

# AgHealth News

Winter 2011 • Vol. 20, No. 1

Western Center for Agricultural Health and Safety • University of California, Davis

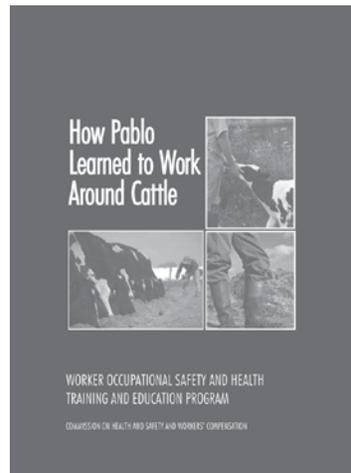
## New dairy safety training guide available in English and Spanish

The transition from small-scale dairies to large operations has led to an increased ratio of animals-to-workers in the industry, which may increase injury and illness rates. The purpose of the recently published *Dairy Safety Training Guide* is to help dairy employers educate their employees on safe practices to reduce injury and illness when working with animals and machinery.

The guide, which is available in English and Spanish, outlines instructions and provides materials for training sessions. It also includes information about maximizing employee participation in training, preparing for training sessions, the objectives of the sessions, as well as providing Cal/OSHA requirements and additional resources.

WCAHS Education and Outreach Specialist Teresa Andrews, along with Principal Investigator Frank Mitloehner, developed the Dairy Safety Training Program as part of the Worker Occupational Safety and Health Training and Education Program (WOSHTEP).

In addition to the *Dairy Safety Training Guide*, the WCAHS published a fotonovela, titled *How Pablo Learned to Work Around Cattle* (also available in English and Spanish) to enhance the training of dairy industry employees. The series of drawings outline basic safe handling



practices of cows and bulls to help workers protect themselves from unnecessary injuries.

WOSHTEP is administered by the Commission on Health and Safety and Workers' Compensation in the Department of Industrial Relations through interagency agreements with the Labor Occupational Health Program (LOHP) at the University of California, Berkeley. Partners include the WCAHS and the LOHP at the University of California, Los Angeles.

The training guide is designed to be used by dairy owners and managers and contains step-by-step instructions for conducting the training sessions as well as background information and

resources. The training section topics are identifying hazards, controlling hazards, machinery safety, animal safety, and planning for emergencies. The training methods used in this guide are participatory.

Research shows that when people are actively engaged in their own learning by discussing, problem-solving, and practicing new skills through hands-on

activities, they are more motivated to participate and commit to supporting best practices.

The Dairy Safety Training Program materials, including the fotonovela in English and Spanish may be downloaded at: [http://agcenter.ucdavis.edu/Announce/dairy\\_guide.php](http://agcenter.ucdavis.edu/Announce/dairy_guide.php) or by calling the WCAHS at 530-752-4050 for additional information.

## Grad students present work on ag-related dust exposure and musculoskeletal injury prevention

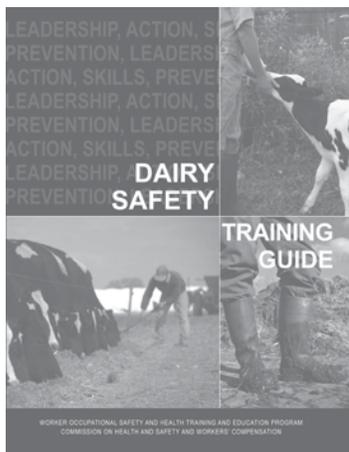
In keeping with tradition, the Jan. 10 seminar, sponsored by the Western Center for Agricultural Health and Safety (WCAHS), featured three graduate students who have been working with WCAHS principal investigators Marc Schenker, Deborah Bennett and Kent Pinkerton.

Hong Xiao, Johnny Garcia and Chris Carosino were

invited to give presentations of their work involving musculoskeletal pain in Hispanic farm workers, exposure by California dairy workers to particulate matter, and allergic airway inflammation in the San Joaquin Valley.

WCAHS Director Marc Schenker introduced Hong Xiao, an epidemiology gradu-

*Continued on page 2*



Dr. Hong Xiao, an epidemiology grad student, discussed chronic musculoskeletal pain in Hispanic farm workers.

# Mitloehner receives 2011 Outstanding Dairy Educator/Researcher award

Frank Mitloehner, an air quality specialist and principal investigator of the California Dairy Environmental Health Research Initiative (Cal-DEHRI), received the 2011 Outstanding Dairy Educator/Researcher

award at the World Ag Expo in Tulare, Calif., on Feb. 8, 2011.

The award, presented by *Western DairyBusiness*, honors Mitloehner's achievements in researching the measurement

and mitigation of greenhouse gas emissions on large dairies in California, as well as the impact of these and other pollutants on dairy workers. The award was also conferred in recognition of his work in educating farmers, regulatory staff and environmental groups on air quality and climate change, and helping them meet air quality compliance regulations.

Mitloehner's research has revealed that the levels of greenhouse gases produced by the dairy industry has declined substantially over the past decades, and that stringent regulations set in California may be excessive and impinging on the livelihood of dairy farmers.

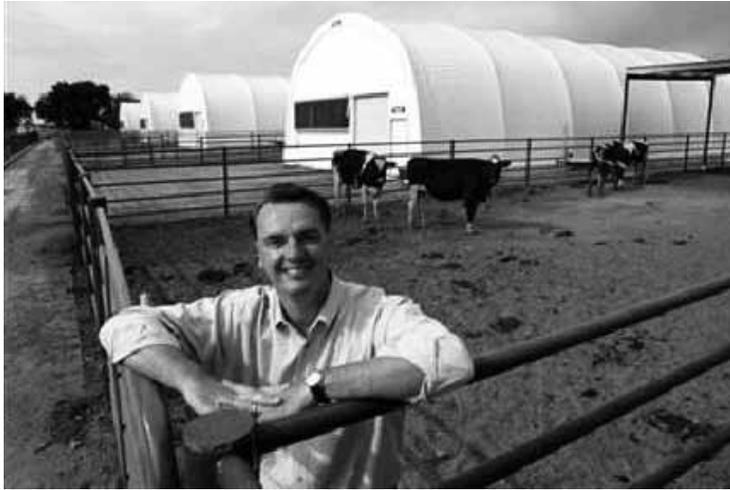
His work has furthered this point by finding that the main air pollutant on dairies is not greenhouse gases, but volatile

organic compounds from animal feed. Therefore, these emissions need to be regulated separately from greenhouse gas emissions.

Before accepting the award, Mitloehner gave a seminar on the current regulatory pressure on the San Joaquin Valley and the possibility of lessening these regulatory measures.

He discussed his research in measuring dairy emissions through his work as principal investigator of the National Air Emissions Monitoring Study in California.

Cal-DEHRI is a collaboration between UC Davis departments of Animal Science and Public Health Science, and Colorado State University. It's funded by a grant from the National Institute of Occupational Safety and Health.



Frank Mitloehner (above) found that the main air pollutants on dairies is not greenhouse gases, but volatile organic compounds from animal feed.

## Grad student seminar from page 1

ate student who received her medical degree from China, her master's degree in public health from UC Davis, and is currently working on her Ph.D. with Dr. Schenker. Dr. Xaio's presentation title was "Agricultural work and chronic musculoskeletal pain in Hispanic farm workers." Reviewing her research methods and results, Dr. Xaio concluded that chronic musculoskeletal pain is prevalent among farm workers and is associated with common work positions, such as driving tractor or other heavy farm equipment, kneeling and stooping over. Dr. Xaio says that further research should focus on developing preventive interventions for tasks associated with risk of musculoskeletal injury. These interventions should be targeted to specific types of agricultural tasks.

Deborah Bennett, a professor of public health sciences, introduced her agricultural and environmental chemistry graduate student, Johnny Garcia, whose presentation was titled, "Cross-sectional

exposure study of California dairy workers to particulate matter and endotoxin." Garcia, a Ph.D. candidate at UC Davis, has been conducting research on the air quality at large California dairies. His ongoing research is aimed specifically at (1) developing a report focusing on particulate matter and endotoxin levels for two size fractions on 13 dairies, on multiple days; (2) evaluating whether levels vary within a dairy depending on its location, time of day, weather, and between dairy characteristics, acreage and number of cows; and (3) indentifying tasks, jobs or locations that contribute to elevated levels of particulate matter or endotoxin.

WCAHS Associate Director Kent Pinkerton is working with pharmacology and toxicology graduate student Christopher Carosino. His presentation was titled "Particulate matter and allergic airway inflammation in the San Joaquin Valley." Carosino's concentration is on seasonal differences in

exposure to particulate matter. He concluded that Summer exposure to CAPs (concentrated ambient particles) in Fresno tends to exacerbate allergic inflammation through sensitization alone. Contributions include (1) Increased inflammatory cell recruitment; (2) increases in systemic inflammation; and (3) a trend toward increased intraepithelial muscosubstances.

Exposure to Winter CPAs revealed no immediate effects in absence of an inversion. He determined that chemical speciation notations include higher OC (engine emissions, on-road and off-road) and ultrafine particles.

An hour-long video and audio recording of all three graduate students' presentations is available at [http://agcenter.ucdavis.edu/seminar/webcast\\_2011.php](http://agcenter.ucdavis.edu/seminar/webcast_2011.php).



From left, Christopher Carosino and Johnny Garcia discuss their research with Drs. Stephen McCurdy and Kent Pinkerton.

# UC Davis Faculty Research Grant funds 2 pilot summer heat studies in 2010

During the last 12 years, California has set three records for highest annual temperatures since records began in 1850. The decade 2001-2010 was also the hottest on record, and the trend looks likely to continue. Although the major environmental and personal risk factors for heat-related illness (HRI) are known and California regulations have been enacted to protect workers, deaths and significant numbers of HRIs continue to occur, particularly in agriculture.

“We know the basic contributing factors that put workers at risk for heat-related illness,” said Principal Investigator Marc Schenker. They include:

- Environmental: solar radiation, conduction of heat and solar radiation from the ground, air temperature and relative humidity, lack of air movement.
- Personal: lack of acclimatization and/or fitness, inability to sweat enough to cool body, worker age, obesity, inadequate hydration (at work and at home), insufficient shade and/or break time, too little clothing or clothing that prevents evaporation of sweat.

However, we currently do not have data that would allow us to understand how much body heat is generated under different working conditions and in different agricultural environments. Most California agricultural laborers are Latino, but it is unknown what social and cultural factors affect their behavior and may cause them to work even when dangerously dehydrated or hot. Without thorough understanding of both of these aspects, effective strategies to reduce agricultural HRI are unlikely.

Two pilot studies were designed by WCAHS investigators and conducted by students and staff in the Summer of 2010 to explore physiological consequences of field work in the heat, and to learn some of the cultural beliefs about appropriate work clothing for the summer harvest season.

A previous survey that assessed the knowledge of the risks of heat illness conducted among Central Valley farmworkers concluded that 89 percent had little or no concern about heat-related risks, and only 24 percent were aware of the length of time it takes the body to acclimatize to heat.

Twenty-eight Yolo County farm workers (both employees of contractors and individual farm operators) were interviewed in August and early September 2010 to learn about their clothing choices and preferences. Only four (14 percent) were female, reflecting the local population of farm workers. Because they wanted protection against environmental exposures, nearly all wore hats, and many wore sweatshirts—even in the heat of the day. They were asked to state what they would like clothing to protect against, and the most popular response was “heat” followed by “dust” and “pests” (See table below).

It is evident from these results that rugged clothing that is

multi-functional would be welcomed by the workers. The clothing needs to protect workers against dust, chemicals, insects and sunlight, while allowing evaporation of sweat so they could effectively regulate their internal temperature as they work. Collaboration with Dr. Gang Sun, professor of textiles and clothing at UC Davis, is planned.

A second study took place at a Yolo County farm in August 2010. This was to test whether a non-invasive internal temperature probe could be used in farm workers (as it has in athletes and fire workers) to monitor body temperature. Ten farm workers swallowed a pill about the size of a fish oil capsule at the beginning of their shift and wore a receiver on their belts to capture real-time data of their internal body temperature. They also wore a heart rate monitor as an indicator of work intensity.

Throughout the day, WCAHS student research assistants

monitored ambient temperature and other weather conditions as well as tasks workers were performing. As the day progressed, correlations could be seen between periods of sustained work that raised the workers’ heart rate and increased internal body temperature. In addition, after periods of rest, the internal temperature decreased, but not back to the original level – the outside, ambient temperature was increasing the “at rest” body temperature. The highest internal body temperature measured in the pilot study was 40.2°C – very nearly clinically hyperthermic for a human.

The two pilot studies produced very useful information and indicated that a larger study with sufficient numbers of workers to allow statistical analysis is warranted and feasible.

For more information, contact Diane Mitchell at [dc Mitchell@ucdavis.edu](mailto:dc Mitchell@ucdavis.edu).

## Farm workers identified the following hazards they would like clothing to help protect against

Hazard type	Sunlight	Heat	Bugs / insects	Cool mornings	Dust	Chemicals	water	wind
Percent	57	75	68	32	68	43	14	39

## Tau Lee presents community-based work at WCAHS seminar

The Dec. 6, 2010, WCAHS seminar series welcomed Pamela Tau Lee of San Francisco, whose research combines the cutting edge of the academic world and grassroots organizations in communities. Tau Lee, who served as a coordinator of public programs for the School of Public Health’s Labor Occupational Health Program at UC Berkeley, is locally and nationally recognized for her work in the area of community-based research with workers and the environmental justice movement.

Tau Lee’s presentation focused on the current and quite remarkable report on San Francisco’s Chinatown sweatshops, and includes the results of 400 workers interviewed by their peers. Earlier in her career, when she knew she must help to organize these workers for better working

conditions and wages, almost all of whom were of color (African American, Filipino and Chinese), she was advised that “If you want to be a good organizer, you have to be a worker.”

“So, I became a room cleaner to really understand the work,” said Tau Lee.

A video link to Pamela Tau Lee’s WCAHS presentation is available at [http://agcenter.ucdavis.edu/seminar/webcast\\_2011.php](http://agcenter.ucdavis.edu/seminar/webcast_2011.php).



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*AgHealth News* is published quarterly by the Western Center for Agricultural Health and Safety, University of California, Davis CA 95616-8757; phone (530) 752-4050; FAX 752-5047; e-mail: [agcenter@ucdavis.edu](mailto:agcenter@ucdavis.edu) <http://agcenter.ucdavis.edu>

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## Calendar of Events

March 6–8

**California Small Farm Conference**, San Jose, CA, [www.californiafarmconference.com](http://www.californiafarmconference.com)

March 7

**Anne Katten**, California Rural Legal Assistance Foundation, and **Susan Kegley**, consulting scientist, Pesticide Action Network North America, will present "Health and Environmental Implications of Methyl Iodide Registration as a Soil Fumigant" for WCAHS' Seminar Series, 4–5 p.m., Hart Hall, UC Davis Campus

April 4

**Brandon Louie**, California regional director of Children in the Fields Project will speak during WCAHS' Seminar Series, 4–5 p.m., Hart Hall, UC Davis Campus

May 2

**Richard Cavaletto, Ph.D., P.E.**, department head of BioREsource & Agricultural Engineering at Cal Poly, San Luis Obispo, will give a presentation for WCAHS' Seminar Series, 4–5 p.m., Hart Hall, UC Davis Campus

June 26–30

**2011 National Symposium on Agriculture, Forestry and Fishing Health and Safety**, Grove Hotel and Conference Center, Boise, ID. Visit [www.agsafetyandhealthnet.org/NIFS%20Forms.htm](http://www.agsafetyandhealthnet.org/NIFS%20Forms.htm) for more information

**The 2010 WCAHS seminar series is available via video webcast at [http://agcenter.ucdavis.edu/seminar/webcast\\_2009.php](http://agcenter.ucdavis.edu/seminar/webcast_2009.php)**



Grant #2 U50 OH007550-2006-11