



UC DAVIS
Western Center for
Agricultural Health and Safety



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Kent E. Pinkerton, Ph.D., University of California, Davis



Photo credit: CAES, UC Davis

Key Personnel

Kent E. Pinkerton, Ph.D.
Director
kepinkerton@ucdavis.edu

Fadi Fathallah, Ph.D.
Deputy Director
fathallah@ucdavis.edu

Heather Riden, M.A.
Program Director
heriden@ucdavis.edu

Christopher Simmons, Ph.D.
Director of Outreach
cwsimmons@ucdavis.edu

Farzaneh Khorsandi, Ph.D.
Pilot/Feasibility Program Director
fkhorsandi@ucdavis.edu

Stuart Henderson, Ph.D.
Evaluation Co-director
sthenderson@ucdavis.edu

Rebeca Giacinto, Ph.D.
Evaluation Co-director
regiacinto@ucdavis.edu

WCAHS Online

Website: aghealth.ucdavis.edu
Facebook: facebook.com/AgHealthUCD
LinkedIn: linkedin.com/company/aghealthucd
YouTube: [@westerncenterforagricultur1963](https://youtube.com/@westerncenterforagricultur1963)

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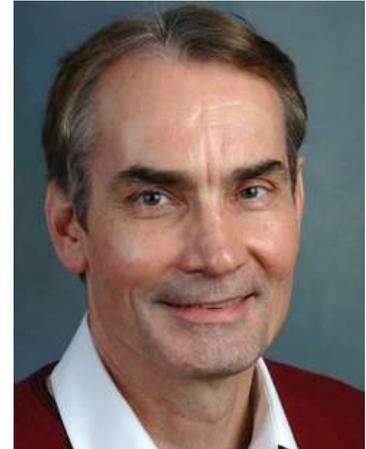


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LETTER FROM THE DIRECTOR

We are pleased to present this 2022–2023 Annual Report of the Western Center for Agricultural Health and Safety (WCAHS) with highlights and accomplishments in the first year of our new funding cycle. Every five years, the center undergoes an extensive review and evaluation of programs, with a major focus on furthering our commitment to enhancing agricultural health and safety in the west. We are now in our 32nd year, being one of two original centers funded by the National Institute of Occupational Health and Safety (NIOSH) to promote the health and safety of everyone working in agriculture.



Center events during this past year have been highlighted throughout this report. We are pleased with the diversity of activities during this year, including with our Emerging Issues Program and the impact of our outreach materials. Cutting edge research continues in ATV innovation, injury surveillance, and biosolarization to reduce pesticide burden in crop management.

We look forward to the coming year with new research projects, innovative small grants funding, and strong outreach and training programs in agricultural health and safety. Our goal is to continue to explore innovative and emerging issues in agriculture, such as autonomous technologies, as well as fostering greater cross-disciplinary collaborations with external partners in advocacy, government, and regulatory policies. The future is bright!

Professor of Pediatrics, School of Medicine
Professor of Anatomy, Physiology, and Cell Biology, School of Veterinary Medicine
University of California, Davis



CENTER SUMMARY

The western region is one of the nation's most intensive and productive with over 99,550 farms and ranches and over one million workers in Arizona, California, Hawaii, and Nevada combined. In addition, western agriculture is characterized by specialty crops, labor intensive work, and an incredible diversity of commodities.



Over its more than 30-year history, WCAHS has developed a comprehensive, multidisciplinary program dedicated to the understanding and prevention of illness and injury in Arizona, California, Hawaii, and Nevada. As one of the most hazardous occupations in the US, WCAHS has a direct public health impact by increasing the understanding of what causes injuries and illnesses in farmworkers in the west and by translating research findings, policy recommendations, and regulatory requirements into practical solutions for adoption in the field.

WCAHS is located at the University of California, Davis (UC Davis), which is ranked first in the nation for its agriculture and forestry program.

Values



- Health and safety for everyone working in agriculture
- Evidence-based solutions
- Engaged and accessible outreach and inclusive practices

Mission



Conduct innovative research, interactive trainings, and tailored outreach to improve the health and safety of agricultural workers in the west.

Vision



To be the regional leader in developing evidence-based solutions to complex safety problems in agriculture.



SECTION ONE

EVALUATION AND PLANNING CORE

The center's Evaluation and Planning Core has a hand in all center activities and achievements. In the 2022–2023 grant period, this core's highlights have been the success of the Seminar Series for inclusively communicating important center research, the timely Emerging Technology Workshop, and the Emerging Issues Program that addresses a community need.



SEMINAR SERIES

The WCAHS Seminar Series is held online every month from October to June each year. WCAHS is committed to providing live Spanish interpretation during the seminar events, increasing equity and attendance among our partners.

2,100

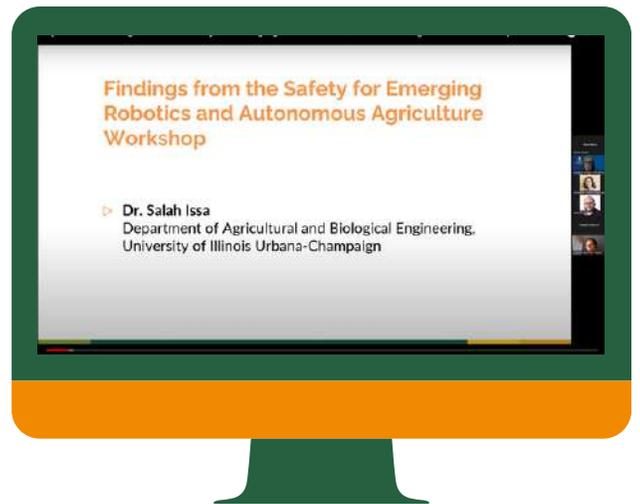
**Total Live Attendance &
YouTube Viewership**

6

**Number of Seminars in
2022–2023**

Topics presented at the 2022–2023 academic year Seminar Series included the health and safety of cannabis workers, the supply of agricultural truck drivers, wildfire smoke exposure, pesticide safety, and more.

To capture additional interest from those who may not be able to attend virtually, the Seminar Series talks are recorded and shared on YouTube in both English and Spanish. The most popular video from the Seminar Series—Findings from the Safety for Emerging Robotics and Autonomous Agriculture Workshop—has had over 1,000 views to date. Scan the QR code to the right to go to our Seminar Series playlist on YouTube.



**Scan QR code
to watch**



Emerging Technology Workshop

The Emerging Technology in Agriculture: Keeping Health and Safety at the Forefront workshop was hosted by WCAHS on Thursday, May 11, 2023, and convened over 40 participants from various fields. WCAHS organized the workshop in response to the increased interest in agricultural technology and the need to ensure the safety of farmworkers coming in contact with technologies that may pose new hazards. The overall aim of the workshop was to foster conversations on new agricultural technologies and farmworkers' safety and health.



"Robotics and new technologies are changing farms and the nature of farmworkers' tasks. As we welcome innovation, let's ensure our progress does not unintentionally jeopardize health and safety."

—Farzaneh Khorsandi, UC Davis



Event overview

To meet its goals of increasing communication and networks, the event included a series of short talks followed by round table discussions and a full group summary session.

The short talks included an overview by Salah Issa, Assistant Professor, The Grainger College of Engineering at the University of Illinois. Subsequent speakers highlighted current research efforts, safety concerns, and regulatory processes.

Roundtable discussions followed the presentations and mixed participants from different fields to promote new networks and conversations. Participants highlighted the importance of establishing a baseline of data.



Fadi Fathallah facilitating discussions.



What role can WCAHS play?

Participants who attended the Emerging Technologies Workshop provided valuable feedback on the roles that WCAHS can play in emerging agricultural technology. Specifically:

- WCAHS can continue to act as a convener of different agricultural entities to ensure that people from multiple sectors work together towards farmworker safety related to emerging technologies.
- WCAHS should continue to act as an educator by sharing stories about more desirable jobs that might come from technology advancement as well as create targeted educational materials related to emerging technologies.
- WCAHS will act as a training expert by providing guidance on the development of agricultural technology-based and culturally appropriate safety training programs developed by the center or others.
- WCAHS can be a mediator between people of differing roles in agriculture by anonymizing data to share with regulators and other parties.



The Emerging Technology in Agriculture Workshop hosted by WCAHS.



EMERGING ISSUES PROGRAM

The Emerging Issues Program is designed to deftly respond to new and unexpected safety concerns. Thus, in response to requests from community advocates and industry representatives for actionable steps to reduce COVID-19 exposure risk and improve indoor air quality, the selected Emerging Issues project for 2022–2023 was to educate partners about and disseminate a scientifically proven do-it-yourself air filtration system known as a Corsi-Rosenthal Box. Corsi-Rosenthal Boxes are proven to improve indoor air quality by reducing particles such as dust, the virus that causes COVID-19, and wildfire smoke.

To date, this ongoing Emerging Issues project has conducted trainings with community partners across California. A train-the-trainer approach was taken to multiply the number of people trained in a low-cost, DIY air filter that can be used for both COVID-19 and wildfire smoke. Trainings focused on promoting accessible and effective air cleaning for both COVID-19 and other pollutants. In addition to trainings, filters were disseminated to community-based organization offices, farmworker homes, and agriculture break rooms and offices.

6

Trainings

120

Boxes distributed

100

People trained



The WCAHS team hosting a workshop on Corsi-Rosenthal Boxes.



We have received positive feedback from training participants who have gone on to distribute Corsi-Rosenthal Boxes within their communities. The improved indoor air quality gained as a result of this Emerging Issues project is drastically affecting the lives of farmworkers in California.

“I wanted to call to thank you, I was for the first time to take a uninterrupted nap, I suffer from allergies since moving to the area and I am surprised that my hoarseness and sputum is no longer there.”
—recipient of a Corsi-Rosenthal Box distributed as a result of this Emerging Issues project

In addition to in-person trainings, we used science communication to reach a wider audience with this information. In March 2022, we published an article about Corsi-Rosenthal Boxes, which continues to be one of our most popular articles. We recently wrote a follow-up post “How and When to Change the Filters in Your Corsi-Rosenthal Box,” published online on September 18, 2023, to continue providing education related to indoor air quality.



17,000

**Lifetime
pageviews!**



Read here



SECTION TWO

RESEARCH CORE

WCAHS has a strong research program consisting of five core projects as well as annually funded seed projects known as the Pilot/Feasibility Program. All research projects and Pilot/Feasibility projects are described in the following pages.



Assessing the impact of co-exposure to agricultural wildfire emissions on California farmworker health, Kent Pinkerton

California is the most agriculturally productive state in the US and more than 50% of this farmland is in the San Joaquin Valley. As a result, the San Joaquin Valley houses the largest population of farmworkers in the US. However, vehicle emissions and farming practices result in poor air quality.

In fact, the air quality of the San Joaquin Valley fails all three tests of the American Lung Association for residents most at risk from exposure to air pollution.

Studies have shown found a link between exposure to air pollution and pulmonary, cardiovascular, and neurological health. However, nothing is known about the effects of dual exposure to wildfire emissions and existing air pollution.



Kent Pinkerton with high school students from Imperial Valley, California getting hands-on experience during a stay at UC Davis on a WCAHS-sponsored small grant scholarship.

Therefore, Dr. Kent Pinkerton and co-investigators Drs. Keith Bein and Christoph Vogel, will address the impact of exposure of both agricultural and wildfire emissions on farmworkers. A better understanding of the impact of dual exposure will allow for the establishment of more effective strategies for mitigating exposure, managing risks, heightening awareness of protective measures, and regulating air quality to improve farmworker health.

In the next year, Dr. Pinkerton and his research team will continue to collect field samples of particulate matter from ongoing air pollution in the San Joaquin Valley. In addition, the research team of Dr. Pinkerton will monitor wildfire conditions in the valley. If wildfires impact agricultural regions, a Rapid Response Mobile Research Unit and Aerosol Sampling and Measurement Platform will be deployed to collect wildfire smoke samples. Samples from both ongoing air pollution and wildfire smoke emissions will be collected using this equipment. After collection, samples will be tested and characterized to reveal the toxicity of exposure to both agricultural and wildfire emissions.



Promoting translation and addressing hurdles to adoption for biosolarization as an alternative to soil fumigation to decrease worker exposure to toxicants, Chris Simmons

Soil fumigants are a class of pesticides used to control weeds, pathogens, and parasitic pests. However, many conventional and widely used soil fumigants have been identified as toxic and/or possibly carcinogenic.

Despite mandated protective equipment, application methods, and access restrictions, exposure risks remain for agricultural workers and communities near fumigation sites. Acute and chronic exposure risks may include irritation to the eyes, skin, and respiratory system, as well as nausea, vomiting, increased risk of certain cancers, and in extreme cases, death.

Despite the known dangers, soil fumigants are still widely used across several major western crops.

Dr. Chris Simmons' research focuses on the efficacy and safety benefits of a novel pest management technology—biosolarization—relative to conventional soil fumigants. Biosolarization uses a combination of passive solar heating and microbial fermentation in the soil to inactivate soil pests. This study will use both laboratory and field tests to optimize biosolarization methods to achieve pest control in understudied cropping systems that rely on fumigation.

In the next year, lab studies will begin to adapt biosolarization to carrot production, a crop that currently employs large amounts of soil fumigants. Soil bioreactor experiments will be used to investigate soil textures, pest profiles, compatible local soil amendments, and weather conditions that are representative of western carrot production. Pest inactivation and carrot growth data will inform the design of additional lab studies and fieldwork to validate the efficacy of biosolarization in this cropping system.



A field being biosolarized. The stripes in the field are rows covered with heavy-duty, clear plastic to heat treat the soil, which inactivates pests.

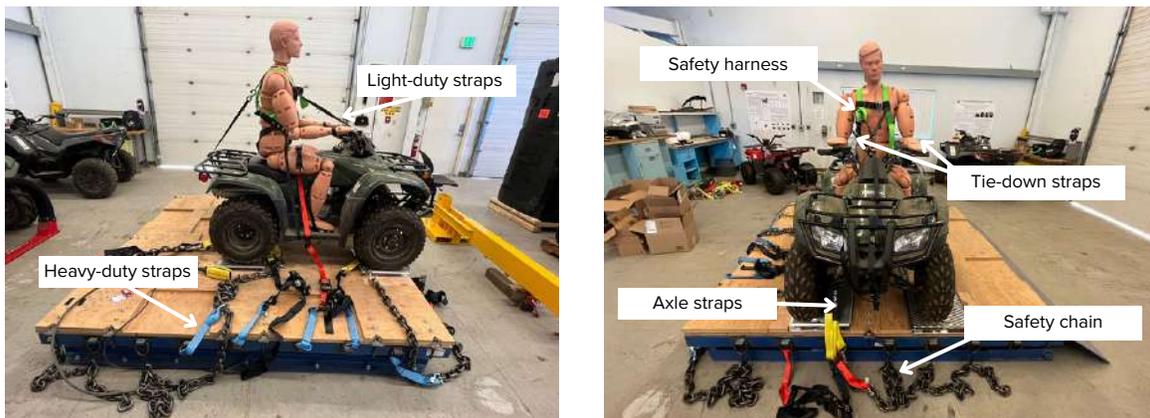


Agricultural all-terrain vehicle safety, Farzaneh Khorsandi

All-terrain vehicles (ATVs)—off-road, motorized vehicles with three or four tires—are commonly used by farmers and ranchers to apply fertilizers, inspect livestock or crops, and carry or tow implements. The instability of ATVs can lead to rollover incidents, which are dangerous and often fatal. Deaths related to the use of ATVs on farms occur yearly in the US.

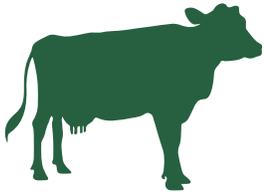
ATV incidents are the second-leading cause of injuries and deaths in US agriculture, with about 190 injuries or deaths in a year.

Despite the known dangers of ATV use in agriculture, few studies have been conducted on agricultural ATV safety in the US. Dr. Farzaneh Khorsandi is thus evaluating the stability of agricultural ATVs and determining the operation and safety performance of engineering controls (i.e., crush protection devices) to prevent deadly outcomes in the case of rollover incidents.



Test set-up for ATV stability tests.

In the next year, Dr. Khorsandi and her team will develop the terrain to be used for ATV stability tests. They will conduct rollover tests with several commercially available ATVs and will evaluate the performance of engineering controls (i.e., crush protection devices) to determine whether the safety of ATVs is increased with their use.



Mitigating the occupational exposure of farmworkers to antibiotic resistant bacteria in livestock production, Xiang (Crystal) Yang

Antibiotics are commonly used in animal agriculture in the US to control, prevent, or treat diseases. However, long-term use of antibiotics has resulted in antimicrobial resistant bacteria in agriculture.

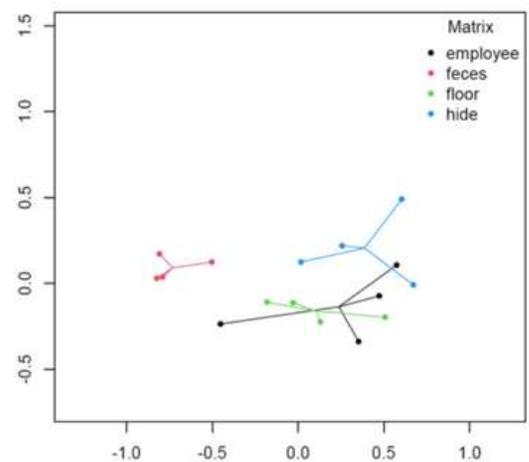
Antimicrobial resistance poses a significant health issue globally. Due to the widespread use of antibiotics in dairy production, there is a substantial concern that antibiotic use in animal agriculture contributes to antimicrobial resistance in farmworkers who are directly or indirectly exposed to antimicrobial resistant bacteria.

Dr. Xiang (Crystal) Yang aims to assess the occupational risk of antimicrobial resistance in dairy farmworkers using metagenomics. Metagenomics is an approach to investigate the structure and function of the DNA sequences of a microbial community. By defining the occupational tasks with a high risk of exposure to antimicrobial resistant bacteria, the study will lay the groundwork for future research aimed at the development of effective safety interventions.

In the next year, the research team will recruit dairy farms to participate in the study. In addition, they will work to develop, test, and validate a survey questionnaire of occupational tasks and behaviors related to exposure risks to antibiotic resistance. Then, they will begin to collect samples from participating farms and questionnaires from farmworkers.

Pilot/Feasibility Funding

This research was supported by a WCAHS Pilot/Feasibility Program grant in 2019. The PI's Pilot/Feasibility research revealed that the employees' outerwear shared high similarities to the work environment. This provides strong evidence of the transmission of antibiotic resistant bacteria between livestock production and the employees.



Non-metric multidimensional scaling ordination plot. The clusters indicate similarities between employee samples and environmental samples.



Continuous surveillance of agricultural workers' occupational health and injuries, Tim Beatty

Agricultural work consistently ranks among the most dangerous occupations in the US. However, existing data on occupational injuries dramatically understate the true burden of nonfatal injuries in the agricultural industry. In addition, surveillance of agricultural injuries is often reported at too broad a scale to efficiently allocate resources, set policy priorities, and target prevention activities and interventions. Failing to account for differences in occupational categories, crop types, equipment, and geographies may result in an inefficient use of public resources.

In 2019, the fatal work injury rate for agriculture, forestry, fishing, and hunting was 23.1 per 100,000 workers—by far the highest rate across all sectors.

With a focus on the western states of Arizona, California, Hawaii, and Nevada, Dr. Tim Beatty's research will do more with the available data. Using machine learning algorithms to extract additional information from existing surveillance data, state-specific estimates of agricultural injuries for specific crops and tasks will be generated. This means that data will be able to be related directly to injuries by state, crop type, and task.

In addition, the study will build a free dashboard to provide comprehensive data and biannual reports on occupational injuries in agriculture. The aim is that the dashboard and reports will be a useful resource for state and local policy makers, and will facilitate novel and impactful research relating to the health and safety of US agricultural workers.

In the next year, previously obtained data will be cleaned and prepared for use with the machine learning model. Additional data will be obtained from other sources including commercial partners. After gaining access to sufficient data, the researchers will implement the machine learning algorithms.



2022–2023 PILOT/FEASIBILITY AWARDEES

WCAHS' Pilot/Feasibility Program funds small-scale research projects to promote data collection and pilot projects with a focus on early stage investigators and new topics in agricultural health and safety. WCAHS also uses the program to expand its work in Arizona, Hawaii, and Nevada. In 2023, WCAHS funded four Pilot/Feasibility projects. The projects are described briefly below.



Scratching the Surface: Improving the Health and Safety of Western Agricultural Workers by Assessing Inequities and Increasing Access to Dermatological Care

Alyssa Gwen Ashbaugh, MD, UC Davis

Migrant agricultural workers have a higher incidence of skin disorders than any other industry. In California, 97% identify as Hispanic/Latinx and face vast inequities in dermatological care. We aim to assess prevalence, incidence, burden, and risk factors of skin cancer and other dermatological conditions to improve the health and safety of rural western agricultural workers.



Assessing Occupational Health Hazards of Migrant Farmworkers in Large Cannabis Greenhouse Farm in Arizona

Nicolas Lopez-Galvez, MD, MPH, San Diego State University

In recent years, the agricultural cannabis industry has been recognized as one of the fastest growing job markets in the US. Cochise, Arizona, a county that borders Mexico, is home to one of the largest indoor growing facilities of cannabis in the US and provides stable job opportunities to the migrant Latinx community residing in this region. However, occupational health and safety research on cannabis workers, including occupational hazards and health-related outcomes, remains severely underdeveloped. Therefore, this study will characterize the occupational hazards experienced by farmworkers in this region and evaluate workers' exposure to hazardous chemicals.



Improving the Performance of Agricultural Robots' Worker Detection Systems Under Adverse Light Conditions

Stavros Vougioukas, Ph.D., UC Davis

The safe interaction between humans and robots in agricultural fields is important as the industry increasingly deploys agricultural robots for labor-intensive tasks. Currently, robots use cameras and deep neural networks to detect and classify obstacles; however, cameras are affected by light conditions, causing degraded performance. Therefore, we will conduct a targeted study of the effect of adverse light conditions on the detection performance of neural networks with high dynamic range (HDR) cameras, which perform better under varied lighting conditions.



Seasonal Comparisons of Acute Kidney Injury, Health Exposure, and Heavy Metal Exposure in a Sonoran Agricultural Population

Rietta Wagoner, Ph.D. Candidate, University of Arizona

In recent decades, global research has highlighted high rates of kidney disease in agricultural populations. This phenomenon is referred to as chronic kidney disease of unknown etiology, and is likely due to multiple occupational exposures. Agricultural workers in the Arizona–Sonora border region are exposed to heat and metals on a daily basis. There is currently a lack of studies that have evaluated the relationship between heat stress, metal exposure, and decreased kidney function. Therefore, this study will assess agricultural workers' exposure to heat and metals.



SECTION THREE

OUTREACH CORE

WCAHS is dedicated to improving the health and safety of those working in western agricultural by translating scientific research into educational resources and trainings for the agricultural community. Outreach staff travel throughout the western states—particularly in California—to deliver in-person trainings, attend community events, and build relationships.



SNAPSHOTS FROM OUTREACH EFFORTS

Networking in Nevada

WCAHS outreach and education specialists have been building relationships with outreach personnel at the University of Nevada, Reno. The program focuses on reaching populations living in rural areas through clinics and a rotation of medical fellows. We shadowed staff during outreach activities and discussed a potential collaboration in the form of revising our existing health and safety print materials for Nevada.



WCAHS team at outreach events.



Figure from the pesticide-focused Frontline Supervisor Training.

Collaboration with the EPA

WCAHS Education and Outreach Specialist Teresa Andrews is currently partnering with Fabiola Estrada, of the EPA western region, on a training for frontline supervisors focused on pesticide safety. This new, interactive training focuses on how frontline supervisors can play a role in limiting farmworker exposure to pesticides and identifying illness caused by pesticide exposure. Outreach and education staff use true and false questions, real-life examples, and hands-on activities to engage participants. This training will be piloted in Spanish in Arizona, California, and Nevada in the coming year.



Puentes Network

The Puentes Network is a group of agency representatives and community leaders that aims to serve Latino communities in rural California. They hold events for promotores in California, including an annual conference. WCAHS Education and Outreach Specialist Teresa Andrews has a leadership role in the network. In addition, we collaborated with the Puentes Network to create a print resource for people and agencies who may want to collaborate with promotores to improve the health and safety of farmworkers.

65 Attendees



Participants at the recent Puentes Network event in September 2023.



Members of the Farmworker Advocacy Working Group.

California Farmworker Advocacy Working Group

The California Farmworker Advocacy Working Group represents organizations committed to centering the needs of California's farmworkers in state policy. The main goal of the working group is to recognize the essential role of farmworkers and ensure that farmworker-serving organizations have a seat at the table for the development of state policy. WCAHS provides agricultural health and safety information, answers policy implementation questions, and provides outreach resources.



TRAININGS

WCAHS' education and outreach specialists provide interactive trainings at no cost on topics essential to staying safe and healthy while working in labor-intensive western agriculture. Agricultural workers in the west predominately speak Spanish; therefore, trainings and associated print materials are offered in English and Spanish.

22

Trainings

840

People
trained



Frontline Supervisor Leadership Training.



From 2022–2023, we conducted a total of 22 trainings on the following topics:



Frontline Supervisor Leadership

Frontline supervisors play a critical role in managing and directing the workforce. They are responsible for overseeing the day-to-day performance of workers, which includes not only ensuring that production goals are met, but also that workers are healthy and safe. WCAHS offers a three-hour-long training that supports frontline supervisors with taking a leadership role for health and safety in the workplace.



Heat Illness Prevention

Our Heat Illness Prevention Training incorporates participatory adult education methods, encourages critical thinking to solve challenges, and provides important background information to understand the impact of heat on human health. The training emphasizes rights and what to do before, after, and during work hours to reduce their risk of heat illness. We also review the three key strategies to preventing heat illness while working outdoors: water, shade, and rest.



Wildfire Smoke Exposure

The Wildfire Smoke Exposure Training provides resources on wildfire smoke exposure for both employers and employees. WCAHS offers trainings for agricultural employers and employees that provide a more comprehensive and in-depth review of the health effects of wildfire smoke exposure, worker protection procedures, and more. We also offer train-the-trainer sessions for community leaders, which include more tips and practice on how to deliver key messages.



“The trainings have been such a support to our team and the Lideres!”

—Herminia



Pesticide Safety

The Pesticide Safety Training provides general pesticide safety information including what is a pesticide, different types of pesticides, and active ingredients. We then describe the symptoms of illness, what causes them, and good hygiene practices to limit pesticide exposure.



Sexual Harassment Prevention

The Sexual Harassment Prevention Training defines sexual harassment, provides examples of what it may look like, and then provides attendees with strategies for recording and reporting the harassment. Attendees receive an accordion with detailed information about reporting sexual harassment.



Sexual Harassment Prevention Trainings from 2022–2023

Sexual Harassment Prevention

What is sexual harassment?
Sexual harassment is an **illegal** form of **discrimination** and **bullying**.

It Could Look Like:

- Asking for sexual favors
- Intimidation or threats
- Offensive comments
- Rude “compliments”
- Unwelcome touching
- Suggestive images
- Vulgar gestures
- Unwanted sexual advances

What can you do?

- + **Tell the Harasser to STOP**
- + **RECORD IT:**
 - date
 - time
 - a brief description
 - names of witnesses
- + **REPORT IT:**
 - human resources
 - a supervisor
 - a manager

If the issue is unresolved, REPORT IT to:

California Civil Rights Department
(800) 884-1684

Equal Employment Opportunity Commission
(800) 669-4000

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Educational material distributed during Sexual Harassment Prevention trainings. This accordion is available in both English in Spanish at <https://aghealth.ucdavis.edu/educational-materials>.



PLÁTICAS EN CONFIANZA

WCAHS developed Pláticas en Confianza (Conversations in Trust, Pláticas) in May 2021 as a way to convene virtually during COVID-19. With content oriented towards community-based organizations, Pláticas are structured differently from a standard presentation in that an expert provides a brief, 15-minute presentation with 45 minutes reserved for questions and discussion. This gave attendees more time to engage directly with the expert and created greater opportunities for listening and connection. Sessions covered topics such as Paid Sick Leave, pesticide safety, and emergency preparedness.

15

Pláticas held

440

People reached

Key Insights

- Pláticas sessions are held both mid-afternoon on weekdays and on Monday evenings. We found that offering sessions at two different times allowed us to reach diverse audiences.
- The Pláticas space is being recognized by state and regional agencies as a new format that they are interested in participating in and have asked to be invited as guest experts. Many agencies have contacted us to propose new topics, having heard about Pláticas by word of mouth.
- Pláticas sessions provide an opportunity for agency outreach staff, public health officials, and others who have expertise on topics that affect farmworker communities to learn directly from the community and to learn how to make their presentations culturally and linguistically accessible.



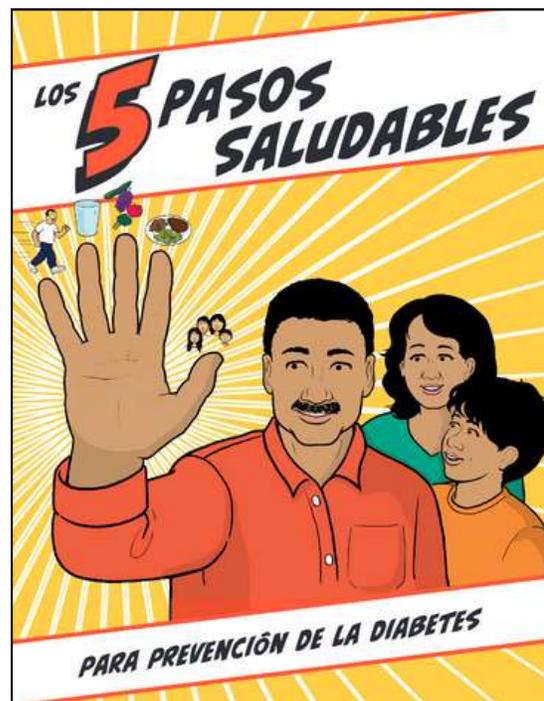
RESOURCE DISSEMINATION

WCAHS serves as a critical and trusted hub for the dissemination of important print resources to community-based organizations, farmer training organizations, and agricultural employers. The center assembles and disseminates outreach kits containing resources such as sexual harassment accordions, heat accordions, and wildfire smoke training materials. These kits are a particularly useful resources for brief encounters such as attendance at outreach events and conferences.

91,000
Total print materials distributed during Year 1

45,000
Sexual harassment prevention accordions distributed during Year 1

42,000
Heat illness prevention accordions distributed during Year 1



Our diabetes novella is available on our website in English and Spanish.

Heat Illness Prevention	Heat Exhaustion	Heat Stroke	In Case of Emergency	Reduce Your Risk
<p>Heat Exhaustion Heat exhaustion can quickly develop into heat stroke, which can lead to organ failure, coma, or even death.</p> <p>Symptoms: Nausea/vomiting Fast heartbeat Sweaty skin Headache Weakness Dizziness Cramps</p> <p>Seek medical attention if you experience these symptoms.</p>	<p>Heat Stroke</p> <p>Symptoms: High body temperature Little/no sweating Red, hot, dry skin Fast heartbeat Convulsions Confusion Fainting</p>	<p>In Case of Emergency</p> <ul style="list-style-type: none"> Remember: WATER, SHADE, REST. Call 9-1-1 and notify the supervisor. Move the person to the shade. Lower their body temperature: <ul style="list-style-type: none"> Respectfully help remove outer clothing layers. Fan them gently. Sponge or spray with cool water. If the person is conscious and not vomiting, provide small amounts of water. NEVER leave the person alone. 	<p>Reduce Your Risk</p> <ul style="list-style-type: none"> Drink enough water. <ul style="list-style-type: none"> Thirsty = dehydrated Monitor pee color and smell Limit alcohol intake Wear loose-fitting, light-colored clothing to work. Take a cool shower. Sleep in a cool room. 	

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This heat illness prevention accordion is available in both English in Spanish at <https://aghealth.ucdavis.edu/educational-materials>.



OUTREACH AND EDUCATION FUNDING PROGRAM

The overarching goal of the Outreach and Education Funding Program is to expand and enhance the topical and regional reach of WCAHS and facilitate stronger collaboration between cooperative extension personnel, academic and private educators, and WCAHS. For the 2022–2023 funding period, WCAHS funded two Outreach and Education projects. The funded projects are briefly described below.



Creating a Culture of Health Workshop Series

AgSafe

National attention to the agricultural community’s health and well-being began long before the COVID-19 pandemic. Headway has been made in the narrative; however, work still must be done in the overall industry. This project will create a series of three live workshops focused on stress mitigation. The goal of the Creating a Culture of Health Workshop Series is to provide a flexible educational opportunity via a live workshop format to teach the importance of identifying and addressing stressors and health-related issues in an effective and efficient manner. The digital nature of these live workshops will allow AgSafe to target participants in Arizona, California, and Hawaii.



Training Program for Health Professionals

CA Nurses for Environmental Health and Justice

Farmworkers experience social and physical determinants of health at a heightened level compared to the general population. Generally, occupational and environmental health is poorly integrated into nursing education. This deficit translates into missed opportunities for assessment, diagnosis, early treatment, referral, and education. We will address this issue by hosting trainings for health care professionals about using assessment questionnaires specifically developed for farmworkers. By increasing the competence of the health care workforce to address these risks, farmworker health and safety can be better promoted and protected.



LOOKING FORWARD

The WCAHS team is looking forward to a productive 2023–2024 academic year contributing to improving the health and safety of agricultural workers in the west through innovative research, interactive trainings, and tailored outreach.



WCAHS staff and scientists at a recent center retreat.