Fadi Fathallah from UC Davis received a 4-year grant to fund California AgrAbility, a program that improves the lives of people with disabilities by helping them to stay working in agriculture. The program offers bilingual technical assistance, rehabilitation, education, referrals, and advocacy to workers with disabilities along with its partner, AbilityTools.

“Agriculture is one of the most hazardous industries in the United States, with over 20,000 disabling injuries in California each year,” reports Principal Investigator Fathallah, a professor of Engineering in the UC Davis Department of Biological and Agricultural Engineering.

California AgrAbility has helped more than 600 small farmers and Latino farmworkers with disabilities with funding from the U.S. Department of Agriculture National Institute on Food and Agriculture. The program offers assistive technology solutions as simple as ergonomic handles for moving potted plants in nurseries, to more complex solutions such as modified steering wheels in farm vehicles, or assistive lifts to help drivers enter their tractors or operate heavy equipment.

One farmer who recently benefited from the program is Anna. When her disease symptoms began to interfere with her work on the farm, she realized it was time to get help. Anna has multiple sclerosis,
This summer has seen a lot of activity about climate change, both in California and globally. In May, Governor Jerry Brown signed an agreement between California and 10 other U.S. states and foreign provinces to sharply limit emissions of greenhouse gases by 2050. The 10 jurisdictions that signed the agreement in addition to California are Oregon, Washington, Vermont, Ontario, Baja California, Jalisco, Catalonia, Wales, Acre (Brazil), and Baden-Württemberg (Germany). Together, these states and provinces represent 100 million people and a gross domestic product of $4.5 trillion. The signatories committed to reducing greenhouse gases by at least 80 percent below 1990 levels by 2050 or to achieve a per-capita annual emission target of less than 2 metric tons by that year. California already has this goal mandated by AB32, the Global Warming Solutions Act, and Governor Brown recently issued an executive order to establish a new mid-term California greenhouse gas reduction target of 40 percent below 1990 levels by 2030. He has characterized this ambitious goal as follows: "California basically is presenting a challenge to Washington, to other states, and to other countries. It’s going to take something like what I laid out, but what I laid out is daunting.”

Not to diminish California’s leadership on efforts to mitigate climate change, but perhaps the biggest news about the world’s most pressing environmental challenge this summer was the Pope Francis’ encyclical, Laudato Si’ or Praise Be to You. In this encyclical, the pope noted that combustion of fossil fuels by humans was responsible for most of global warming and warned of an “unprecedented destruction of ecosystems, with serious consequence for all of us” if strong and swift actions to mitigate are not taken. He put the onus on developed, industrialized countries to help low and middle income countries confront the crisis.

Pope Francis made the case that there is a moral imperative for those who have reaped great profits from industrialization based on extraction of natural resources and combustion of fossil fuels to redress the environmental devastation that has resulted. He argued for a new partnership between science and religion to combat human-driven climate change — a position that brings him into direct conflict with climate change skeptics, whom he chides for their denial of the scientific consensus.

The encyclical shows impressive command of policy strategies to mitigate climate change. Pope Francis specifically calls for increased public transit, carpooling, tree planting, limiting unnecessary power use, recycling, and even boycotts of certain products. However, his deep suspicion of the free market leads him to criticize one of California’s major mitigation strategies, a cap-and-trade mechanism, in which CO₂ emissions are capped at a certain value and industrial facilities are granted allowances to emit specific levels of CO₂. The allowances can be traded, i.e., a facility that installs clean technology and emits less than it is allowed can sell the unneeded allowance to a facility that has not reduced its emissions. This approach has been criticized by environmental justice groups as not providing sufficient incentive for polluting facilities to clean up their act and reduce harm to the health of residents in adjacent, often low-income neighborhoods. Pope Francis’ encyclical states that, “The strategy of buying and selling ‘carbon credits’ can lead to a new form of speculation which would not help reduce the emission of polluting gases worldwide. It may simply become a ploy which permits maintaining the excessive consumption of some countries and sectors.”

A carbon tax is often thought to be a better approach to putting a price on carbon by environmental justice advocates. A cap-and-trade system puts a cap on emissions but allows the price on carbon to vary; a carbon tax puts a price on carbon, but allows the emissions to vary. Certainly, a tax is theoretically easier to administer, avoids the potential gaming of a carbon market scheme, and could put greater pressure on polluters to clean up their act. But the biggest problem with the carbon tax approach is that while it puts a price on carbon, i.e., $ per metric ton of CO₂ emitted, it does not put a cap on emissions. In other words, the taxing jurisdiction has to correctly estimate the level of tax that will incentivize reduction of emissions. Because levying taxes is often politically difficult, increasing the tax if the jurisdiction does not get it right initially may prove problematic.

When the California legislature tasked the state Air Resources Board (CARB) with the implementation of AB32, including the ability to develop a mechanism to place a price on carbon emissions, Governor Arnold Schwarzenegger refused to allow CARB to openly discuss a carbon tax, fearing that it was a politically impossible approach. In response, CARB worked to develop a credible and a gaming-free cap-and-trade system. That system was launched in 2012 and has been a remarkable success to date. Quebec linked with California in 2014 and since the inception of the program over $2.2 billion in revenue has been raised from the sale of allowances. By California law (SB535), 25 percent of that revenue has to be spent to the benefit of disadvantaged communities as defined by the CalEnviroScreen mapping tool designed by the Office of Environmental Health Hazard Assessment. During the period that the cap-and-trade program has been in place, the California economy has shown steady growth. My assessment at this point is that the pope got it wrong about California’s cap-and-trade system.

That said, I am enthused by the pope’s weighing into the climate change debate. He is a heavy hitter when it comes to moral authority, and he has spoken out forcefully about the needs for effective and equitable mitigation policies. Jerry Brown has described the pope’s efforts as “bringing a moral and theological dimension that adds to the market and political calculation.” Brown also said that, “We face an existential threat to human existence as we know it. It’s not being taken seriously by the vast majority of powerful people. When the pope, as a powerful person, issues this encyclical, it’s a helpful addition to the mix.”
New Director of the California AgrAbility Project: Fadi Fathallah

continuing from page 1

or MS. People with MS can experience a temporary worsening of their symptoms through physical exertion or hot weather. In Capay Valley, where Anna works, temperatures reach well over 100 degrees in the summer months. Anna approached Esmeralda Mandujano at California AgrAbility, who provided support and guidance on strategies to reduce fatigue so Anna could work more comfortably, despite the challenges of MS.

Through a collaboration between California AgrAbility and the California Department of Rehabilitation, Anna received financial support for two assistive device interventions—a cooling vest and an air conditioning unit—to cool her body temperature in periods of extreme heat. “This [AC] unit will revolutionize my work capacity and my general ability to fully engage in life and community during the hotter months,” noted Anna. “I can barely imagine how summer life will be, since I have spent so many summers incapacitated at my home.”

Fathallah and his colleagues not only connect workers like Anna with the latest health and safety interventions, they also design new ones. For example, to bring nursery propagation workers back from disability due to repetitive strain injury of the hand, wrist, and arm, the University of California Agricultural Ergonomics Research Center developed air powered shears, funded by a grant from the National Institute for Occupational Safety and Health.

Now, instead of workers hand-cutting an average of 5,000 stems a day for plant propagation, the “Air Klipper” cuts the plant for them, virtually eliminating the need for repetitively and forcefully gripping manual sheers. By reducing hand and arm fatigue, the new technology can increase worker productivity.

Over the past years, California AgrAbility has targeted its resources toward injured U.S. veterans. Working with a partner organization, the Farmer-Veteran Coalition, they encourage veterans re-entering the workforce to consider farming as a viable career alternative. “A lot of them have a misconception that they have lost their livelihood due to an amputation or injury. We reach out to them and provide resources to help them adapt,” says Fadi.

Older adults, minorities, and the medically underserved are the at-risk populations assisted by California AgrAbility. Due to language or cultural barriers, many of these workers have difficulty locating health providers, filling out medical forms, and understanding directions on medicines. Too often, they lack services to manage chronic health conditions, including rehabilitation and counseling. In addition to reaching out to these workers through workshops, webinars, and community support systems, California AgrAbility networks with affiliated non-profits and government agencies across the state. For more information on California AgrAbility, visit: http://calagrability.ucdavis.edu.

Watch the webinar by California AgrAbility and Ability Tools: YouTube via Ability Tools Channel.

LOHP Offers Health and Safety Training to Workers with Intellectual and Developmental Disabilities

Workers with intellectual and developmental disabilities (ID/DD) are injured at higher rates as compared to the general population due to the hazardous nature of the work they most commonly perform, such as light manufacturing, recycling, assembly, janitorial tasks, landscaping services, and warehouse work.

While the provision of health and safety training to workers in general is limited, it is even rarer for workers with ID/DD. A needs assessment conducted by LOHP in 2006 found almost no examples of comprehensive health and safety training for this population. To address this gap, LOHP created the Staying Safe at Work curriculum in 2009. Program Coordinator Robin Dewey is currently collaborating with NIOSH to update the health and safety curriculum customized to workers with ID/DD. Next, she plans to promote it nationally to high school transition programs serving students with disabilities, employment support agencies, community rehabilitation programs, and other places of employment for adults with disabilities. For more information about Staying Safe at Work, visit: http://lohp.org/safe-at-work-curriculum.
California Heat Standard Revisions Bring New Protections for High Risk Workers

The California Occupational Safety and Health Standards Board (OSHSB) approved important revisions to the Division of Occupational Safety and Health (better known as Cal/OSHA) heat illness prevention standard by a majority vote effective May 1, 2015. The current OSHSB members include Patricia Quinlan, deputy director of COEH, and Laura Stock, director of the UC Berkeley Labor Occupational Health Program.

The new changes will require employers to closely observe new employees during their first two weeks working in a high heat area, as well as all employees during heat waves; provide shade for all workers on a rest or meal break at 80°F (lowered from 85°F); provide water to employees free of charge and shade as close as practicable to workers; encourage employees to take preventative cool-down rest breaks in the shade; and develop and implement emergency response procedures, among other changes. The new standard applies to those employed in agriculture, construction, landscaping, oil and gas extraction, and part of transportation.

Currently, COEH scientists from UC Davis are studying physiological responses to heat and physical work in inland valley field workers. The California Heat Illness Prevention Study (CHIPS) is a five-year project sponsored by the National Institute for Occupational Safety and Health led by principal investigator Dr. Marc Schenker, the director of COEH at UC Davis. Their goal is to ensure agricultural workers have the safest possible working conditions in a region where temperatures often exceed 100 degrees over the harvest seasons.

CHIPS researcher Sally Moyce, a doctoral candidate in Healthcare Leadership and Nursing Science from the Betty Irene Moore School of Nursing at UC Davis, is conducting a novel study exploring the links between kidney disease and heat exposure among farmworkers in California.

While a nurse at a clinic for migrant farmworkers in Oregon, Moyce met a young woman diagnosed with chronic kidney disease. “It was baffling to us at the clinic because we didn’t understand why she had developed this,” said Moyce. “That experience really stuck with me. And, as I was sharing my background with Marc Schenker, I told him that story, and he said, you know, this is not as uncommon as you think.”

For her doctoral study, she has evaluated heat exposure and renal function in a cohort of 300 male and female farmworkers. The average age of the cohort was 38 years old, with the majority of participants aged 26 to 50 years. Moyce has completed her first year of data collection, including information about acute kidney injury and common preconditions such as hypertension, diabetes, age, and health history.

Although Moyce is in the data analysis phase of her project, her early results suggest occupational factors may play a role in the development of chronic kidney disease. “If you have repeat injury and you just never fully recover, it may eventually become a pathway to chronic kidney disease.

If you multiply that out to the number of shifts that people work over an entire season, and then over many years, the problem is actually quite frightening. It’s a big issue because the majority of this population lack legal status and access to healthcare and health insurance, so they have very limited access to life saving dialysis.”

“If it turns out that chronic kidney disease is directly associated with a preventable occupational hazard such as heat exposure or not enough hydration, then the new heat standards in California will potentially help to prevent kidney injury,” said Moyce.

Moyce received funding for her study from the Betty Irene Moore Foundation, the Western Center for Agricultural Health and Safety, the Health Initiative of the America’s PIMSA research program, and a grant from the UC Global Health Institute’s One Health Initiative.
Teens Monitor Neighborhood Air Quality in San Joaquin Valley

For two weeks in April, four science-minded teenagers from the Center for Advanced Research and Technology (CART) in Clovis, CA, outfitted their school backpacks with some extraordinary equipment. This included two air pollution monitors (PAS 2000 CE), a global positioning system (GPS) device, and an accelerometer, all as part of a unique community outreach initiative designed to measure their pollution exposures while in transit to and from school.

The project is part of the Children’s Health and Air Pollution Study, or CHAPS. A collaboration of UC Berkeley, Stanford, and Fresno State, CHAPS investigates the health effects of air pollution on children living in the San Joaquin Valley. According to the American Lung Association, this region of Fresno County has some of the worst air quality in the United States.

“The CHAPS project is innovative in that we estimate someone’s daily exposures based on residence and workplace,” says Jennifer Mann, a co-investigator with CHAPS and an epidemiologist with the UC Berkeley School of Public Health. “However, we have no information on transit exposures for PAHs (polycyclic aromatic hydrocarbons), and that’s what this project contributes.”

“PAHs are compounds that are generated by combustion of carbon-based materials, including diesel, gasoline, tobacco, and wood. When inhaled, PAHs are capable of injuring cells and disrupting their normal functioning.” CHAPS researchers report. The Community Outreach and Translation Core of the CHAPS study works with local residents to understand air quality hazards and how they affect children’s health as they grow. Jenny Saklar, director of Outreach and Communications, reached out to CART when she learned of their shared interest in helping students collaborate on youth education projects with partners from the local community.

All students in CART’s environmental

“Household Hazards” Blog Reveals Hidden Connections Between Environmental and Consumer Issues

COEH faculty Dr. Paul Blanc, author of more than 200 peer-reviewed biomedical publications, steps out of his usual realm once a month to publish a blog for general audience readers of Psychology Today (PT). Dr. Blanc started collaborating with the editors of PT after they became aware of his 2009 book, “How Everyday Products Make People Sick, Toxins at Home and in the Workplace” (University of California Press). PT became interested in expanding their portfolio and approached Dr. Blanc to help them cover emerging issues and in the field of environmental health.

“Household Hazards” has received nearly 50,000 hits since Dr. Blanc began posting essays approximately four years ago. “I don’t presume medical or environmental knowledge. And I try to make the links between workplace issues, environmental issues, and consumer issues (on the part of my readers),” says Dr. Blanc, chief of the multi-campus Division of Occupational and Environmental Medicine (OEM) in the UCSF Department of Medicine. “It’s great to do something that takes you out of your usual, narrow confines. It makes you think about things differently.”

Dr. Blanc has posted roughly 50 posts for PT. Still, he says it is surprising which blogs will take on a life of their own. One of his most popular blogs highlighted the potential risks of a chemical commonly used in the fragrance industry called galaxolide, a synthetic musk used after musk deer were hunted to near extinction for their “natural” perfume. After a professional colleague asked him what he knew about galaxolide, Dr. Blanc began digging into the research. He found that, not only does it persist in the environment, but galaxolide is detectible in humans and displays the potential to interfere with estrogen hormonal function, raising alarm bells for consumers.

Dr. Blanc also has a new book project underway with Yale University Press. “The book focuses on 200 years of a very toxic chemical called carbon disulfide. It looks at what the effects have been predominately on workers, but it also looks at the cultural and political context of the manufacturing,” explains Dr. Blanc.

To read a sampling of Dr. Blanc’s posts for PT, visit: http://www.psychologytoday.com/blog/household-hazards.
Heart Disease and Work: What is the Connection?
Highlights from the UCSF Occupational and Environmental Medicine CME Conference, March 2015

Story by Raj Puri, MD
Fellow Physician, Division of Occupational and Environmental Medicine, UCSF

There were numerous highlights in this year’s annual UCSF Occupational and Environmental Medicine (OEM) and Continuing Medical Education (CME) conference. The theme focused on Cardiovascular Health and Disease and was held in March at Fisherman’s Wharf, San Francisco. It was organized and chaired by Drs. Paul Blanc and Robert Kosnik. Conference participants benefited from the diverse number of lecturers from occupational medicine, cardiology, dermatology, allergy, and immunology, psychiatry, pharmacology, nursing, and others. The conference was fortunate to gain a large international presence from Sweden, both as attendees and as lecturers. Course participants also included OEM specialist physicians and nurses, industrial hygienists, PhD researchers, and others from across the United States as well as participants from Argentina, Australia, Austria, Canada, Iceland, Israel, Italy, and the United Kingdom.

The conference was prefaced a day in advance by a colorful poster presentation session illustrating interesting and unique links between cardiovascular diseases and occupational medicine. Posters from all the current UCSF OEM trainees were included.

The conference began with one full day focused on “Cardiovascular Health and Disease.” The remaining day and a half comprised of “Updates” in OEM. The first day was launched by Dr. Mia Soderberg from Sweden who discussed epidemiological issues related to occupational heart disease. Later in the day, Captain Bruce Bernard, MD, a Public Health Service officer from NIOSH, gave an insightful lecture on cervical artery dissection and vascular diseases.

Dr. Stefanos Kales, Residency Program Director and Chief of Harvard’s OEM program, discussed “Sudden Cardiac Death in Law Enforcement and Firefighting.” Finally, a panel discussion concluded the day with an interesting question and answer session.

The second day began with Dr. David Claman, Director of the UCSF Sleep Disorders Center. He discussed shift work disorders and presented a brief example of a “sleepy firefighter.” He highlighted issues relating to airline pilots, truck drivers, and other demanding transportation professionals. Later, Dr. Katherine Gundling, UCSF Professor of Allergy and Immunology, shared a memorable video on how to use an epipen. A full roster of other topics was covered, ranging from migrant health to bipolar affective disease in the workplace. The second day’s final lecture by Dr. Neal Benowitz captivated the audience with its focus on toxins associated with E-cigarettes.

The concluding half day was led by the always-on-point Dr. Howard Maibach, UCSF Professor of Dermatology. He commanded the audience’s attention with his calm presence, famous bow tie, brevity in slides, and ability to field the numerous questions posed throughout his interesting talk. World renowned in Occupational Dermatology, Dr. Maibach discussed the toxic effects of fragrances, metals, and chemical burns as well as proper testing methods. Dr. Denis Vinnikov, an MPH student in the Berkeley Environmental Health Sciences program, shared his vast experience with high altitude health effects in his work as a physician in the gold mines of Kyrgyzstan.

The attendees walked away with a new fund of knowledge and an unmatched networking opportunity in the field of occupational and environmental medicine.

New Research from COEH

COEH faculty member Martyn Smith and COEH faculty affiliate Luoping Zhang from the UC Berkeley School of Public Health published an up-to-date review on “Functional genomic screening approaches in mechanistic toxicology and potential future applications of CRISPR-Cas9” in Mutation Research Review ahead of print on January 25, 2015. The CRISPR-Cas9 technology, a novel genomic editing tool, can be applied to test toxicities of environmental chemicals.

“It has been used to identify genes involved in the response to chemical and microbial toxicants in several human cell types and could readily be extended to the systematic screening of large numbers of environmental chemicals,” the study reports. In the future, the innovative technology offers the potential to tailor medical treatments to match an individual’s genetic makeup.

In collaboration with scientists at the National Cancer Institute and in China, Smith, Zhang, and COEH faculty Stephen Rappaport and Alan Hubbard published their influential work on formaldehyde toxicity in the stem/progenitor cells of Chinese workers in the January 2015 issue of the journal, Carcinogenesis.

Read the study in Mutation Research Review: http://www.sciencedirect.com/science/article/pii/S1383574215000034

Read the study in Carcinogenesis: http://carcin.oxfordjournals.org/content/36/1/60.abstract?sid=d47a6366-4671-4072-9c5b-ee567ad43bb4

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Exposure to Small Particle Air Pollution Linked to Ischemic Heart Disease in Aluminum Workers

Occupational exposure to air pollution less than 2.5 microns in diameter (PM$_{2.5}$) is associated with an increased risk of ischemic heart disease (IHD) among aluminum smelter and fabrication workers, a new study by COEH researchers at UC Berkeley concludes.

The longitudinal study predicted that after 15 years, the risk of IHD for smelter workers was 2.9 percent higher in those always exposed above, compared to always below the 10th percentile (0.16 mg/m$^3$) of exposure to PM$_{2.5}$. For fabrication workers, where the 10th percentile was 0.06 mg/m$^3$, the estimated difference in the risk of IHD was 2.5 percent.

“Our study provides more evidence that there is a causal relationship between inhaling small particulates at levels seen in an occupational environment and the subsequent development of heart disease,” says lead author Daniel Brown, a research data analyst in the School of Public Health.

PM$_{2.5}$ poses a greater health risk than larger, coarse particles over 2.5 microns in diameter, reports the U.S. Environmental Protection Agency. Due to their smaller size, they can be inhaled and stored deep in vulnerable areas of the lung. IHD narrows the arteries that bring oxygen and blood to the heart muscle. It is the leading cause of death globally, notes the World Health Organization. Heart disease is responsible for one in four deaths each year in the United States.

“Basically, workers who get sicker as they get older, possibly due to some of the exposure in the workplace, tend to leave work or selectively reduce their exposure by switching to different jobs,” explains Brown. “That process makes it difficult to get meaningful estimates of the effect of the exposures that we’re looking at. In order to adjust for that process, we really need to use these newer causal techniques.”

Using TMLE, researchers also took into account personal characteristics that change over time, such as smoking and Body Mass Index (BMI) two risk factors for heart disease. The study collected smoking and BMI data at occupational medicine clinics onsite at each facility. The results of the study remained robust to the removal of these variables. “Yes, they’re certainly strong predictors of heart disease, but in this setting, they didn’t act as confounders,” confirms Brown.

Brown’s co-authors from COEH include Sadie Costello, Elizabeth Noth, Katherine Hammond, and Ellen Eisen. Additional authors are Mark van der Lann and Maya Petersen from UC Berkeley and Mark Cullen from the Stanford University School of Medicine.
Before a capacity crowd of 200 at the David Brower Center, COEH Director John Balmes kicked-off the 2015 Lela Morris Symposium on ergonomics, health, and workplace design. Held in Berkeley on May 22, 2015, the symposium brought together industry and worker representatives from the United States and around the world. Adding to the faculty and staff in attendance from the three campuses of COEH – UC Berkeley, UCSF, and UC Davis – researchers attended from UCLA, Washington University in Seattle, Ohio State University, the University of Michigan, Northeastern University, and the University of Bologna, Italy.

Balmes opened the symposium by introducing David Rempel, his esteemed colleague of 30 years. Rempel, founder of the University of California Ergonomics Program, exemplifies COEH’s triple mandate of teaching, research, and service, according to Balmes. Many in the packed theater came to honor the legacy of Rempel, now professor emeritus after retiring as director of the Ergonomics Program.

Keynote speaker Bill Marras spoke to the role of ergonomics in design. Marras is a National Academy of Engineering member and a professor and Honda Endowed Chair in the Department of Integrated Systems Engineering at the Ohio State University. His presentation detailed a four-part systems approach to design, which extends beyond the worker’s isolated musculoskeletal disorder to include psychosocial stressors in the workplace and the broader occupational environment. Marras contends this “human-centered” context is what separates trained ergonomists from other fields. He argues that fitting the environment to the human, or “human factors design,” ultimately improves worker productivity and reduces health care costs. The three key components of high quality ergonomics are that it is design centered, takes a systems approach, and considers work performance and well-being.

Following Marras, presenter Barbara Silverstein, executive committee chair of the Industrially Developing Countries Committee for the International Ergonomics Association, described how she applies the Balance Theory developed by Pascale Carayon to assist international workplaces to improve worker and company health. (The theory initially recognized the influence of work on job stress.)

Using the example of coffee farming in Jalapa, Nicaragua, Silverstein showed how workers were not only exposed to musculoskeletal risks while harvesting, but they had the added risk of carrying 40 pound sacks of coffee cherries down steep mountain terrain. Her international team engaged worker focus groups while designing prototype baskets to better balance their load to reduce back discomfort and fall risks.

The emphasis of the symposium turned to new national initiatives on injury prevention. Thomas Armstrong from the University of Michigan Center for Ergonomics discussed draft guidelines recently proposed by the American Conference of Governmental Industrial Hygienists (ACGIH) for Threshold Limit Values (TLV). The new limits will help protect workers exposed to upper limb localized fatigue on a daily basis.

Switching the lens from national to state measures, Deborah Gold, former deputy chief of Health and Engineering Services at Cal/OSHA, laid out the complexity of extending California’s Safe Patient Handling regulation (AB1136) to long-term care (LTC) facilities. Currently, AB1136 protects workers in acute-care hospitals and excludes LTC and correctional facilities.

Musculoskeletal disorders (MSDs) accounted for 33 percent of all injury and illness cases in 2013, reported Gold. Nursing assistants were among the most at risk, with MSD cases accounting for 53 percent of the total cases of injury and illness (BLS – December 16, 2014).

Following a break, Richard Jackson re-energized the theater with his presentation linking the built environment to ergonomics and health. Jackson, former director of COEH in southern California and a professor in the UCLA Fielding School of Public Health, relayed his experience in the
2015 Whorton Award Winners

Daniel Brown won the 2015 COEH M. Donald Whorton Award for “Best Original Paper” and Michael Guarnieri received first place for “Best Scientific Writing Paper.” The awards honor the late Dr. Whorton. Announced annually at the symposium, the awards recognize important new voices in occupational and environmental research.

Wrapping up the day’s presentations, Carisa Harris-Adamson from UC Berkeley and Samuel Merritt University and Jack Dennerlein from Northeastern University presented results of their U.S. studies on preventing hand and arm injuries and improving the safety culture through workplace programs.

Two panel discussions during the symposium synthesized each presenter’s perspective on ergonomics, workplace design, and health. Guest expert Francesco Violante, Director of the Occupational Medicine Department at the University of Bologna, moderated the first panel. Andy Imada, President of the Human Factors and Ergonomics Society, moderated the second. Imada asked audience member Meg Honan, a senior ergonomics program manager at Genentech and graduate of the UC Berkeley Ergonomics Program, her unscripted advice on effecting change in workplace health.

“I believe that if you give employers a pathway to be successful when you are proposing programs to improve ergonomics, where they can exercise their values and create a balance with the profits they need, they are willing to come along,” said Honan. “You have to be persistent and give them a path forward.”

Balmes wrapped up the symposium with an open invitation to an after-party celebrating Rempel’s retirement. Family, colleagues, and graduate students at the party waited for a turn to toast Rempel’s lifelong contributions as a leader, scientist, entrepreneur, mentor, and friend.

Guarnieri’s Lancet paper, “Outdoor air pollution and asthma,” discussed the effects of particulate matter, gaseous pollutants, and mixed traffic-related air pollution on pre-existing and onset asthma. It also examined clinical implications, policy issues, and research gaps relevant to asthma and air pollution.

Brown’s paper, “Occupational exposure to PM10 and incidence of ischemic heart disease: Longitudinal targeted minimum loss based estimation,” has been published by the journal, Epidemiology. The study provides evidence that there is a causal relationship between inhaling small particulate at levels seen in an occupational environment and the subsequent development of heart disease. See the article on Brown’s research in this issue of the Bridges Newsletter on page 7.

 Asked what he likes most about his new job – Odell says his coworkers top the list. “So far it has been the people – a really great team of super smart, motivated, interesting people. I definitely get caught up in their energy in a positive way,” adds Odell. Some of the futuristic projects, or “Moonshots,” to come out of Google X include a self-driving car and Google Glass, the voice command, wearable technology that places data within eyesight.

Not many people have Odell’s background in product design and ergonomics, which are unique skill-sets that he brings to the Google X team. Odell earned his PhD at UC Berkeley in Mechanical Engineering with a major in Design. It was in Professor Paul Wright’s mechanical engineering lab that Odell’s research began to turn toward new types of computer input devices. Odell says, “the work turned from a question of, how do you build this device, to the
human element - how do you make it better for people?” During this time, Odell began engaging David Rempel to learn about ergonomics. Rempel sat on Odell’s thesis committee for his dissertation, “Bimanual Computer Input and Forearm Support Implemented and Evaluated in an Integrated System.”

After earning his doctorate, Odell went straight to Microsoft. “If you’re able to work an innovation into a product at Microsoft, you’re going to be able to help millions of people,” says Odell. “For instance I got to drive the ergonomic design of the first-ever Natural mouse. Up until that time, the focus had been on split keyboards and Natural keyboard design, but as computer interfaces changed from text-based to graphics-based, we found that the mouse was being used three times as much as a keyboard. That was a really gratifying project.”

The Sculpt Ergonomic Desktop was Odell’s last project at Microsoft – and one of his career highlights. Collaborating with David Rempel and former ergonomic students Pete Johnson and Jack Dennerlein, Microsoft tested early prototypes of the keyboard in Rempel’s lab. Previously, Rempel and Odell were co-authors of several papers on the ergonomics of keyboard and tablet design.

In addition to Rempel, Odell says a number of mentors influenced his career, such as Paul Wright, his advisor, and Hugh McLoone, his predecessor at Microsoft. “He definitely helped me, especially as I was starting out as a young researcher straight out of school.”

Asked what advice he could offer to students beginning their professional career, Odell says, “It’s important to take the opportunity to form relationships with the people who are doing the kind of work that you want to do. Frankly, Professor Rempel was pretty intimidating to me early on because he’s well-published and respected in the field. But for the most part, these people are open and willing to have a conversation with you, to give you advice and feedback. Those types of relationships can be super-helpful in navigating your career.”

COEH Retirements

Professor David Rempel retired from UCSF at the end of 2014 following a 25-year career as the director of the University of California Ergonomics Program. He remains a professor emeritus of Bioengineering at UC Berkeley and will continue his affiliation with COEH by managing ongoing grants and assisting in the transition to a new director of the Ergonomics Program.

His research focuses on the etiology and prevention of work-related upper extremity disorders through the design of workplace tools and tasks. He recently managed a 5-year study with six universities to better understand workplace factors related to carpal tunnel syndrome. The overhead drilling device — a 10-year project — led to the development of an overhead drill rig and a universal drill rig that are being sold and used in the construction industry — both devices reduce workers’ exposure to physical stressors and silica dust.

Rempel obtained his MD from UCSF in 1982, his MPH in Epidemiology from UC Berkeley in 1981, and a BA in Engineering from UC San Diego in 1977. He is board-certified in internal medicine and occupational medicine and is a Certified Professional Ergonomist. In addition to 17 book chapters, he has published more than 140 peer-reviewed scientific papers.

Rempel continues to serve on the National Research Council’s Board on Human Systems Integration. He will also continue to serve on the American Conference of Governmental Industrial Hygienists (ACGIH) Physical Agents Committee and the American College of Occupational and Environmental Medicine (ACOEM) Clinical Practice Guidelines Committee.

COEH faculty Alan Buckpitt announced his retirement from UC Davis. He will continue to serve as a professor emeritus of Molecular Biosciences in the UC Davis School of Veterinary Medicine. Buckpitt’s 35 year career with the University of California included five years at UC Irvine before joining the faculty at UC Davis in 1985. He was a postdoctoral fellow in the Laboratory of Chemical Pharmacology at the National Heart, Lung, and Blood Institute and subsequently in the Laboratory of Clinical Pharmacology at the National Cancer Institute.

Buckpitt’s laboratory focuses on the mechanism by which environmental chemicals produce tissue selective toxicity in the respiratory system. He taught in the pharmacology/toxicology graduate program, including a specialized course in drug metabolism. He won the Achievement Award from the Society of Toxicology in 1983.

Buckpitt earned his PhD and MS in Pharmacology from Indiana University in Bloomington and his BS in Chemistry from the College of William and Mary in Williamsburg, VA.

In April, 2015, the journal PLOS ONE published his co-authored paper, “Simultaneous Quantification of Multiple Urinary Naphthalene Metabolites by Liquid Chromatography Tandem Mass Spectrometry.”

Barbara Plog, MPH, CIH, CSP, has retired from her position as director of the COEH Continuing Education Program after 28 years with the University of California. Funded by the National Institute for Occupational Safety and Health, the Program coordinates a range of accredited courses for practicing health and safety professionals.

Concurrent with her role of director, Plog was a lecturer in the UC Berkeley School of Public Health. She taught graduate

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Profile: COEH Advisory Committee Member Lynette Landry, Hawaii Pacific University

In January 2014, Lynette Landry became dean of the College of Nursing and Health Sciences at Hawaii Pacific University, the largest nursing program in the state of Hawaii. Formerly from the San Francisco Bay Area, Landry was the director of the School of Nursing for San Francisco State. She earned her MS and PhD in Occupational and Environmental Health Nursing Science at UCSF.

How did you come to be the dean of College of Nursing and Health Sciences at Hawaii Pacific University?

I was director of the school of Nursing at San Francisco State for 13 years. I really enjoyed my work, but there were some aspects of the bureaucracy that made it difficult to affect change. I started looking for a position with the opportunity to develop programs, influence curricula, and work with faculty in ways that I couldn’t at San Francisco State. Hawaii Pacific University is a small, private university. It is much more nimble than a state-run system, more cutting-edge and innovative.

My husband is a surfer, and he always wanted to live here for the surf. And, I must say, I’m enjoying my commute much better. I used to live in Sonoma County, and my average daily commute going to and from work was about 4 hours. Now, my commute is less than 30 minutes, both ways.

What are some of your early leadership lessons that help you in your current role?

One of the lessons I learned early on is to listen. I did home care for many years. I was not only a case manager, but I was a director of a home care agency for the nursing division. Working with patients and nurses who are case managing patients, you have to learn to listen before you make decisions.

Then, with Catholic Healthcare West, now Dignity Health, I did performance improvement for seven years. Within the hospital system, you’re working with professionals with all sorts of different educational backgrounds and specialty areas. Learning to work collaboratively with people who view things differently was a key learning experience. Now I oversee not only a school of nursing, but a school of social work and a public health department. I work with professionals who have different perspectives on health and the environment. Those early lessons in performance improvement serve me well.

Can you describe the most important occupational or environmental health issues in your region?

I remember the research that Marion Gillen was doing several years ago on occupational safety, particularly among construction workers. We’ve had a few incidents lately on Oahu where construction workers have been injured. They’re either not using the safety equipment or they’re not using it properly. In Kakaako, near Waikiki, they’ve constructed six high rises in the last three to four years and there are another eight or nine more going up. As is true nationally, worker safety is of primary importance in the construction industry in Hawaii.

The other issue unique to Hawaii is that, unlike many other states, there are no emission standards for automobiles. There’s been a lot of research on the health effects of inhaling exhaust particulates, especially for those who live next to heavily trafficked roadways. Research needs to be done to ascertain the health effects on local population of pollution from cars and trucks in Hawaii. Results of studies done on the mainland may not be transferrable to Hawaii given the unique atmospheric conditions of living on an island.

On environmental health, we’re facing a lot of the same issues as many coastal communities globally. We also have water quality concerns because of run-off from road surfaces and hillsides. Other issues impacting water quality and marine life are over fishing in some parts of the state and the impact of tourism on reef integrity. Since a major food source for the state is fish and other seafood, assuring good water quality and sustaining a healthy ecosystem is important to the health of the state’s residents.

How can you help COEH expand their reach in Hawaii?

I think the key is to engage faculty. A starting point is to identify faculty who are interested in these issues and mentor them to develop research programs specific to Hawaii. What is really profound to me is the commitment that faculty has to the communities on this island, and how they actively engage with those communities. I think there are great opportunities to work with local communities to address their occupational and environmental health concerns and make a positive impact on their quality of life.

As Dean, do you have any advice for students in the field of occupational and environmental health?

Students need to understand that it’s engagement with the community that’s going to have the largest impact. When the community owns the problems and is involved in finding the solution, you’re going to affect change. That is the most important thing I tell all of my students.
WCAHS and UCD Blum Center Cosponsor Ag Health and Safety Projects in Developing Countries

By Andrea Sargis, UC Davis

The Western Center for Agricultural Health and Safety (WCAHS) is proudly partnering with the UC Davis Blum Center for Developing Economies to help impoverished communities around the world improve their agricultural health and safety. WCAHS (headed by UC Davis COEH director Marc Schenker) and the Blum Center are excited to announce joint funding of six UC Davis undergraduate students and eight UC Davis graduate students to conduct agriculture health and safety related projects this summer both in the United States and abroad in conjunction with a local non-profit or agency.

The selected undergraduate projects are located in Latin America. Trent McGowan and Ariel Chavez will work with Engineers Without Borders to improve water quality and catchment in Chirinos, Peru, a small agricultural town that has outgrown its current water supply system. Alex Thornton-Dunwoody will help build a low cost pollen dryer for Colombian beekeepers to improve bee pollen storage. Colombia is one of the highest pollen producing regions in the world, and the project will help beekeepers improve their income and dramatically improve pollen quality. Finally, Tracie Dang, Elspeth Fullerton and Greta Soos will travel to Sabana Grande, Nicaragua, to help reduce malnutrition in cows by developing feed silage. This Nicaraguan community depends on dairy cows as their main source of milk and dairy products, but their cattle’s nutrition suffers due to a lack of crop growth during the dry seasons. The undergraduates will conduct community silage workshops and help build a silage chopper.

Graduate student projects range from North America to Latin America to Asia. Michael Kato will help establish a “One Health” approach in Knights Landing, California, a predominantly agricultural-based community where many of the residents are migrant, undocumented, poor Latino workers with little access to health care. The One Health approach brings veterinarians and physicians together in one building to improve animal and human health through shared knowledge, while also educating the community about zoonotic disease, animal husbandry, and preventative vaccination.

Lisandra Ochoa and Kayla Carlson will also be taking a One Health approach to community development in Sabana Grande, Nicaragua. Their goal is to assess the health needs of the community and provide education about disease states and preventive health care, especially to the local youth in order to empower the next generation of leaders. Laura Budd, Abigail Fosdick, Samantha Lawton, and Sarah Tirrell will also travel to Sabana Grande, Nicaragua, to help improve poultry egg and meat production by training families on simple and inexpensive interventions to boost poultry output, such as record keeping, night housing, and disease prevention. Lastly, Wendi Jackson and Jake Pry will study the role of pesticides and alcohol consumption in a kidney disease epidemic among the rural poor in Sri Lanka. The epidemic is especially prevalent in farming regions of North Central Region of the county.

“Contributing to research that could lead to prevention of [chronic kidney disease of unknown etiology] is tremendously rewarding and humbling.”

Jake Pry, Graduate Student and Award Recipient going to farming communities in Sri Lanka

These hands-on opportunities allow undergraduate and graduate students to gain fieldwork experience in establishing change to problems that they are passionate about solving. The students, faculty, and outside organizations affiliated with these projects aim to further the WCAHS’ and the Blum Center’s mission of assistance and aid domestically and abroad while training the next generation of leaders through experiential learning in agricultural health and safety.
The Labor Occupational Health Program (LOHP) once again helped coordinate a statewide annual public awareness campaign designed to highlight the importance of preventing teen injuries on the job. Funded by the California Commission on Health and Safety and Workers’ Compensation, the campaign helps raise community awareness about child labor law protections and workplace health and safety rights and responsibilities. The campaign includes statewide distribution of the winning teen designed poster (this year designed by Venice Faye E. Torres, of Channel Islands High School in Oxnard, CA), as well as a social media campaign, a video PSA contest, and distribution of resource materials for educators. For more information, go to http://youngworkers.org.

Safe Jobs for Youth Month!

Garrett Brown, coordinator of the Maquiladora Health & Safety Support Network and COEH Advisory Committee member, presented an update on the Bangladesh Accord for Fire and Building Safety on March 31, 2015, at the UC Berkeley Center for Latin American Studies.

The Accord is a legally binding agreement between 190 clothing brands and two international trade unions and their local Bangladeshi affiliates that addresses health and safety hazards in Bangladesh’s garment industry. It began after a series of fatal disasters, most notably, the Rana Plaza building collapse on the morning of April 24, 2013, which killed 1,100 workers and disabled hundreds more. Brands pay a fee to participate in the Accord, supplying crucial funds to improve factory working conditions in Bangladesh.

The Accord contracted independent, international health and safety professionals to conduct initial inspections of 1,800 Bangladesh garment factories to review fire, electrical, and building safety. It also established a staff of Bangladeshi engineers to do follow-up inspections to verify that corrections have been made. Brands are legally responsible to pay for mandatory repairs if factory owners are unable to pay.

Funded by the Accord, LOHP Program Coordinator Robin Dewey and Valeria Velazquez (formerly of LOHP) went to Bangladesh with Brown in October, 2014, to provide two occupational safety and health training sessions. The first was a two-day training course conducted for 30 representatives of the Industrial Bangladesh Council (IBC) unions. The second was a half-day training course conducted for the Accord’s 12 case handlers and seven engineers.

The goal of the week-long trip was to increase the occupational safety and health knowledge and skills of the union members, the Accord’s complaint handlers who receive worker complaints, and the engineers inspecting the garment industry. LOHP also provided a number of fact sheets and other resources on occupational safety and health that were translated into Bangla.

“The experience in Dhaka was moving for us and eye opening. I am sure we learned at least as much - if not more - from our trainees as they did from us,” added Dewey. “We are hoping to continue our partnership with the Accord and others we met in Bangladesh to help bring about much needed, positive health and safety changes in the ready-made garment industry.”

The United Kingdom-based Institution of Occupational Safety and Health (IOSH) invited Brown to participate in a Parliamentary conference in London on June 29, 2015. Conference attendees analyzed the fashion industry’s global supply chains and identified how to improve working conditions in the industry.

The Bangladesh Accord Brings Health & Safety to South Asia

Union representatives attend the two day occupational safety and health training sessions.

A worker is designated as a fire fighter in the event of a fire.
AWARDS AND ANNOUNCEMENTS

Fadi Fathallah
Director of New COEH Agriculture Safety and Health Training Program

COEH faculty Fadi Fathallah is the director of a newly awarded educational research program designed to train PhD students in agricultural safety and health (ASH). The NIOSH-funded initiative, offered at UC Davis, will train doctoral students who will develop interdisciplinary skills in ASH research and practice. Currently, candidates will apply to the PhD program in Biological Systems Engineering with a major emphasis on ASH, with the possibility of expanding the candidate pool to other programs such as Epidemiology and Toxicology.

Participating faculty from COEH includes Kent Pinkerton, Stephen McCurdy, Deborah Bennett, and Marc Schenker. A total of six professors are taking part in the program from four colleges/schools on campus: Agricultural and Environmental Sciences, Engineering, Medicine, and Veterinary Medicine.

Agriculture ranks among the most hazardous industries in the United States. Every day, approximately 167 agricultural workers suffer a lost-work-time injury. Five percent of these injuries result in permanent impairment, according to the Centers for Disease Control and Prevention. Yet, there are very few US academic programs that train doctoral students in ASH. The new program will fill this void by educating doctoral professionals and leaders in who will play a role in making agriculture a safer industry.

ILWU Local 6 Honors LOHP for Health and Safety Training

International Longshore and Warehouse Union Local (ILWU) 6 recognized Labor Occupational Health Program (LOHP) staff Suzanne Teran, Dinorah Barton Antonio, and Valeria Velazquez (former with LOHP) for providing health and safety training to almost 250 workers in the recycling industry.

Hundreds of workers, family members, and supporters attended the special event in March 2015 organized to celebrate the winning of a fair wage and benefit standard in Alameda County recycling facilities represented by ILWU Local 6.

While presenting a campaign commemorative poster to LOHP staff, a recycling worker described the risks they face on the job, including dust, needles, and other items that are unexpected in the line, as well as ergonomic hazards. She talked about the way the trainings helped workers take action when they see a problem, such as using the conveyor belt’s emergency stop button to prevent injuries while sorting.

In their second year of training workers in Fremont, Oakland, and San Leandro, CA, LOHP added new curriculum materials to address confined space hazards and heat illness prevention. Also in year two, Teran and her colleagues offered three days of leadership training at the facilities represented by ILWU Local 6.

“The idea was to train health and safety leaders to be resources within their facility in addition to integrating health and safety into the leadership role that they already played with the union,” says Teran.

Fremont Mayor Bill Harrison and city council members from Oakland attended the celebration to lend community support to those striving to improve conditions in Alameda County’s recycling industry.

Kirk Smith Receives 2014 Haagen-Smit Clean Air Award

On June 25, the California Air Resources Board (CARB) honored COEH faculty Kirk Smith with the 2014 Haagen-Smit Clean Air award. CARB gives the award annually to individuals who have made significant lifetime contributions toward improving air quality and climate change science, technology and policy, and furthering the protection of public health.

“The Haagen-Smit Award is our way of honoring these individuals who have demonstrated a sustained commitment to protecting public health throughout their long and distinguished careers,” said CARB Chairman Mary D. Nichols. Other winners in 2014 include Donald Blake, professor of chemistry at UC Irvine and John Wall, Vice President and Chief Technical Officer, Cummins Inc.

The award is named for the late Dr. Arie Haagen-Smit — known as the “father” of air pollution science and control. The award recognizes those who continue his legacy through perseverance, leadership and innovation in the areas of research, environmental policy, science and technology, public education and community service.

Condensed from a CARB press release.
Sarah Daniels Wins Fellowship from Soroptimist International of the Americas

UC Berkeley PhD candidate Sarah Daniels received a Founder Region Fellowship (FRF) from Soroptimist International of the Americas. FRF awards one-year grants to female scholars in the final phase of their doctoral degree. FRF seeks to support women who are working in fields traditionally held by men or in fields that have social importance to the world. The award also recognizes the significance of the recipients’ studies.

Daniels’ research interests include molecular biology, epidemiology, biostatistics and causes of chronic diseases. Her PhD studies focus on the use of leading-edge technology to examine environmental exposures and identify biomarkers related to type II diabetes.

Daniels received her award at the Founder Region’s reception held on May 1, 2015, in San Ramon, CA.

To learn more about the Fellowship, visit: http://www-founderregionfellowship.org.

Sarah Daniels

AIHA-NCS Honors Blythe and Raval

Rachel Blythe received the 2015 Tebbens Student Award from the Northern California Section of the American Industrial Hygiene Association (AIHA-NCS). The award pays tribute to Dr. Bernard D. Tebbens, a former professor of industrial hygiene from the UC Berkeley School of Public Health.

AIHA-NCS also awarded Amee Raval the 2015 Robert T. Legge Award, which commemorates Dr. Legge’s pioneering contributions to the fields of occupational medicine and public health. Dr. Legge was a former professor of industrial hygiene and university physician at UC Berkeley.

The awards for academic excellence are presented to students from the UC Berkeley Environmental Health Sciences (EHS) programs who demonstrate an interest in the industrial hygiene profession.

Blythe completed her MPH in the Industrial Hygiene program within the Division of Environmental Health Sciences in May 2015. Recently a graduate assistant at LOHP, she begins her new career in August as an industrial hygienist at Intel in Hillsboro, Oregon. Raval is in her first year of EHS studies in the Global Health and Environment and Industrial Hygiene programs, and she will graduate in May 2016.

AIHA-NCS presented the awards to Blythe and Raval during its Student and Vendor Night held in Berkeley in March 2015.

American Industrial Hygiene Association Honors Kathleen Navarro

COEH student Kathleen Navarro won “Best of Session - 1st Place Student Poster Award” at the American Industrial Hygiene Association’s annual conference held in Salt Lake City, Utah, from May 30 to June 4, 2015. Navarro is a PhD candidate in the Environmental Health Sciences program in the School of Public Health at UC Berkeley.

Navarro’s poster titled, “Gas-Phase Polycyclic Aromatic Hydrocarbon Exposure During Prescribed Fire – Case Study” ranked first place out of more than 40 student posters at the session.


Garrett Brown Recognized for Contributions to Industrial Hygiene

The American Conference of Governmental Industrial Hygienists honored COEH Advisory Committee member Garrett Brown with the 2015 William Steiger Memorial award at the AIHce conference held May 30 to June 4, 2015, in Salt Lake City, Utah. “The award recognizes individuals from the social or political sphere whose efforts have contributed to advancements in occupational safety and health.”

Brown also received the 2015 United Steelworkers J. William Lloyd award at the United Steelworkers’ Health, Safety, and Environment (USW HSE) conference in March. The USW HSE presents the award annually to an individual or organization from outside the union for outstanding contributions to the field.

He also presented the 2015 Jeffrey S. Lee Lecture at the AIHce conference in Salt Lake City, an address sponsored by the Foundation for Occupational Health and Safety.
Teens Monitor Neighborhood Air Quality in San Joaquin Valley
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Very few of these PAS 2000 CE monitors exist worldwide, and they are expensive. “I have to admit I was really worried,” said Mann. Fortunately, the teens cared for the equipment without incident, turning the monitors on and off throughout the day to save battery life.

Later, the CHAPS team helped the students download and analyze their monitoring data. Then, they compared one another’s PAH concentrations during the same time periods and hypothesized why concentrations varied by route taken and mode of transportation. “The excitement of them being able to start understanding concepts about air pollution and health and how much it can vary from place to place,” made an impression on Mann. When students presented their preliminary results to CART board members in February and to CART students and teachers in May, 2015, it generated a great deal of enthusiasm. “All in all, this was a win-win project,” added Saklar.

The CHAPS study receives funding from the National Institute for Environmental Health Sciences and the U.S. Environmental Protection Agency. Principal Investigators include COEH faculty Katharine Hammond, professor of Environmental Health Sciences, UC Berkeley School of Public Health, and John Balmes, director of COEH. Gary Shaw, professor of Pediatrics in the School of Medicine at Stanford, is also a Principal Investigator. Jaymin Kwon, professor in the Department of Public Health at Fresno State, was a partner in CART’s community outreach project.

For more information on CHAPS, visit: http://chaps.berkeley.edu.

COEH Retirements
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courses in Occupational Safety and the Professional Practice of Industrial Hygiene. Prior to her role of director of the COEH Continuing Education Program, she served as Assistant Director of Technical Services of the Labor Occupational Health Program.

She was the Editor-in-Chief of “Fundamentals of Industrial Hygiene,” 3rd, 4th, 5th, and 6th Editions with COEH Deputy Director Patricia Quinlan. The book is considered an important reference tool for practicing safety and industrial hygiene professionals. She received her BA degree from the University of Arizona in Tucson, Arizona in 1973 and her MPH degree in Industrial Hygiene from the University of Illinois at the Medical Center in Chicago, Illinois in 1981.