

AgHealth News

Summer 2011 • Vol. 20, No. 3

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

My transition from agricultural worker to agricultural health researcher

by José Gutierrez

It's 4:30 a.m., and a father enters his 14-year-old son's bedroom and says, "it's time." By 6 a.m., the young boy is carrying a sack, walking through the endless rows of peach trees along with older men who are staring at his young face and asking what he is doing working in such a brutal job. For the young boy, the difficulty of the work is unknown but he knows he has to be strong. After the nine-hour routine of picking peaches, the day ends and the young boy is physically and mentally exhausted but is determined to

come back. His determination to continue working comes from the financial necessity his family has and for the lesson his father wanted him to learn – the lesson that this is the job he will be doing if he does not focus in school. For his young age, the boy has assumed the responsibilities of an adult – the responsibility of providing and contributing to his family's livelihood. This young, strong, determined 14-year-old is me.

After working in multiple farming jobs throughout my high school years, I realized that this

was not the life I wanted; this is the life I wanted to change. The pressures and demands placed upon me during these jobs motivated me to look beyond. I was invisible and so was my father. It was hard to witness my father – someone I have always respected – be bossed, yelled at and ordered around by someone who had no respect for him. The harsh realities of a farm worker's life forced me to look for a way to travel beyond my immediate life situation. Therefore, I took the values of hard work, determination and persistence that my parents taught me through their daily struggle to support a household of six, to pursue a career. This simple understanding drove me to end up in the top 10 percent of my high school class and to be admitted to the University of California, Davis (UCD).

In making my decision to attend UCD raised many concerns. No one in our family had gone to college, so my parents were afraid that I would fail in college and only acquire debt. I was shocked that these were the concerns my parents had about me, but I assured them that I would finish college and bring help to our family. Once at UCD, I realized that having grown up in a farm-working family, I was unaware of the challenges of college life. I was not used to the fast pace of

college, the heavy reading loads and the frequent exams. Through some disappointment in some of my classes, I was determined to find a solution. I took action and decided to search for learning centers, seek help from professors and be persistent with improving my work. I spent more time studying, writing essays and working on assignments than the average college student and managed to earn good grades. Even though my struggle was a constant battle, I managed to graduate with a double major and kept the promise I made to my parents.

"I no longer work with the agricultural workers, but instead I work for them."
—José Gutierrez

Throughout my four years in college, I never forgot the struggles my parents faced everyday at work and at home. These memories were my motivation to help the community that struggled, just like my parents did. I joined a student organization with the mission of helping the minority community improve their living conditions by giving them food and clothing. Besides, the organizations that I worked



José Gutierrez (above) works on several WCAHS research projects.

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Using nanotechnology applications in agriculture—the good & bad

Nanotechnology is defined as a broad-based field of study that involves a wide range of technologies that synthesize, measure, manipulate and incorporate compounds and materials with features having at least one dimension between approximately 1 and 100 nanometers (nm). Such applications exploit those properties found in the nanoscale size, which are distinct from bulk/macroscale systems, to create unique and dynamic products.

Professor Kent Pinkerton, Ph.D., director of the Center for Health and the Environment, and WCAHS associate director, delivered a fascinating presentation focusing on nanotechnology in agriculture during the June WCAHS monthly seminar series – the last of the 2010-2011 academic year.

In his presentation, Pinkerton showed some examples of nanotechnology in agricultural food products:

- Nanofood – “on demand” preservatives, enriched food, flavor, smell and taste
- Interactive food – surface treatment, glaziers and colors
- Nanocarriers for food and delivery of nutrients
- Controlled extraction and release nanoparticles

Examples of packaging to reduce spoilage and extend shelf life:

- Nanotechnology gas, UV barriers
- Temperature reinforced foils and packaging
- Antibacterials
- Magnetic nanocomposite for tag sensors
- Nanocoding of plastics and paper materials

Examples of nanoagriculture:

- Smart pesticide delivery
- Controls for microbial and chemical contamination
- Control of chemical contamination
- Complete plant health monitoring
- Extreme condition agriculture
- Water purification
- Animal food and health

Pinkerton listed some of the pros and cons of nanotechnology, as follows.

The Good:

- Numerous medical applications as drug carriers, tumor imaging and targeting, cell and tissue scaffolds
- Nanomaterials are reshaping nearly all aspects of our lives from molecular

switches and battery electrodes to solar and fuel cells and semiconductors

- Nanotechnologies and products provide unique uses as sunscreens, cosmetics, textiles and personal care products

The Bad:

Concern for these materials to be toxic due to:

- High length to diameter aspect ratio similar to an asbestos-like morphology
- Small size with easy penetration through skin, lungs and the intestinal tract
- bio-persistence in

organisms, plants and the environment

In conclusion, Pinkerton said, “Nanotechnology has incredible potential for high-efficiency use in a diverse number of agricultural applications. Nanoparticles have the potential for uptake, transport and retention throughout multiple organ systems. Additionally, evaluating the potential risks of fine aerosols will require assessment of the dynamics between particle size, chemical composition, exposure potential and biological fate.”

Dr. Pinkerton’s PowerPoint presentation is available on the WCAHS homepage: <http://agcenter.ucdavis.edu/>

Ag worker to ag researcher *continued from page 1*

with on campus, I found it important to stay connected to the people from my hometown by volunteering my weekends with a local business in their charity program, which was formed to help those in need of financial assistance. However, my major contribution to the agricultural workers comes from my current job. Currently, I help promote and establish safe and healthy working conditions for agriculture workers. Furthermore, this is the type of change I enjoy making in people’s lives and will continue doing throughout my professional career.

Having witnessed the struggles of farm workers and having an interest in medicine, I decided to pursue a career in the medical field. Having grown up as a farm worker, I questioned how farm workers could manage to work at the same pace every day. My interest lies in agromedicine, which I plan to use to help farm workers live a healthier and happier life.

My life has changed in many ways. I no longer work with the agricultural workers, but instead I work for them. I have gone from the passive young boy with no voice, to a young man filled with the energy and devotion to give back to his community. This was all made possible through the values my parents taught me. I will never forget the values that I acquired as a young boy. Because of them I have become the person I am – a hard working, determined and persistent person. Furthermore, as a young man who has surpassed multiple adversities, I have a clear understanding that life is filled with obstacles, but I am certain that I can overcome anything because of my devotion to myself and my family.

José Gutierrez is a Junior Specialist working for WCAHS on research projects for Drs. Mitloehner, O’Malley, McCurdy and Schenker. He plans to attend medical school in the fall of 2012.

Nanomaterials: Agricultural Hazard?

THE ASBESTOS ANALOGY REVISITED

Direct injection of long multi-walled carbon nanotubes into the abdominal cavity of mice produces asbestos-like (pathogenic) responses. What does it do to lung tissue?

Agnes B. Kane and Robert H. Hurt are at Drexel University, Philadelphia, Pennsylvania, USA.

Exposure to nanoparticles is related to pleural effusion, pulmonary fibrosis and granuloma

Y. Sheng*, S. Li* and S. Dai*

Carbon nanotubes introduced into the abdominal cavity of mice show asbestos-like pathogenicity in a pilot study

GREGG A. POLAND, MICHELLE SHERRY, BEN KIN COY, ANDREW SAMMONS, WILLIAM S. H. WALLACE, ANTHONY SEATON, YONG CHANG, SHIYU SHAN, WILLIAM BAUSER, AND IAN DONALDSON*

WCAHS Outreach Highlights

By Teresa Andrews

Day labor workers participate in safety training

On May 13, more than 25 day-labor workers actively participated in a health and safety training at the Michael Chavez Community Center in Concord, Calif. During the training, participants talked about the difficulty of controlling workplace hazards when their work site and assignments change every day. However, after they worked in small teams in a hazard mapping activity, the workers were



able to identify some hazards that are commonly present in diverse settings and brainstormed some potential solutions. For example, they identified “working for a different employer on a daily basis” as one of the top hazards they face. To increase their safety, they listed: (1) write the license plate number and a brief description of the vehicle that will take them to the working site; (2) always carry a cell phone; (3) call a friend/family member and let them know where you are going and what time you expect to be back. After the activity, participants stated that the maps helped to increase their awareness about common hazards and to identify what they can do to reduce their occupational risks.

Small Farm Advisor in Fresno is honored by the Hmong Community in Fresno

On July 19 and 20, the Hmong farming community organized the first Hmong Specialty Crop Conference in Fresno, Calif. The conference began with a tour of four of the largest Hmong farms in the country, in which Asian specialty vegetables are grown. During the second



Hmong goods on display at the conference.

day, attendees learned about the challenges faced by Hmong farmers and about Hmong medicinal herbs and scientific evaluations. The highlight of the conference was the recognition ceremony in which Richard Molinar, UC Davis small farm advisor in Fresno and the Hon. August Schumacher, former USDA undersecretary for farm and foreign agricultural services, received Hmong names. During the heartfelt ceremony, honorees were told that their Hmong names were selected by a shaman to recognize their role in supporting Hmong farmers. Richard Molinar's name means “the one that brings prosperity,” because for years he has helped farmers to understand the regulations that apply to their farms, how to yield healthy crops and where to sell their crops. Schumacher was called the “the protector,” because during his tenure at the USDA, he supported the work of Hmong farmers.

Cal/OSHA Heat Illness Prevention Campaign

As part of the Cal/OSHA Heat Illness Prevention Campaign 2011, on July 8 and 9 WCAHS had an information booth at the South Asian Games, hosted at Gibson Ranch in Elverta Calif. During the two days, more than 600 people received information on how to prevent heat illness, the symptoms to watch for, and what to do in case of an emergency.



Water, Rest, Shade: The work can't get done without them

Helping to educate workers about the dangers of working in the heat and how to prevent heat illness, Cal/OSHA teamed with UC Davis and UC Berkeley again this summer. Responsible for trainings within Hmong-, Punjabi- and Spanish-speaking communities, UC Davis completed three workshops, training 65 community leaders, farm owners and crew supervisors from Yuba City to Modesto. Participants commit to provide the training to other community leaders, farm owners, and their coworkers – estimated conservatively to reach 1,000.

Of the 26 participants in the Summer 2011 Heat Illness Prevention Community Train-the-Trainer workshop at the Sutter County Agricultural Department in Yuba City, 25 were Punjabi speaking. Deepak Bhakoo (4th from the left/burgundy shirt), agricultural community leader with Community Business Bank, assisted with translation as did Veronica Ramos (red blouse), American Red Cross.

At first, some were skeptical about the need for heat illness prevention training in their community. Many expressed appreciation for the training as well as the training materials to train others in their communities. Comments ranged from, “Isn't this common sense?” to, “I am glad I came, this is good.”

Labor Rights Week 2011

In Washington, DC, the ambassadors of El Salvador, Costa Rica and the Dominican Republic joined Secretary of Labor Hilda Solis in signing a historic partnership to protect the labor rights of migrant workers from these countries who are employed in the United States.

The signing kicked off National Labor Rights Week, Aug. 29-Sept. 5. "Women in the Workplace" is the focus of this year's Labor Rights Week. Migrant women are at risk of wage theft and safety violations, sexual harassment, workplace violence and gender discrimination.



WCAHS' information table at the Mexican Consulate Sept. 1.

Our local event was held this year at the Mexican Consulate in Sacramento, with Consul General Carlos González Gutierrez serving as host. Keynote speakers were Christine Baker, chief deputy director for the Department of Industrial Relations, and Rosa Moran, administrative director, Division of Workers' Compensation.

Attendees were representative of diverse agencies serving the Hispanic community, among them the Employment Development Department, Department of Labor, Department of Pesticide Regulation, Cal/OSHA, and others. The agencies had informational tables in the waiting area, and people visiting the Consulate received information. WCAHS displayed health and safety information at the events on Wednesday, Aug. 31, and Friday, Sept. 1.

AgHealth list-server: Are you a subscriber?

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 email List."



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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 <http://agcenter.ucdavis.edu>

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Director of Research Frank Mitloehner
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Calendar of Events

Monday, October 3

Steve Berry and **Paivikki Susitaival**, Dairy Management and Health, Department of Animal Science at UC Davis will present "**Work-related health among veterinarians**" during the WCAHS Seminar Series, 4–5 p.m., at the Center for Health and the Environment (CHE) (**NEW LOCATION**) on Old Davis Road. Free, convenient parking.

Monday, November 7

Howard Maibach, M.D., Dermatotoxicology & Dermatopharmacology Environmental Dermatoses Clinic, UC San Francisco, Mt. Zion Campus, will present "**Life after in vitro percutaneous penetration: a 15-step ag chemicals complex membrane**" during the WCAHS Seminar Series, 4–5 p.m., at CHE on Old Davis Road.

Monday, December 5

Fadi Fathallah, Ph.D., Professor and Research scientist, Biological & Agricultural Engineering, UC Davis, will present "**Recent agricultural ergonomics research at UC Davis**" during the WCAHS Seminar Series, 4–5 p.m., at CHE on Old Davis Road.

Monday, January 9, 2012

WCAHS Graduate Student Presentations, 4–5 p.m., at CHE on Old Davis Road.

The 2010 WCAHS seminar series is available via video webcast at http://agcenter.ucdavis.edu/seminar/webcast_2009.php

NIOSH National Institute for
Occupational Safety and Health

Grant #2 U50 OH007550-2006-11