



DEPARTMENT OF ENVIRONMENTAL AND OCCUPATIONAL HEALTH SCIENCES

ENVIRONMENTAL HEALTH

News

SCHOOL OF PUBLIC HEALTH ■ UNIVERSITY OF WASHINGTON ■ WINTER 2009

WORKER HEALTH AND SAFETY

Our department offers consultations, laboratory testing, and clinical services to businesses and labor groups to promote the safety and health of workers in Washington state. In this issue, we highlight our successes in identifying occupational hazards and offering strategies to prevent injury or illness, successes that depend on interdisciplinary collaborations within our department and strong relationships with external partners.

We also feature researchers working to improve the delivery of health care to injured workers.

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OUR FIELD GROUP AND EH LAB

Service to Washington state workers

The strong collaboration among the Field Research and Consultation Group (Field Group), Environmental Health Laboratory (EH Lab), and department researchers illustrates our commitment to worker health and safety in Washington state. The EH Lab, accredited by the American Industrial Hygiene Association, offers a wide range of services in analytical chemistry and instrumentation. The five members of the lab (pictured below, left to right) include Senior Research Scientist & Quality Assurance Coordinator Jianbo Yu, Laboratory Administrative Manager Rosie Schaffer, Research Scientist Tristan Butterfield, EH Lab Director Russell Dills, and Research Scientists Jacqui Ahmad and Maureen Cornell. The EH Lab responds to industrial hygiene service requests from a variety of organizations and agencies, including those from the Field Group. The EH Lab also provides consultation on the chemicals produced during industrial processes.

Using EH lab analyses and our faculty's expertise to pinpoint potential problems, Field Group staff provide employers and workers strategies to reduce occupational health and safety hazards.

Members of the EH Lab (top row) and Field Group (bottom row)

*Photo:
Sarah Fischer*



The five members of the Field Group (pictured on cover, left to right) include Research Industrial Hygienists Gerry Croteau and Marty Cohen, Research Scientist Marc Beaudreau, Field Group Director Janice Camp, and Research Industrial Hygienist Venetia Runnion. They have professional certifications in industrial hygiene and safety, among other specialties, and nearly 100 years of cumulative experience working on a wide variety of health and safety issues in the workplace. The Field Group also offers our graduate and undergraduate students a chance to participate in research projects, work closely with our external partners, and develop technical expertise.

Below we highlight collaborative projects between the Field Group and EH Lab, who work closely with external partners to identify occupational hazards and strategies to prevent injury and illness.

Electronics Recycling & Metal Exposure

The upcoming shift from analog to digital broadcasting has motivated many consumers to shop for new televisions and throw out older TV sets, which are useless without a digital TV converter box or cable subscription. Some components of electronic equipment are made up of heavy metals like lead, which is why discarded TVs, computers, monitors, and other electronics are potentially toxic to the environment and to human health. Each year, millions of pounds of electronic products end up in Washington state landfills. In order to better protect the environment, Washington state legislation, effective January 1, 2009, requires manufacturers to assume the cost of recycling TVs, computers, and other e-waste.

A Seattle-based electronics recycling facility contacted the Field Group to evaluate its workers' potential exposure to metal dust generated and accumulated during recycling and to determine the need for their workers to wear respiratory protection. The company wanted to know if it had the proper safeguards in place.

Russell Dills and Venetia Runnion used a portable X-ray fluorescence unit to test areas in the facility for high-surface contamination of metals and bromine. Bromine is a marker for polybrominated diphenyl ethers (PBDE), a type of flame retardant used in electronic casings. Two of the three most commonly used PBDEs have been banned in Washington state because of their toxicity, ability to bioaccumulate, and persistence in the environment. In

addition, Runnion and Marc Beaudreau collected airborne and surface wipe samples from the recycling facility.

Nearly all samples taken from surfaces that employees use frequently had detectable levels of lead dust. The Field Group recommended that the facility improve its house-keeping program and continue to use wet cleaning methods and/or HEPA filtered vacuums in the break areas and on work surfaces. The Field Group also recommended that employees continue to wash hands before eating, drinking, smoking, or taking breaks to remove potential metal dust, and that during work, gloves should be worn to prevent skin contact with the various metals.

Personal air samples were tested for potential exposure during different recycling processes. The Field Group found regulated metals to be well below permissible exposure limits. Despite the relatively low levels, the Field Group recommended that personal protective equipment be used when workers are performing activities or operating machinery that may increase their risk of exposure.

The recycling facility plans to share the Field Group findings and recommendations with the Basel Action Network, which is based in Seattle and operates globally to raise awareness about the environmental and public health impacts of transporting potentially toxic products to poorer regions of the world.

FURTHER READING

The Environmental Protection Agency on eCycling:

<http://www.epa.gov/epawaste/conserve/materials/ecycling/index.htm>

Best Practices for Welders

In February 2006, the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) lowered the permissible exposure limit of hexavalent chromium or chromium 6, from 52 to 5 micrograms per cubic meter of air. Chromium 6 has been linked to cancer and can be found in paint, pigments, metal-plating tanks, and plastics, and can also be generated when welding or using tools that produce fire or sparks on stainless steel.

Nationwide, the new rule impacts 558,000 workers in general industry, including painters and metal platers. Fifty percent of these workers are welders who work in a wide variety of industries, including metal fabrication shops, foundries, shipyards, and maritime maintenance.

STUDENT RESEARCH ON WORKER EXPOSURES

Shipyard Welders & Fume Exposures

Joseph Nelson's grandmother worked in the shipyards during World War II. So, it seemed fitting that his graduate research project, studying welding fume exposures, led him to three regional shipyards. Nelson, who works with Professor Noah Seixas, wanted to characterize welding fumes and identify exposures to welders. From this information, he plans to develop a statistical model designed to predict worker exposure in different situations.

Predicting worker exposures in this setting isn't easy. Welders don't typically weld for eight hours straight, said Nelson. The exposures can vary by duration of welding activity, size of the space, and type of ventilation used. The welder or someone else can set up the ventilation. The ventilation system, even when present, may be ineffective. For example, in the hull of a ship, a welder may be far away from ventilation, or a welder may use a fan for ventilation, which circulates the air and cools the worker but doesn't get rid of the fumes.

There's another caveat, Nelson explains. In ship repair, electricians, carpenters, plumbers, painters, and pipe fitters may be working in the same space as a welder. He often observed adjacent-worker exposure to welding fumes. One common scenario in ship repair, Nelson said, is the pairing of a welder with a fire watch worker, who watches for fires and holds a fire extinguisher in one hand and a radio in another. The fire watch is likely exposed to the same fumes as the welder, but the fire watch is not necessarily wearing the same protective equipment, such as respirator.

With the help of Field Group staff, Nelson connected with these shipyards where Nelson collected 165 eight-hour personal samples of welding fumes from more than 60 welders. With the EH Lab staff's assistance, Nelson analyzed these samples for 10 different metals and total particulates. He hopes the data will help employers in the shipyards set policy around welder exposures and affect worker practices.

Before his graduation with a master's degree in Exposure Sciences in June 2009, Nelson will present results from the study and the model he is developing for predicting exposure at the American Industrial

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Over the past two years, the Field Group has collected air monitoring data on welders' exposures. Working with the EH Lab staff, the Field Group found that 30% of the samples collected from welders had exposures greater than the permissible exposure limit. Based on these results, the Puget Sound Shipbuilders Association was interested in the Field Group developing a training video in order to raise awareness on welders' potential exposures to chromium 6.

In 2008, the Field Group received funding from a Washington State Department of Labor and Industries (L&I) Safety and Health Investment Projects (SHIP) grant to produce a training video applicable to all industrial sectors. The training video will consist of seven five- to ten-minute modules on chromium 6 health hazards and best practices for reducing fume exposures. It will show footage of preferred and proven exposure controls for welders, and in particular, the effective use and placement of local exhaust ventilation. A workbook will accompany the video. Checklists and hazard assessment forms will be offered to welders and their supervisors so they can better understand how to successfully comply with the new standard. The video and training materials will be available free of charge from L&I.

Venetia Runnion, Marty Cohen, Janice Camp, Marc Beaudreau, and Graduate Research Assistant Bridget Igoe are developing the training video package.

FURTHER READING

Hexavalent chromium: <http://lni.wa.gov/Safety/Topics/AtoZ/default.asp?KWID=363>

Welder in protective gear



Marc Beaudreau

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Hygiene Association Conference in Toronto, Canada. He hopes his study will be expanded and used to help with epidemiological studies of shipyard welders and welder fume exposures.

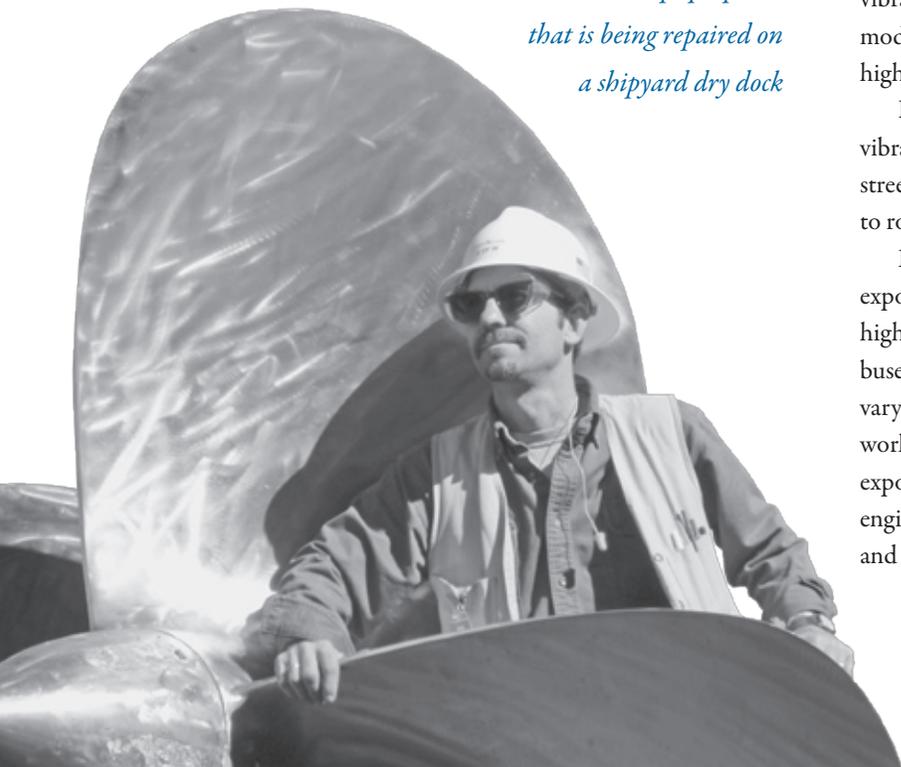
Bus Drivers and Vibration

Based on workers' compensation data from King County Metro, a substantial number of claims from bus drivers were associated with low-back pain or injury, explained doctoral student Ryan Blood. In many of the claims, bus drivers cited bouncing and jarring of the bus as the reason for their back pain.

In 2004, King County Metro asked the Field Group to help determine sources of these back injuries, and the Field Group worked with Associate Professor Pete Johnson to investigate the problem. The relationship between low-back pain and exposure to whole body vibration has been established in prior research, and in 2005, Johnson received departmental funding to measure whole body vibration exposures in King County Metro's bus drivers.

Blood worked with Johnson to characterize average vibration exposure and to develop a special instrument to measure "impulsive shocks," which occur when a bus driver hits a speed bump or a pothole. These shocks are as significant to whole body vibration exposure as average vibration exposure. Blood explains that a bus driver on a smooth freeway all day and another bus driver unexpectedly driving over a few potholes while driving on city streets will be exposed to different types of vibration.

Joseph Nelson stands next to a ship's propeller that is being repaired on a shipyard dry dock



Seong Huang

Ryan Blood downloads vibration signal data to his laptop

Seats can greatly influence whole body vibration exposures. At King County Metro, the current bus seat allows a driver to adjust the seat forward or back, set the firmness of the back support, and modify the seat suspension or stiffness.

In 2007, Blood and Johnson worked with King County Metro on another study to evaluate the ability of three different seats to "absorb" vibration exposures. All seats performed similarly, but the researchers found the seat suspension setting had a significant effect on whole body vibration exposures. A more rigid seat resulted in lower exposures. Blood and Johnson also found the driver's weight was an important factor. Results showed that a heavier person experiences less vibration than a lighter person. With seats designed to accommodate the heaviest drivers, other drivers may experience higher vibration levels.

In the same study, freeway driving resulted in higher average vibration exposures than city-street driving. Since the type of street and bus route affects exposures, a possible solution may be to rotate the higher exposure routes among drivers, said Johnson.

Blood and Johnson's next step is to compare vibration exposures in different types of buses. King County Metro has high-floor buses, low-floor buses, articulating buses, and coach buses. The researchers will study how each bus performs on varying road types and routes. Ultimately, the goal of their work is to identify factors that influence whole body vibration exposures in bus drivers and to provide administrative and engineering solutions that could effectively reduce exposures and risk of chronic back injury. ■

DESIGNING AGE FRIENDLY WORKPLACES

Over the last 30 years, the number of workers who remain in the workforce after the age of 65 has increased 101%, according to the Bureau of Labor Statistics, compared to a 59% increase in overall employment during the same period. More workers aged 65 and over are opting to postpone full retirement. Delaying retirement may become even more common in the years to come.

Why the change? Many workers stay on the job to retain health insurance, which is usually tied to employment. In some industries, the numbers of incoming younger workers are inadequate to replace older workers planning retirement, a situation that increases the need to keep older employees at work. Even before the recent economic downturn, many workers stayed employed because they did not feel financially prepared to retire. How the current economic crisis will affect long-term employment patterns is still unclear. Since many people have lost some of their retirement savings, the need to keep working may be an issue for many baby boomers.

In some ways, a graying workforce will benefit employers. The older worker often has keen skills due to years of experience, long-time institutional knowledge, and company loyalty.

Yet, many companies have not developed programs or policies to address the challenges particular to aging workers. For instance, as workers age, chronic conditions such as diabetes and heart disease become more prevalent. Muscular flexibility decreases, as do strength, balance, and reaction time. Due in part to these physiological changes, the numbers of severe injuries on the job increase with age.

Many companies have not developed programs or policies to address the challenges particular to aging workers

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Washington State Department of Labor & Industries

Faculty members Michael Silverstein, Steve Hecker, and Kate Stewart and Curriculum Manager Ken Scott worked with employees from the Washington State Department of Labor & Industries (L&I) to develop a workshop to help Washington state businesses, unions, and other organizations prepare for the aging workforce. L&I partners include Rick Goggins, Sharon Drozdowsky, Bruce Coulter, and Lena Wang. Scott says the workshop has two aims: help organizations understand how an aging workforce can contribute to productivity and sustainability and help companies prepare for future changes.

The development of a two-day curriculum, “Designing the Age Friendly Workplace,” was funded by an L&I Safety and Health Investments Projects grant. Workshop participants learn how to make the work environment safer for aging employees and develop an organization-specific action plan. The action plan includes ways to balance work and life as well as ideas for potential health promotion and disease prevention programs for employees.

The initial workshop was designed for general industry, and a construction industry-specific version is in development. To learn more or sign up for a workshop, contact Melissa Symon at mrsymon@u.washington.edu or call 206-897-1652. Visit the workshop website at www.agefriendlyworkplace.org



CONTINUING EDUCATION & EVENTS

To confirm this schedule or find more information about these courses, call 206-543-1069 or visit the Continuing Education website at <http://depts.washington.edu/ehce>. Courses are in Seattle unless otherwise noted.

PACIFIC NORTHWEST OSHA EDUCATION CENTER

Not for OSHA rules only! All classes offer training that meets WISHA, OR-OSHA, and Alaska state standards, as appropriate.

Apr 6-8 OSHA 2225: Respiratory Protection (*Portland*)

Apr 6-8 OSHA 3010: Excavation, Trenching & Soil Mechanics (*Portland*)

Apr 6-9 OSHA 6000: Collateral Duty Course for Other Federal Agencies

Apr 13-15 OSHA 502: Update for Construction Industry Trainer (*Portland*)

Apr 13-15 Supervisory Safety & Health Duties

Apr 13-16 OSHA 500: Trainer Course for Construction Industry (*Richland*)

Apr 13-16 OSHA 2045: Machinery & Machine Guarding Standards (*Portland*)

Apr 15-17 OSHA 503: Update for General Industry Trainer (*Portland*)

Apr 20-22 OSHA 3110: Fall Arrest Systems

Apr 20-23 OSHA 5400: Maritime Train-the-Trainer (*Anchorage*) **NEW!!**

Apr 20-23 OSHA 500: Trainer Course for Construction Industry (*Boise*)

May 4-6 OSHA 3095: Electrical Standards (*Portland*)

May 4-7 OSHA 511: General Industry Standards

May 4-7 OSHA 521: OSHA Guide to Industrial Hygiene (*Portland*)

May 4-7 OSHA 5600: Disaster Site Worker Train-the-Trainer (*Richland*)

May 11-14 OSHA 501: Trainer Course in Standards for General Industry (*Portland*)

May 11-14 OSHA 2045: Machinery & Machine Guarding Standards

May 12-14 OSHA 2264: Permit-Required Confined Space Entry (*Portland*)

May 18-21 OSHA 500: Trainer Course for Construction Industry

ONLINE OSHA 10-Hour Construction

CONTRACT OSHA 7600: Disaster Site Worker Training. Offered as a contract course.

Jun 1-3 OSHA 2250: Principles of Ergonomics (*Portland*)

Jun 1-4 OSHA 2015: Hazardous Materials

Jun 1-4 OSHA 510: OSHA Standards for Construction

Jun 8-10 OSHA 3010: Excavation, Trenching & Soil Mechanics (*Portland*)

Jun 8-11 OSHA 501: Trainer Course in Standards for General Industry

Jun 8-11 OSHA 511: General Industry Standards (*Portland*)

Jun 15-17 OSHA 2225: Respiratory Protection

Jun 22-25 OSHA 5400: Maritime Train-the-Trainer **NEW!!**

NORTHWEST CENTER FOR OCCUPATIONAL HEALTH & SAFETY

Apr 2 Puget Sound Occupational & Environmental Medicine Grand Rounds: *The Flavor of Heat—Forging Occupational Health Policy*

Apr 20-24 Comprehensive Industrial Hygiene Review (*Vancouver, BC*)

May 11 Chemical Reactivity Hazards: Laboratory Scale Recognition & Control (*Portland*)

May 13 Chemical Reactivity Hazards: Laboratory Scale Recognition & Control

May 14 Puget Sound Occupational & Environmental Medicine Grand Rounds: *Occupational Health Research in China: Past and Future Research on Benzene Exposure and Risk*

DELIVERING QUALITY CARE TO INJURED WORKERS

In *Crossing the Quality Chasm: A New Health System for the 21st Century*, the Institute of Medicine's Committee on Quality of Health Care in America criticized the current American health care system for serious problems in delivering high quality care. "Quality problems are everywhere, affecting many patients. Between the health care we have and the care we could have lies not just a gap, but a chasm."

The workers' compensation system in Washington state is working to close that chasm by developing a first-of-its-kind, community-based approach to health care delivery for injured workers. The Centers of Occupational Health and Education (COHE) aim to prevent disability among injured workers by promoting occupational health best practices that emphasize timely and efficient coordination of health care services.

COHE is a collaboration among the UW Occupational Epidemiology and Health Outcomes Program, the Washington State Department of Labor & Industries (L&I), business and labor organizations, and community health care leaders. The current incarnation stems from over a decade of research addressing quality of care in workers' compensation, research that has identified key factors affecting the quality of health care.

Central to these studies is DEOHS Research Professor Gary Franklin, whose research activities are designed to predict and prevent long-term disability among injured workers. Franklin directs the UW Occupational Epidemiology and Health Outcomes Program and is the Medical Director for the Washington State Department of Labor & Industries. For more than 10 years, Franklin's interdisciplinary team of researchers has been addressing the challenges of delivering high quality health care within the Washington state workers' compensation system.

From the initial quality improvement project, eight performance quality indicators were developed, ranging from timeliness of submitting the workers' compensation claim form to an assessment of impediments that may prevent an injured worker from returning to work.

Building upon these early activities, the COHE model of occupational medicine emphasizes timely coordination of care with continued follow-up to help the injured worker get back on the job. COHEs were first established in Renton and Spokane, and more recently in Everett and

HARBORVIEW COHE

Modeled after the original COHEs in Renton and Spokane, a COHE seed project at Harborview Medical Center aims to improve care for injured workers and prevent disability. Harborview's Emergency Department, the state's only Level 1 trauma center and also a regional burn center, receives approximately 11,000 visits a year from injured workers.

Jordan Firestone, medical director of the Harborview COHE, uses its designation as a "seed project" to illustrate how the COHE design sown here in Seattle has begun to grow, so that workers across the state are reaping numerous benefits. Like the other COHEs, Harborview provides free continuing medical education and access to occupational health expertise. Harborview has the added advantage of being a teaching site for the UW School of Medicine and other Health Sciences programs, including our department's Occupational and Environmental Medicine residency program.

Still more, Harborview is home to the UW Occupational & Environmental Medicine Clinic, which offers services to treat and prevent occupational and environmental exposure, illness, and injury. Clinic physicians are all UW faculty in DEOHS.

Firestone, also the clinic director, explains how the Harborview COHE is making a difference in the workplace, too. COHE staff directly contact an occupational nurse coordinator at L&I about an injured worker. This call sets in motion the Catastrophic Injury Response Plan. An L&I safety inspector is sent out to investigate. In the past, L&I may not have learned of a worker's injury until weeks later. Now, using a coordinated electronic system, the communication delay is shortened to approximately two days. Workplace hazards can be identified quickly, preventing further injuries.

With the COHE system in place, workers' compensation claims are routinely filed within two days. "This makes a difference to everyone involved," said Firestone, adding: "If we're going to prevent disability in the long run, we have to improve the quality of care so that things are done right from the very first clinic visit."

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Delivering Quality Care

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Seattle. (See sidebar.) Central to each of these Centers is the mission to prevent disability. The COHEs are working to increase employer, worker, and provider satisfaction with the workers' compensation system and to promote use of occupational health best practices by health care providers. To accomplish these goals, the COHEs offer providers free continuing medical education, access to experts in occupational health, new electronic tracking systems, assistance with health services coordination, and financial incentives to use occupational health best practices.

In a follow-up study completed in 2007, workers treated by COHE providers had on average nine fewer days away from work because of disability than the comparison group of workers who received care from outside the COHE system. In addition, the estimated cost savings per claim was between \$400 and \$500, which for every 1000 workers amounts to a total savings of \$400,000 to \$500,000.

By 2015, the goal is "to have every worker see a doctor who uses these best practices for occupational health," said Franklin. "The same principles, promoting the best medical practice with education, technical support, and incentives to doctors, could be used in health care overall."

FOR FURTHER READING

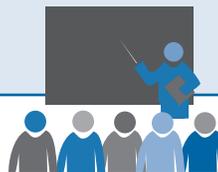
Institute of Medicine. 2001. *Crossing the Quality Chasm: A New Health System for the 21st Century*.

Occupational and Environmental Medicine Clinic at Harborview. <http://uwmedicine.washington.edu/PatientCare/MedicalSpecialties/SpecialtyCare/Harborview/Occupational/index.html>

Smith-Weller T, Fulton-Kehoe D, Egan K. Task 7A: Process evaluation of the Harborview Medical Center Seed Center of Occupational Health and Education. November 13, 2008. <http://www.lni.wa.gov/ClaimsIns/Files/Providers/ohs/Task7AFINAL.pdf>

Washington State Department of Labor & Industries Occupational Health Services Project. <http://www.lni.wa.gov/ClaimsIns/Providers/Research/OHS/default.asp>

Wickizer TM, Franklin GM, Mootz RD, Fulton-Kehoe D, Plaeger-Brockway R, Drylie D, Turner JA, Smith-Weller T (2004). A community-wide intervention to improve outcomes and reduce disability among injured workers in Washington state. *The Millbank Quarterly* 82(3): 547–67.



CONFERENCE

SOCIETY FOR RISK ANALYSIS BOSTON, MA, DECEMBER 7-10, 2008

Faustman EM, Xiao Y, Griffith WC, Robinson JF. Useful lessons for toxicogenomics using systems based approaches for dose and temporal response modeling

Griffith WC, Schumacher KM, Ramaprasad J, Faustman EM. Using simple kinetic models to integrate experimental datasets: Lessons learned with chlorpyrifos

Scherer AC, Younglove LR, Griffith WC, Krogstad FTO, Tsuchiya A, Faustman EM. Novel domoic acid risk assessment framework: New considerations for two susceptible populations

Vigoren EM, Griffith WC, Krogstad F, Faustman EM. Integrative tools for improving our evaluation of accountability: Lessons for pesticide biomarker studies

UW/UBC/SFU OCCUPATIONAL & ENVIRONMENTAL HEALTH CONFERENCE BLAINE, WA, JANUARY 8-9, 2009

Blood R. Measurement of whole body vibration in forklift operators

Camp J. MRSA exposures and emergency response personnel

Coker E. Measurement of VOCs by UV-DOAS

Dunbar L. Air sampling for microbial pathogens

Heitkemper A. Search for *Cryptococcus gattii* in the Pacific Northwest

Hofman J. Serum cholinesterase inhibition in relation to paraoxonase (PON1) status among organophosphate-exposed agricultural pesticide handlers in Washington state

Johnson P. Research on designing stature proportional mice and keyboards

Nelson J. Exposures to welding fume in shipyard workers

Parette D. Particle size distribution and bioavailability of hexavalent chromium in various industries

Paulsen M. Biomonitoring of pesticide exposures by using protein adducts

Sheppard L. Air pollution and health studies

Vedal S. Air pollution components and atherosclerosis

ROCKY MOUNTAIN ACADEMY DENVER, CO, JANUARY 16-17, 2009

Kaufman, JD. Epidemiology of air pollution and cardiovascular disease

PRESENTATIONS

Departmental researchers and alumni are in bold-faced blue type.

NATIONAL LABOR COLLEGE'S HEALTHY AGING FOR WORKERS SILVER SPRING, MD, FEBRUARY 17-18, 2009

- Silverstein M.** Public policy approaches—(Return to work, medical management issues, etc.)
Scott K, Silverstein M, Hecker S. Designing the Age Friendly Workplace: An action plan workshop

HEALTH CARE ERGONOMICS CONFERENCE PORTLAND, OR, MARCH 9-12, 2009

The **Northwest Center for Occupational Health and Safety** co-sponsored the conference in conjunction with the Oregon Governor's Occupational Safety & Health Conference.

SOCIETY OF TOXICOLOGY BALTIMORE, MD, MARCH 15-19, 2009

- Botta D, White CC,** Wilkerson H, Hu X, Gao X, **Kavanagh TJ.** Uptake and toxicity of tri-n-octylphosphine oxide, poly(maleic anhydride-alt-1-tetradecene) coated CdSe quantum dots in THP-1 human macrophages
Costa LG, Pizzurro D, Dao K, **Guizzetti M, Giordano G.** Manganese impairs the ability of astrocytes to promote neurite outgrowth in rat hippocampal primary neurons
Cox D, White CC, Hu X, Gao X, **Kavanagh TJ.** Assessment of quantum dot (QD) uptake and toxicity in SVEC4-10 murine endothelial cells
Fay KA, White CC, Wilkerson H, **Farin FM, Kavanagh TJ.** Comparative analysis of short-term vs. long-term cultures of primary mouse hepatocytes for modeling *in vivo* responses to acetaminophen
Gilbert S, Davies H. Policy, science, and communication: Protecting children from the health effects of lead
Gilbert S, Wexler P, Gozner M, Brown M. Topics in ethics: Conflict of interest—Real or imagined? PBDEs as a case study
Giordano G, Kavanagh TJ, Costa LG. Mouse cerebellar astrocytes protect cerebellar granule neurons against toxicity of the polybrominated diphenyl ether (PBDE) mixture DE-71
Griffith WC, Coronado GD, Thompson B, **Vigoren EM, Faustman EM.** Organophosphate pesticide residues in home environment dust of orchard workers

- Guerrette Z, Yu X,** Kim H, **Hong S, Faustman EM.** Optimization of a protocol to isolate genomic material from buccal cells
Huang SC, Giordano G, Costa LG. Induction of oxidative stress and apoptosis in mouse cerebellar granule neurons by various PBDE congeners
Li T, Woods JS. Genotype determines susceptibility to mercury toxicity: Studies in transformed cells expressing coproporphyrinogen oxidase (CPOX) and its genetic variant CPOX4
Moreira EG, Coronado GD, Thompson B, **Vigoren EM, Griffith WC, Faustman EM.** Urinary concentrations of dialkyl organophosphate metabolites in farmworkers and non-farmworkers and their children in a longitudinal cohort study
Peck EC, Rosenquist T, **Eaton DL.** Activation of aristolochic acid to mutagenic metabolites by human liver microsomes containing CYPs 3A4 and 3A5
Poulton EM, Eaton DL, Lampe JW. Lack of effects of sulforaphane (SFN) on baseline CYP3A4 activity in healthy human volunteers
Robinson JF, Yu X, Hong S, Faustman EM. Comparing gene expression alterations in mouse embryos undergoing neurulation; Dose and time dependent effects of cadmium and arsenic exposures
Smith WE, Tracy JH, White CC, Bammler TK, Hu X, Gao X, **Kavanagh TJ, Eaton DL.** Disposition of quantum dots in HepG2 cells
Weldy C, Cox DP, Wilkerson HW, **Kavanagh TJ.** Diesel exhaust particulate exposure affects endothelin-1, eNOS, iNOS expression in mouse lymph node endothelial cells
Wexler P, Breskin D, **Gilbert S.** World Library of Toxicology, Chemical Safety, and Environmental Health (WLT)(<http://www.wltox.org>)
Xia Z. Novel signaling mechanisms that regulate dopaminergic neuronal survival or death: Implications in Parkinson's disease
Xia Z. Mitochondrial complex I inhibition is not required for dopaminergic neuron death induced by rotenone, MPP+, or paraquat
Yu X, Hong S, Ng RT, Kim H, **Faustman EM.** Systems biology-defined crosstalk between p53 and NFκB signaling and modulation by arsenic

Professor **Zhengui Xia** chaired a symposium session, "Novel signaling mechanisms that regulate dopaminergic neuronal survival or death: Implications in Parkinson's disease." ■



Seattle Magazine's September 2008 issue named Professor **Scott Barnhart** and Clinical Associate Professor **Tim Gilmore** “top doctors” in the field of occupational medicine.

The Institute of Medicine appointed Professor **Matt Keifer** to a committee on Gulf War Syndrome. In January, Keifer presented on pesticides in clinical care at the 18th Annual Western Migrant Stream Forum in San Diego, California. He also gave a tribute to activist Shelley Davis, who advocated for the safety of workers, children, and the environment. In February, he taught pesticide health and safety in Puerto Rico, in a program supported by the Migrant Clinicians Network and the Environmental Protection Agency.

In January, Lecturer **Rick Gleason** presented on the safety and health of construction workers at the Tri-State Construction Annual Safety Seminar in Bellevue, Washington. In February, he taught a course on accident and incident investigation.

Helen Murphy, the Pacific Northwest Agricultural Safety and Health Center's (PNASH) Director of Outreach, partnered with StoryCorps, a national oral history project, to record and archive the rich oral history of U.S. farmers and farm life as well as their experience in preventing farm accidents.

In February, **PNASH** hosted its annual Health Fair at the Washington Governor's Agriculture Safety Day in Yakima, Washington. The event gathers more than 300 agricultural employers and workers to learn and discuss farm safety and health. Sessions are held in both Spanish and English.

The National Institute of Occupational Safety and Health (NIOSH) recently released the *National Agriculture, Forestry, and Fishing Agenda*, a publication largely influenced by the January 2006 National Occupational Research Agenda Town Hall meeting organized by **PNASH** and **DEOHS**.

In February, the **Center for Ecogenetics and Environmental Health** (CEEH), along with the **Superfund Basic Research Program**, organized a seminar featuring two researchers from Southern California who are involved in studying the health effects of air pollution near ports, educating community residents about the latest research findings, and informing policymakers about the need to control diesel emissions to protect public health. Following the presentations, the audience discussed how the work being done in California might be relevant to the Pacific Northwest.

The **Integrated Environmental Health Middle School Project** (IEHMSP), part of the **Community Outreach Education Core** of the **CEEH**, has been recognized in the West Coast region. The Los Angeles County Department of Public Health Lead Poisoning Prevention Program incorporated some of the IEHMSP curriculum materials in a publication made available to high school teachers. In addition, the Washington Office of the Superintendent of Public Instruction's (OSPI) Environmental Education Report identified IEHMSP as a model program. OSPI used IEHMSP materials for a teacher's guide on sustainable design that encourages students to explore how environmental factors impact their health.

In March, **Steve Hecker**, director of Continuing Education and Outreach (CEO), and **Mike Willis**, assistant director of CEO and director of the Pacific Northwest OSHA Education Center, presented “Engaging youth with an activity-based OSHA 10-hour course” at the Alaska Governor's Health and Safety Conference in Anchorage. The OSHA Center will begin a new “Hazardous and Solid Waste Specialist” certificate program in Alaska for members of the Yukon Intertribal Watershed Council. The Center offered three OSHA 10-Hour Construction courses (one in Spanish) in conjunction with Construction Safety Day and in collaboration with the Washington State Department of Labor & Industries and the Associated General Contractors of Washington.

Doctoral student **Rick Neitzel** was elected President of the National Hearing Conservation Association in December 2008. He presented “Can subjective perceptions of noise be used to improve noise exposure estimates?” at the Association's conference in Atlanta, Georgia on February 13.

In December 2008, doctoral student **Tingting Li** was featured speaker at the Superfund Basic Research Program annual meeting in Pacific Grove, California. Her research



Courtesy of H. Murphy



Courtesy of M. Rommen

l to r: Helen Murphy and Michael Rommen

focuses on characterization of a genetic polymorphism that increases susceptibility of humans to the neurotoxic effects of mercury.

Also in December, **Erica Finsness** (MPH, Environmental and Occupational Health, 2008), undergraduate student **My Dung Nguyen**, and graduate student **Hamilton Bennett** presented posters on their participation in the International Experiences in Occupational and Environmental Health program directed by Professor **Matt Keifer**. Finsness and Bennett traveled to Cambodia and Nguyen to Vietnam.

In January, doctoral student **Clarita Lefthand** delivered the student presentation at the annual UW Health Sciences Martin Luther King, Jr. Tribute.

In 2008, undergraduate **Michael Rommen** was selected as one of 10 students nationwide to participate in the inaugural class of the Collegiate Leaders for Environmental Health program, a 10-week summer internship at the Centers for Disease Control and Prevention's National Center for Environmental Health and Agency for Toxic Substances and Disease Registry. He also served as an ensign in the U.S. Public Health Service Commissioned Corps during the program.

Janessa Graves (MPH, Environmental and Occupational Health, 2008) is a member of an *ad hoc* committee to form the International Federation of Public Health Students, a group trying to gain recognition and formal status by the World Health Organization. ■

Matt Keifer (left side of photo) receiving Community Volunteer Recognition Award from UW Medical Center Executive Director Stephen Zieniewicz

Photos: Sarah Fischer

DANIELL NAMED ROHM & HAAS PROFESSOR

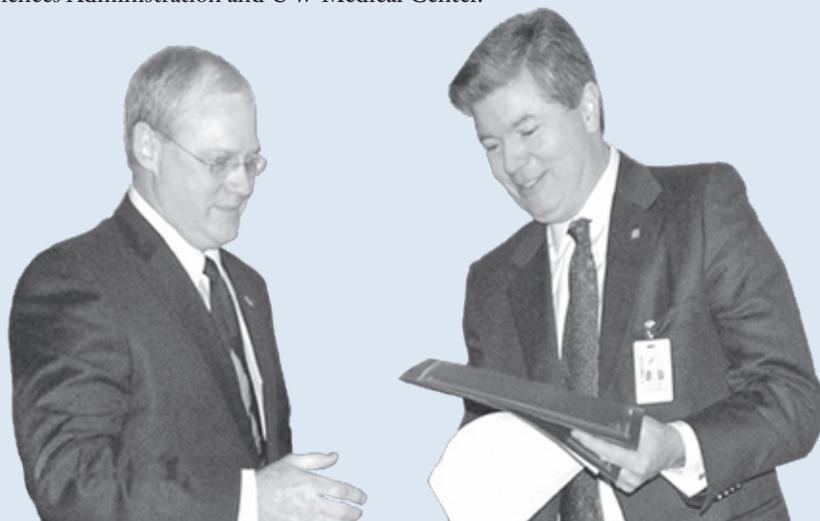
In January, the School of Public Health named Associate Professor **William Daniell** the Rohm & Haas Professor of Public Health Sciences. Sponsored by the Rohm & Haas Company of Philadelphia, the endowed professorship “gives an investigator five years and generous financial resources to add to our knowledge of the health consequences of exposure to chemicals,” said Dr. Patricia Wahl, dean of the School of Public Health. Daniell will investigate environmental and occupational issues of concern to public health in Southeast Asia, beginning with an epidemiological study to test pesticide exposures in Cambodia. Former DEOHS recipients of the award have included Professors Noah Sexias (2002–2008) and Dave Eaton (1992–1997).



William Daniell

KEIFER GIVEN COMMUNITY VOLUNTEER RECOGNITION AWARD

Since his earliest years as a public health physician in Nicaragua, Professor **Matt Keifer** has worked to improve the lives of under-served and at-risk groups in Washington state, Latin America, and Southeast Asia. Through research, teaching, and professional and personal activities, his work focuses on better understanding and managing occupational and health risks faced by individuals working in hazardous situations and with hazardous materials. In January, Keifer received a Community Volunteer Recognition Award at the UW's Health Sciences Dr. Martin Luther King, Jr. Tribute, jointly sponsored by UW Health Sciences Administration and UW Medical Center.



STUDENT RESEARCH DAY

For more than 20 years, our department has hosted Student Research Day, an event celebrating the research of graduating master's students.

This year's event will take place on Thursday, May 28 in Room 316 of the UW South Campus Center. It is an opportunity to see exciting research projects, learn more about activities within the department, recruit new employees, and make contact with faculty.

From 12:30 to 1:20 pm, the event will feature five student presentations, each representing one of our degree programs. Then, from 1:30 to 3:00 pm, a poster session will showcase all graduating master's students. Attendance at one or both sessions is welcome.

Refreshments will be served and there will be ample opportunity to meet students and discuss their work.

Please join us for Student Research Day and pass this information on to your colleagues. If you have any questions, please call the graduate program office at 206-543-3199 or e-mail ehgrad@u.washington.edu.

You can view last year's student research at http://depts.washington.edu/envhlth/research_day/srd_08.php

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