center, Hope stated, “The thing I like most about my job is the ability to really focus on the betterment of the American worker. As a federal employee, I am able to solely focus on research and making the workplace a safer place.”

We are proud of the leader Hope has become in occupational safety and health and look forward to following her continued success.



# Working from Home and Ergonomics

Like many organizations, the University of Iowa required non-essential employees to work from home following the onset of the COVID pandemic. Recognizing the potential impact of the pandemic on the mental and physical health of employees, researchers from the Heartland Center, the NIOSH-funded Healthier Workforce Center of the Midwest, and University of Iowa's Tippie College of Business collaborated to administer the longitudinal UI Employee Well-Being Survey.

In addition to several validated measures of mental health, well-being, and occupational psychosocial stress, the survey included measures of musculoskeletal pain, the computing equipment used at home, and features of the home office working environment. Initial data collection occurred in May-June 2020 with follow-up data collection every three months until April-May 2021.

Using data collected in May-June 2020 and at the first follow-up in August-September 2020, ergonomics trainee Gordie Mitchard examined associations between both the computing equipment used and features of the home office working environment and musculoskeletal pain of the low back, neck/shoulder, and elbow/wrist/hand body regions. He also explored how changes

made to the home work environment affected the experience of musculoskeletal pain.

Key results of Mr. Mitchard's analyses suggest employees who had an adjustable chair, the ability to support the arms while working, and the ability to alternate between sitting and standing experienced 38-56% lower odds of reporting musculoskeletal pain (depending on body area) compared to employees whose home offices lacked these features. In addition, among the subset of employees reporting pain in April-May 2020, those who made adjustments to the home office environment (e.g., a new computer, an additional display, a new chair, and a new desk, among others) were 70% less likely to report elbow/wrist/hand pain in August-September 2020 compared to those who made no adjustments.

A key strength of Mr. Mitchard's analyses was the consideration and control of confounding by a large number of factors associated with musculoskeletal pain. Overall, his results offer employers a simple, low-cost set of home office features to consider with respect to the health and well-being of remote employees.

# Industrial Hygiene Trainees Provide Voluntary N95 Fit-Testing Service

SEVEN INDUSTRIAL HYGIENE TRAINEES, under the supervision of Professor Renee Anthony, recently volunteered to conduct fit-testing of N95 face filtering respirators for faculty, staff, and students in the College of Public Health. Over five days, they fit-tested and educated 83 people.

The trainees provided respirator education, performed qualitative fit-testing, and kept track of required paperwork all while following COVID-19 distancing and disinfection protocols. Those involved were industrial hygiene trainees Rebecca Hertges, Lexi Pratt, Ashley Anderson, Kelsey Strandberg, Hannah White, and Emma Smaellie, along with occupational/injury epidemiology trainee Victor Soupene.

“This service-learning opportunity gave our students a chance to learn and demonstrate basic industrial hygiene skills and the opportunity to develop communication skills needed to explain this process to an audience unfamiliar with requirements for this important PPE,” says Anthony. Voluntary-use N95s were provided to those in CPH who wanted to wear these respirators during the COVID pandemic, and the fit-testing assured users that what they were wearing would be an effective barrier against the virus causing COVID-19.

# Trainees Garner Real-World Experience in the Industrial Hygiene Internship Track

TRAINEES IN THE INDUSTRIAL Hygiene Program can now select between a thesis or internship track. In the internship track, trainees must complete a project that involves a minimum of 150 hours in the field. They must write a report and present their findings.

Six MS trainees opted for the internship track in the second year of its offering.

Two internships were devoted to better understanding and control of COVID: “Effectiveness of local ventilation controls to reduce respirable concentrations in a multi-chair dental clinic” (Nicholas D’Antonio); and “Implementing safety measures in a manufacturing setting during COVID-19 pandemic” (Nastaran Moradi).

Two involved monitoring for respirable crystalline silica: “Respirable crystalline silica monitoring in the construction industry” (Tori Liles); and “Airborne monitoring for dust and hex chrome at a corn wet-milling operation” (Matthew Lillie). Another two show the breadth of the topics under study: “Evaluation of chemical exposures in plastic injection molding” (Carter Focht); and “Noise dosimetry of natural gas utility workers” (Lindsay Heck).

