



AgHealth News

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University of California, Davis

Journal for Agricultural Safety and Health (JASH) devotes special issue to r2p efforts in agriculture

Research to Practice (r2p) is a NIOSH initiative focused on the transfer and translation of research findings, technologies and information into highly effective prevention practices and products that can be adopted in the workplace. The goal of r2p is to reduce illness and injury by increasing workplace use of effective research findings. In order to achieve this, NIOSH is continuing to work with WCAHS and its other partners to focus research on ways to develop effective products, translate research findings into practice, target dissemination efforts, and evaluate and demonstrate the effectiveness of these efforts in improving worker health and safety.

A recent noteworthy outcome of this focus on r2p is publication of topics presented in the 2006 conference, titled "Health & Safety in Western Agriculture: Research to Practice," in an upcoming Special Issue of the *Journal for Agricultural Safety and Health* (JASH). The journal will publish six articles selected through peer review and includes an introduction by the WCAHS Director Marc Schenker and Associate Director Kent Pinkerton.

Sponsored by the National Institute for Occupational Safety and Health (NIOSH), WCAHS and the Pacific Northwest Agricultural Safety and Health Center (PNASH), the conference was convened to explore

research to practice (r2p) efforts in agriculture. The successful two-and-a-half day conference, held on the Asilomar Conference Grounds in Pacific Grove, Calif., was attended by more than 110 researchers, graduate students, growers, farm safety managers, government agencies representatives and professional associations. Presentations, including

the foundation for the six articles in the JASH Special Issue, followed the NIOSH r2p initiative.

Populations involved in agricultural work include educated, high-income farmers and impoverished, poorly educated immigrant farm workers. Their families – small chil-

(see **JASH** on page 4)



Xochitl Castañeda, director, Health Initiative of the Americas, UC Berkeley

Immigrant workers: A population at risk

Although workplace injuries and fatalities overall are declining in the United States, injuries, illnesses and fatalities among immigrant workers are on the rise. Several studies have concluded that immigrant workers suffer a greater risk of injury and illness, because they are employed in more haz-

ardous jobs. But the experience of immigrant workers cannot be understood solely by the types of jobs they occupy. Other factors – including immigration status, lack of training, language barriers and the lack of health insurance – compound their risk. On April 18, 2008, the Center for Occu-

(see **Immigrant workers** page 3)

Agricultural ergonomics at UC Davis: past, present and future

Fadi Fathallah, Ph.D., AEP, associate professor in the UC Davis Department of Biological and Agricultural Engineering, presented a talk titled, “Agricultural ergonomics research at UC Davis: Past, present and future,” for attendees of the May WCAHS seminar.

An investigator for WCAHS, Fathallah began his presentation by first acknowledging that, UC Davis – specifically John Miles, the Department of Agricultural Engineering and its Agricultural Ergonomics Research Center – have a long history of developing technical ergonomic solutions to labor-intensive agricultural field work.

Although the term “agricultural ergonomics” was not used in the 1950s through 60s, Fathallah said an emergence of farm equipment/tractor safety research studies, including field evaluations, were taking place back then. The first agricultural tractor rollover protection structure was designed and successfully tested at UC Davis in 1956. Over time, a significant drop in rollover accidents led to 1987 legislation that required all new tractors to be equipped with ROPS (roll-over protection systems). Campaigns to encourage the retrofitting of older tractors with ROPS, including several state rebate programs, remain high priorities to this day.

The 1960s and 70s brought about large-scale mechanization with the tomato harvester, which has since been perfected, and is in high demand today. The 1970s and 80s saw a concentration in forestry safety, as well as initial work on the ergonomic design of ladders and bags used by orchard workers.

Since the 1990s, labor-intensive agriculture dominates much of the research and field testing that Professor Fathallah and his colleagues



Roy Berke, State Fund consultant to the California Farm Bureau Federation discusses tractor safety issues with Richard Webb from Plant Pathology at UC Davis, including the use of ROPS and safe vehicle and pedestrian passing on Old Davis Road.

organize. Their projects include data collection through field studies involving symptom surveys, worker opinions and input, productivity comparisons and force measurement. Their research on personal weight transfer devices to alleviate the cumulative stoop labor stress and damage is ongoing, as is simulation and evaluation of the effects of stoop labor on the spine.

Fathallah says the future direction of his research will include implementation of mechanisms and weeding techniques using GPS devices and vision-based systems.

For more information on his work, WCAHS Investigator Fadi Fathallah can be reached at Fathallah@ucdavis.edu.



The term “ergonomics” is derived from two Greek words “ergon,” meaning work and “nomoi,” meaning natural laws. Ergonomists study human capabilities in relationship to work demands. In recent years, ergonomists have attempted to define postures that minimize unnecessary static work and reduce the forces acting on the body. All of us could significantly reduce our risk of injury if we could adhere to the following ergonomic principles:

- All work activities should permit the worker to adopt several different, but equally healthy and safe postures
- Where muscular force has to be exerted it should be done by the largest appropriate muscle groups available.
- Work activities should be performed with the joints at about mid-point of their range of movement. This applies particularly to the head, trunk and upper limbs.

Source: www.ergonomics.org

Immigrant workers *from page 1*

ational and Environmental Health (COEH) held its annual symposium on the topic of global migration and occupational health at the Elihu Harris State Auditorium in Oakland. The symposium, organized by Marc Schenker, M.D., MPH, WCAHS director, and Robin Baker, M.P.H., director of the Labor Occupational Health Program (LOHP) at Berkeley, and examined current research on occupational health hazards that disproportionately affect immigrant workers. Participants also explored health care access and policy initiatives that affect such diverse populations with a focus on understanding and developing intervention strategies to reduce illnesses and injuries among this growing community.

Stating that the symposium directly relates to the health of hired farm workers in California and elsewhere, Dr. Schenker noted that it was exciting to see the COEH and the Western Center taking the lead in understanding the complex issues affecting the health of immigrants, and in developing appropriate interventions.

In addition to discussing health concerns of farm workers, speakers discussed needs and challenges of other immigrant workers, including Chinatown restaurant workers, Los Angeles garment workers and hotel workers.

Nearly 100 occupational health and safety professionals, students and others interested in reducing immigrant worker occupational injury and illness attended. The well-represented audience included industrial hygienists, safety professionals, occupational health physicians and nurses, labor representatives and policy makers.

The UC Davis contingent included presenters Dr. Schenker and Stephen

McCurdy, M.D., M.P.H.; graduate students Aaron Campbell, Chelsea Eastman, Johnny Garcia, Erik Rodriguez, Kelly Trunnelle and Hong Xiao; and staff members Teresa Andrews, Tamara Hennessy-Burt and Sandy Freeland from the UC Davis Western Center for Agricultural Health and Safety.

The Northern California Center for Occupational and Environmental Health was established in 1980 by the University of California in response to a California legislative mandate. COEH coordinates occupational

and environmental health activities of 60 faculty in five programs on the Berkeley, Davis and San Francisco campuses.

Environmental Health and Safety (EHS) faculty member Robert C. Spear was the founding director. COEH (<http://coeh.berkeley.edu/>) links programs on the three campuses to labor, community, professional groups, and to clinically oriented academic programs at UC Davis and UC San Francisco.



Thomas A. Arcury, Ph.D., professor and research director in the Department of Family and Community Medicine at Wake Forest University School of Medicine in Winston-Salem, NC, was invited speaker for the March 3 WCAHS seminar. Arcury, whose talk was titled "Pesticide Exposure among North Carolina Farmworkers," has cross-appointments in the Department of Epidemiology and Prevention, and the Maya Angelou Research Center on Minority Health.

He has authored or co-authored over 180 referred articles and chapters. His contributions have been recognized by the NIOSH with the 2006 Innovative Research Award for Worker Health and Safety, the National Rural Health Association with the 2004 Outstanding Researcher Award, the Washington Association for the Practice of Anthropology with 2003 Praxis Award, and the National Council for Geographic Education in 2001 with the Journal of Geography Award: Best Content Article.

UCD competes for NSF grant to explore nanotechnology in environment

This impressive group of multidisciplinary researchers, led by WCAHS Associate Director Kent Pinkerton, are competing for a five-year, \$25 million NSF grant to create a center devoted to studying the environmental impacts of nanomaterials. The campus, which survived the first cut when 30 grant applicants were whittled to 10, are now among the three semifinalists, along with Duke University and UCLA. The three finalist were invited to a reverse site visit at the National Science Foundation headquarters in Washington, DC, on May 13 and 14, 2008.

The implications of nanoscience to agriculture are significant and only beginning to be appreciated. Nanotechnology will contribute directly to advancements in agriculture in a number of ways: 1) molecularly engineered biodegradable chemicals for nourishing plants and protect-



From left, Colin Milburn, English, Science and Technology, UC Davis; Tom Young, Civil and Environmental Engineering, UC Davis; Kristen Kulinowski, director of the International Council on Nanotechnology, Rice University; Kate Scow, LAWR, Soil Microbiology, Ecosystems, UC Davis; Alexandra Navrotsky, Chemical Engineering and Material Science, Chemistry, Geology, LAWR, UC Davis; Sam Luoma, director of Public Affairs for JMIE, UC Davis; Henning Stahlberg, Molecular and Cellular Biology, UC Davis; Marco Molinaro, chief education officer, Center for Biophotonics Science and Technology, NSF; Ting Guo, Chemistry, NET, UC Davis; Kent Pinkerton/Pediatrics, School of Medicine, director Center for the Environment, UC Davis.

ing against insects; 2) genetic improvement for animals and plants; 3) delivery of genes and drugs to animals; and 4) nano-array-based technologies for DNA testing, which,

for example, will allow a scientist to know which genes expressed in a plant when it is exposed to salt or drought stress.



JASH from page 1

dren to grandparents – are a significant part of this wide spectrum. The six articles range from policy and behavioral approaches to engineering interventions. The titles of the articles and their authors are:



The California Agricultural Workers Health Survey – Don Villarejo and Stephen McCurdy.

Reaching Teen Farm Workers With Health and Safety Information: An Evaluation of a High School ESL Curriculum – Suzanne Teran, Ron Strohlic, Diane Bush, Robin Baker and James Meyers.

Worker Health and Safety in Concentrated Animal Feeding Operations

– Frank Mitloehner and Michelle Calvo

Protection Against Breathing Dust: Behavior Over Time in California Farmers – Diane Mitchell and Marc Schenker

Achieving Community Participation in Research to Improve Farm Worker Health – Jennifer Crowe, Mathew Keifer

Low Back Disorders in Agriculture and the Role of Stooped Work: Scope, Potential Interventions, and Research Needs – Fadi A. Fathallah, Brandon J Miller and John A Miles.

Lessons learned from r2p in agriculture need to be understood, shared and expanded. This special issue of JASH adds to our collective knowledge in this area, and provides a valuable basis for expanding and transferring this knowledge.

The *Journal of Agricultural Safety and Health* is published by the American Society of Agricultural and Biological Engineers (ASABE). The ASABE is an educational and scientific organization dedicated to the advancement of engineering applicable to agricultural, food and biological systems. Founded in 1907 and headquartered in St Joseph, Michigan, ASABE comprises 9,000 members in more than 100 countries.

While JASH is a subscriber-only journal, it is available in most libraries. Additionally, the WCAHS office will be pleased to send out copies of specific articles by sending an e-mail request to agcenter@ucdavis.edu or by calling (530) 752-4050.



Meet Teresa Andrews: WCAHS's new education and outreach specialist

The Western Center for Agricultural Health and Safety is pleased to introduce a new member of its ranks. Teresa Andrews joined the Center in April as its education and outreach specialist.

Her responsibilities include identifying new opportunities of outreach and education as well as building relationships with community groups, non-government organizations, government agencies, cooperative extension and other UC researchers and personnel involved in health and safety issues for agricultural workers.

In addition, Andrews will play a key role in expanding the California Workers' Occupational Safety and Health Training and Education Program (WOSHTEP) to the Central Valley. This expansion is part of a recent partnership between the WCAHS and the Workers Occupational Safety and Health Training Educational Program, based at UC Berkeley. The goal of this expansion is to reduce the job hazards faced by farm workers by providing health and safety courses. In her position, Andrews will contribute to tailoring, developing and pilot testing curriculum and educational materials in Spanish and English.

Before joining the Center, Andrews worked for Rural Community Assistance Corporation, a West Sacramento-based nonprofit agency contracted by The California Endowment to provide technical assistance for their Poder Popular Agricultural Worker Health Initiative. This Initiative seeks to strengthen the social, economic and civic infrastructure of 27 identified agricultural worker communities across California.

In her role as a technical assistance provider, Andrews' expertise played an important role in the develop-



Teresa Andrews, education and outreach specialist

ment of training curricula and educational materials for the *Promotores Comunitarios* Strategy (Community Promoters). Under this Initiative, more than 300 farm workers received training and support to spearhead coalition-building efforts aimed to improve their quality of life in collaboration with diverse local and regional stakeholders.

Andrews' involvement with the *Promotores* movement started soon after she moved to the U.S. from Mexico City in 1994. She has collaborated with the National Institutes of Health, American Heart Association, American Lung Association, San Diego Nutrition Network, San Diego Children Hospital and the Health Initiative of the Americas.



Local Farm Bureau events feature health and safety workshops

The Sacramento County Farm Bureau held its Annual Farm Safety Seminar in Walnut Grove, Calif., on March 21, 2008. Nearly 200 growers, farm workers, managers and supervisors attended. Diana Tejeda from the Agricultural Ergonomics Research Center (AERC) at UC Davis held ergonomics training classes on pruning, hand tools and ladder safety in the agricultural workplace. Michael Harder, vineyard manager for Vino Farms, Inc., provided training on pesticide safety. Both presenters conducted their training sessions in English and Spanish.

Additionally, California Highway Patrol Sergeant Jim Epperson reviewed for growers, managers and supervisors, "Load securement requirements." WCAHS staff members volunteered their services, which included serving on the

Planning Committee and manning the registration table – an opportunity to meet and greet attendees.

A special respirator fit and training workshop, for a charge of \$55 including lunch, followed the seminar.

On April 23, the Sacramento County Farm Bureau sponsored its Health and Safety Fair. At this annual family event, attendees received information on important farm worker safety issues, pesticide use and workplace ergonomics. All participants were treated to health screenings, including vision screening arranged by Joann Helmus of Helmus Optometry, and adult and child immunizations with appropriate shot records.





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for Agricultural
Health and Safety**

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Join our list server!

Have puzzling questions about occupational hazards in agriculture? Wondering about resources for teaching pesticide safety? Interested in Spanish-language resources for agricultural health and safety training? Then subscribe to our list server by visiting our Web site at <http://agcenter.ucdavis.edu>, and click on "AgHealth E-mail List."

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WCAHS Seminar Series

4-5 p.m., 3201 Hart Hall, UC Davis Campus
Refreshments Provided

Monday, June 2

Jay Schreider, primary state toxicologist, Department of Pesticide Regulations, California EPA. "The Registration of Pesticides in California."

The seminar series is available via video webcast at <http://agcenter.ucdavis.edu/seminar/webcast.php>

Other Events

June 2-4, 2008

- **Green Acres, Blue Skies: Agriculture & Air Quality Issues & Solutions: A Stakeholders Conference**
- A series of three one-day conferences to be held at the
- Buehler Alumni and Visitor's Center, UC Davis.
- Sponsored by the UC Davis Air Quality Research Center.
- For more information, visit www.cevs.ucdavis.edu/Cofred/Public/Aca/ConfHome.cfm?confid=365 on the Web.