

WCAHS Current NIOSH Funded Projects

California

Western Center for Agricultural Health & Safety (WCAHS)

University of California, Davis
530-752-4050
agcenter.ucdavis.edu

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Administration & Planning Core

Marc Schenker, MD, MPH
Director, WCAHS
University of California Davis
530-752-5254
mbschenker@ucdavis.edu

Sandra Freeland
Center Manager, WCASH
University of California Davis
530-752-5253
slfreeland@ucdavis.edu

Provide oversight and management for the Center; ensure that projects and core activities are properly integrated; that timely progress is made on projects; that pilot/feasibility projects are implemented; that outreach efforts take place; and that the data sharing plan is implemented.

Evaluation Program

Julie Rainwater, PhD
UC Davis Health System
916-703-9189
julie.rainwater@ucdmc.ucdavis.edu

Outreach Program

Stephen McCurdy, MD, MPH
UC Davis Medical Center
530-754-7635 | 530-752-8051
samccurdy@ucdavis.edu

Xochitl Castaneda, PhD
University of California Berkeley
510-643-1291
Xochitl.Castaneda@berkeley.edu

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Pilot/Feasibility Projects and Emerging Issues Program

Frank Mitloehner, PhD
University of California Davis
530-752-3936
fmitloehner@ucdavis.edu

1. Effects of California agricultural particulate matter in a murine intranasal sensitization model of allergic airway inflammation

Kent Pinkerton, PhD
University of California, Davis
530-752-8334
kepinkerton@ucdavis.edu

Using a murine intranasal sensitization model of allergic airway inflammation and PM collected from various agricultural, rural and urban sites in the Sacramento and San Joaquin regions of California, the goal of the proposed research is to enhance our knowledge of the relationship between agricultural PM, alone and relative to other PM sources and source mixtures, and adverse health effects; thereby, better approaches to managing exposure risks and regulating air quality will be established. A novel approach to collecting ambient, size-segregated PM will be employed to provide both single pollutant (e.g., single source) and multi-pollutant (e.g., source mixture) PM samples for subsequent toxicological studies.

2. Using large national datasets and econometrics in agricultural injury research

J. Paul Leigh, PhD
University of California, Davis
530-754-8605
pleigh@phs.ucdavis.edu

The overall goal is to demonstrate how large, reliable, national data sets, combined with econometric techniques, can be used to address significant questions facing agricultural stakeholders including health professionals, researchers, farmers, policy makers, unions and trade groups. These data sets are specifically designed to provide information on the safety and health of farm owners, their children, farm managers, contractors and workers.

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3. Impacts of new caging laws in California on worker health and safety in layer hen facilities

Jerold Last, PhD
University of California, Davis
530-752-6230
jalast@ucdavis.edu

California voters passed Proposition 2, which requires egg-laying hens be confined only in ways that allow these animals to lie down, stand up, fully extend their limbs, and turn around freely. Project 3 proposes to use a before and after testing strategy to determine the impact of changes in animal housing on the workers in otherwise similar egg production facilities. We have put together a new research team with expertise in indoor air quality monitoring, whole animal toxicology, and human subjects research to perform field studies that examine the chemistry and toxicology of indoor air and the potential for allergic sensitization of workers in the egg production industry during the period of transition from conventional battery cages to Proposition 2-compliant animal housing. The new information generated by this anticipatory research will be disseminated to managers and workers in the egg production facilities to encourage the adoption of best occupational health and safety practices in this rapidly changing industry.

4. Rapid assays for human and environmental exposure assessment

Bruce D. Hammock, PhD
University of California, Davis
530-752-7519
bdhammock@ucdavis.edu

The translational goal of this project is to develop improved tools for the detection of pesticides in farmworkers and landscape workers, and apply these tools to determine exposure levels. Development of new immunoassays for pesticides used heavily in western states will be generated, particularly for the herbicides 2,4-dichlorophenoxybenzoic acid (2,4-D), glyphosate, and paraquat and the insecticides chlorantraniloprole and the class of pyrethroids.

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5. Reducing the risk of heat-related illness in western agricultural workers

Marc B. Schenker, MD, MPH
University of California, Davis
530-752-5254
mbschenker@ucdavis.edu

Missing from occupational studies on factors contributing to HRI are considerations of the metabolic heat load from working in diverse agricultural environments, and the socio-cultural factors affecting the mostly immigrant workers' work practices/behaviors. Without thorough understanding of these aspects, effective strategies to reduce agricultural HRI are diminished. This multidisciplinary effort brings together investigators from medicine, epidemiology, public health, physiology, anthropology and community outreach/education who are uniquely positioned to address HRI in agricultural populations. Our goal is to obtain novel data on internal body temperature as it relates to crop type and geography, external heat and internal metabolic loading, including accounting for work type, personal factors, and obtain critical information on knowledge, work practices and social-cultural issues that impact a worker's decisions with regard to HRI prevention.

6. Effects of Orchard Ladder Rung Spacing on Agricultural Workers

Fadi Fathallah, PhD
University of California, Davis
530-752-1612
fathallah@ucdavis.edu

The main goal of the proposed research is to reduce the number of falls from ladders in orchards, through an alternative ladder or set of ladders designed to better suit the anthropometry of specific worker populations. With a research design focused on optimum rung spacing, the improved orchard ladder is expected to reduce worker force exertions, fatigue, and self-reported pain, as well as a potential increase in worker stability during climbing activities or unexpected ladder movement or foot slippage.