environmental and occupational health sciences



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OUR DEPARTMENT IS ABOUT... PARTNERSHIPS

The places where we live, work, and play can significantly impact our well-being, so it's important to build with that in mind. Read more about the built environment and health on page 2.

Photo: www.pedbikeimages.org/Dan Burden

Working together to improve public health

Teams of people and organizations with a variety of expertise are often more successful than individuals in addressing complex issues. Our department has a long history of cross-disciplinary collaboration.

In this issue, we focus on some activities that bring people from different fields together to prevent injury and illness. A new area of training and research explores the associations between the built environment and public health. A recently funded research center connects multiple institutions to investigate roadway pollutants and their toxicity. We highlight a center that has improved the health and safety of workers in forestry, farming, and fishing, and two unique department-sponsored events: a course on ethical and legal issues in occupational medicine and a symposium marking the 100th anniversary of the Triangle Shirtwaist Factory Fire. For all the improvements to health and safety, there is much work left to do. Proposed budget cuts may have long-lasting implications for our region. We cover what these cuts may mean to two research centers that have been lauded for their efforts and achievements in improving worker health and safety.



PUBLIC HEALTH WEBplus* and the built environment

* New feature: Web-plus content. Access story-related content on the Web at *http://depts.washington.edu/ envhlth/newsletter/newsletter.php*. Look for this icon **WEB**_{blus} in this and future issues.

Many praise public transit for its benefits to the environment. It can decrease the number of cars on the road, and in so doing, decrease air pollution from automobile exhaust. Less air pollution is healthier for people, too. Studies are showing additional health benefits. People get regular exercise by walking to and from transit points and findings have documented weight loss in transit riders.

Transit is an example of the built environment, which is anything constructed, ranging from sidewalks to freeways, tree-lined parking strips to full-fledged parks, and homes to whole communities. Attention to and research on the health effects of the built environment have been growing, and seemingly disparate fields like public health and urban planning are coming together to promote better health.

At the University of Washington, a new series of interdisciplinary courses focuses on research and tools that demonstrate the associations between community design and human health. The courses are co-taught by Affiliate Professor Andrew Dannenberg, who holds the same appointment in the Department of Urban Design and Planning in the UW College of Built Environments, where co-instructor, Research Professor Fritz Wagner is also based. The courses have attracted students from public health, nursing, public affairs, urban planning, and other schools and colleges across campus.

A different health paradigm

Studying the effects of the built environment on health uses a new health paradigm. "This is different from the run-of-the-mill environmental and occupational health that we've grown up with in the last few decades," said Howard Frumkin, dean of the UW School of Public Health and professor in our department. In this new paradigm, he explained, exposure assessment, which is key to environmental health, quantifies not the human uptake of chemicals, but exposure to other kinds of environmental factors. "How much nature someone sees, or how densely packed people are, or how much noise somebody experiences; these are daily exposures to human habitat," he said.

Nature contact is an environmental factor that influences health, but measuring it is complicated. "We don't know exactly what a 'dose of nature' is," said Frumkin. "With chemicals, we can quantify the level you're inhaling or the level in your blood. We can't do that with nature contact. In study after study, it looks as though there are benefits to nature contact." For example, post-operative patients in rooms with views of trees out the window recover more rapidly, have shorter hospitalization, and have less need for pain medications. Urban-dwelling elders living in green neighborhoods have longer life expectancy than those in more barren settings. People who live near parks have lower levels of stress and lower blood pressure.

"In my view," said Frumkin, "the built environment is one of the most exciting arenas of environmental health. Modern environmental health education needs to include training students in the health implications of the built environment and in assessing, recognizing, and controlling risks."

Bringing people together

Students in the Winter 2011 course, Public Health and the Built Environment, read early chapters of the book, *Making Healthy Places: Designing and Building for Health, Well-being, and Sustainability,* edited by Dannenberg, Frumkin, and Richard Jackson (University of California, Los Angeles). Comments from students were given to the chapter authors and incorporated. To be published by Island Press in August 2011, "the book owes a lot to the students at the UW," said Frumkin, who has written and spoken widely on the associations between community design and human health.

From 2005 to 2010, Frumkin directed the Centers for Disease Control and Prevention's (CDC) National Center for Environmental Health in Atlanta, Georgia, and together with Dannenberg, began the Healthy Places Research Group, a collaboration among the CDC, Emory University, and Georgia University of Technology. Each gathering of the group highlights speakers and then opens up the floor to discussion. Dannenberg brought the concept to the UW, where he leads monthly meetings supported by the Northwest Center for Public Health Practice and the Department of Urban Design and Planning.

Dannenberg is also a consultant and former team lead for the Healthy Community Design Initiative, part of the National Center for Environmental Health at the CDC. With national and international partners, the Initiative supports research, surveillance, training, and communications related to links between health and community design. It also helps develop and promote tools, such as those used to assess the health impact of community projects.

Measuring impact

Since the National Environmental Policy Act was passed in 1969, most major projects and policies, especially those that receive federal funds, must include an assessment of environmental impact.

An environmental impact assessment might determine that a roadway would increase air pollution by a certain increment, Dannenberg explained. But what does that air pollution increment mean in terms of health? That is missing, he said. If the air gets worse, how many extra cases of asthma or other respiratory diseases will result? A health impact assessment (HIA) does for health what an environmental impact assessment does for the environment and can be used to convey health messages to decision makers.

An HIA evaluates a project in terms of physical activity, air pollution, injury prevention, social capital, mental health, and social equity. "Any project is likely to affect many or all of these," said Dannenberg. "For example, if you build a park, chances are it's going to be fairly positive to all of these."

While HIAs have been widely used in Europe, Dannenberg said that only recently has their use in the United States been increasing, and the Pacific Northwest is one of the leaders in using HIAs. For example, when the Washington State Legislature approved funding to replace the State Route 520 bridge over Lake Washington, it mandated that an HIA be done. Barbara Wright, former environmental health deputy director for Public Health – Seattle & King County, was one of the authors of this 2008 HIA.

Both Wright and Dannenberg, who helped guide the work on the assessment, said the Seattle and Washington State Departments of Transportation (SDOT and WSDOT) were receptive to the findings and recommendations, which included adding green spaces, pedestrian and bicycling facilities, and noise reduction strategies. These components had been addressed in the WSDOT 520 bridge proposal. "WSDOT wants to do a model highway project," explained Wright, "but it can be costly and many times these additions are cut." The HIA stressed these features were "integral to the plan" and "should be supported even in difficult budget times for optimal health benefits," said Wright.

Dannenberg and Wagner offered a course on HIA for the first time in Spring 2011, making UW one of only five schools in the country to offer a graduate-level course in the subject. Wright and several staff from SDOT assisted in teaching the course, and students conducted an HIA of the current King Street Transit Hub redevelopment project. The report was submitted to SDOT for use in their decision processes.

HOW CAN THE BUILT ENVIRONMENT AFFECT HEALTH?



Provide safe bicycling and walking routes— Increases physical activity



Develop community gardens and farmers' markets— Improves nutrition



Build parks, trails, and green space— Promotes interaction with others and boosts mental health

agricultural safety and health

Helping industry develop best practices for worker health and safety

"People in the workplace are the experts." That's the philosophy of the National Institute for Occupational Safety and Health (NIOSH) Pacific Northwest Agricultural Safety and Health Center (PNASH). PNASH collaborates with businesses and workers to improve health and safety in the nation's deadliest industries: agriculture, forestry, and fishing. Fatality rates in agriculture, fishing, and forestry are nearly 10 times that of other industries, averaging more than 25 deaths per 100,000 workers each year. Cutting the risk of workplace injuries and fatalities benefits businesses by reducing costs. And most important: it saves lives and prevents permanent disabilities.

Agriculture

"Our PNASH team of physicians, industrial hygienists, and health educators brings professional expertise to the table, but it is farm managers, workplace supervisors, and pesticide handlers who have the experience and skills to identify the most practical and cost-effective methods of reducing pesticide exposure. Their input is essential to finding health and safety solutions," said PNASH Director Richard Fenske, a professor in our department.

PNASH and Washington state safety educators and growers work together to reduce exposure to organophosphate pesticides among agriculture workers. The PNASH team worked with area growers, clinics, and pesticide handlers to identify practices on the farm that affect exposures. They found that key risk factors are the tasks of mixing and loading pesticides and cleaning spray equipment. Protective factors include using a full-face respirator and chemical-resistant boots. These and other farm-based solutions will be highlighted in an upcoming PNASH publication, *Practical Solutions for Pesticide Safety*. PNASH has also developed innovative safety training using fluorescent tracers that show workers and managers how pesticide residues cling to protective gear, skin, and clothing.

In addition, PNASH focuses on musculoskeletal risks, especially in Washington's orchards, where about 8.5% of workers are injured each year. Orchard injuries, including

falls from ladders, are costly, accounting for 45-58% of workers' compensation claims in Washington state, the nation's number one producer of apples. To minimize falls and reduce labor costs, some orchards are replacing ladders with mobile platforms that move workers from tree to tree. However, this equipment requires workers to lean and reach in new ways. "We need to know how the different work habits will affect musculoskeletal risks," said Jim Doornink, an orchard owner and member of the Washington Tree Fruit Research Commission. Associate Professor Peter Johnson and PNASH staff are addressing this need by analyzing the ergonomics of the platforms and other technologies, such as safer ladders and harvesting bags, which reduce shoulder and back strain. "They're working with us in trying to get ahead of the curve," said Doornink. "We'd like to get the right design now rather than years down the road."

Forestry

Rates of injury and death in logging and related industries have often been cyclical, according to Affiliate Professor John Garland, who leads PNASH's work in logging safety and who is an emeritus professor of forest engineering at Oregon State University. For example, injuries among Oregon loggers increased 77% after the 1980–1981 recession, as companies quickly rebuilt their work forces. Garland sees the potential for the same post-recessionary spike in injuries now and is working to head it off by developing training programs in collaboration with Research Scientist Richard Neitzel (PhD, Environmental and Occupational Hygiene, 2009) and the Associated Oregon Loggers (AOL), an organization of contract logging operators, most with seven or fewer employees.

Small firms such as AOL members are especially in need of help, said Garland. "It's all on-the-job training." Garland, Neitzel, and AOL are developing programs to identify logging masters and teach them how to be successful trainers. "Training used to be an older guy yelling at a new guy, and that's not very effective," said Garland. Because many new loggers are Hispanic, Garland has written training materials in both Spanish and English.

center



Pacific Northwest Agricultural Safety and Health Center collaborates with businesses and workers to improve health and safety in the nation's deadliest industries: agriculture, forestry, and fishing. *Photo: Stacey Holland*

Garland is also working with industry to make logging less hazardous, especially for older loggers who may be more at risk for injury. His ergonomic studies include a series on replacing steel wire with synthetic rope, which has one ninth the weight. Workers over age 45 make up the majority of the Pacific Northwest's forestry work force.

Other PNASH projects have addressed health and safety issues in harvesting forest products, such as cedar and greenery used in floral arrangements.

Fishing

The fatality rate of commercial fishers in Alaska has dropped by 42% since 1990. This decline resulted from a variety of collaborative safety programs. To further reduce fatalities, PNASH recently partnered with the nonprofit Alaska Marine Safety Education Association (AMSEA) to learn how often fishers need to take refresher training. The study determined that safety skills, such as the ability to don an immersion suit within 60 seconds, declined about 30% within the first three months after training. "We found out that the first month after training is the time to process the skills you've learned," said AMSEA Executive Director Jerry Dzugen. After the study results were provided to the US Coast Guard, Congress proposed that fishers take refresher training more frequently.

Thanks in part to safety training, deaths resulting from vessel sinkings have decreased, but those from falls overboard remain high, totaling 155 nationwide from 2000 to 2009. None of these fishers were wearing a personal flotation device (PFD). In an effort to increase use of these safety devices, Jennifer Lincoln and her research team at the NIOSH Alaska Field Station asked fishers in Alaska to evaluate PFDs and identify which could be comfortably worn on deck. She then collaborated with PNASH and the US Coast Guard to learn which PFDs were most practical to wear during the aerobically demanding work of catching Dungeness crab. Dungeness fishers work on small vessels in extremely rough waters, such as river bars and near-shore surf, and fatalities often occur when vessels sink too rapidly for crews to deploy life rafts or don PFDs.

The research team has surveyed fishers on their safety practices and asked them to test a variety of PFDs. "Many were not aware of the innovative designs out there," said Lincoln. In recent years, manufacturers have designed PFDs that are nearly identical to the gear fishers already wear, such as rain gear with thin layers of imbedded flotation. "People want to be safe," she said, "but they want equipment that's relevant and practical to their work situation."

For more information

Pesticide risk information and worker training materials in English and Spanish: http://depts.washington.edu/ pnash/pesticides_health

Logging training materials in English and Spanish: http://depts.washington.edu/pnash/ORforest_training

National Institute for Occupational Safety and Health (NIOSH) on fishing: *http://www.cdc.gov/niosh/topics/ fishing/*

the dialogue



Noah Seixas, Richard Fenske Photos: Sarah Fish

PROPOSED CUTS TO FEDERAL PROGRAMS THAT PROTECT WORKERS

The Pacific Northwest benefits from successful efforts by the UW Pacific Northwest Agricultural Safety and Health Center (PNASH) to improve the health and safety of workers in the region's forests, farms, and fishing grounds and by the UW Northwest Center for Occupational Health and Safety (NWCOHS) to train occupational health and safety professionals who work in a host of local and regional industries.

Yet, the proposed Presidential Budget for fiscal year 2012 (which begins October 1, 2011) would terminate funding for both centers as part of deep cuts to the National Institute for Occupational Safety and Health (NIOSH), the federal agency that conducts research to address work-related health and safety problems. The budget would eliminate all NIOSH Agriculture, Forestry, and Fishing (AFF) Programs, including PNASH, and all NIOSH Education and Research Centers (ERCs), including NWCOHS.

Impact to Pacific Northwest businesses

"The NIOSH Agriculture, Forestry, and Fishing Program is the only federal effort to improve workplace health and safety in these dangerous industries," said Richard Fenske, PNASH director and a professor in our department. Thanks to PNASH efforts, pesticide exposures among orchard workers and their families have decreased dramatically. To reduce workplace injuries and fatalities, the PNASH team is collaborating with orchard managers and logging companies to develop sound ergonomic practices and better training programs, and with fishers to increase the use of personal



flotation devices and other safety practices that save lives (see article on page 4). "Cuts to these programs will be felt in the many Northwest rural communities that rely on these industries," said Fenske.

While PNASH focuses on safe work practices in agricultural, forestry, and fishing, NWCOHS trains health and safety professionals who improve work practices and help reduce injuries in a wide range of industries. The center supports students in graduate programs in Exposure Sciences, Occupational and Environmental Medicine, and Occupational and Environmental Health Nursing and trains students and professionals in hazardous substance management and occupational health services research.

"Since 1977, most of NWCOHS funding has supported graduate students. Cuts in funding will severely impact training of students intending to pursue careers in occupational health and safety," said NWCOHS Director Noah Seixas, a professor in our department. In addition, NWCOHS provides continuing education programs to professionals already practicing in industry. In 2010, the center offered more than 100 courses to almost 2000 individuals.

Representatives from companies, including Cisco Systems, Microsoft, Boeing, and URS Corporation, as well as government entities, including Sound Transit and the Washington State Department of Labor & Industries, have written to Congress in support of NWCOHS. Representatives from the Washington Growers League, North Pacific Fishing Vessel Owners' Association, and Washington Contract Loggers Association, among others, have been advocating for the preservation of the AFF program.

"We are hopeful that the federal Office of Management and Budget will recognize that its justification for terminating these programs was in error, and that Congress will continue to support programs that are critical for both business and labor in the Northwest region," said Fenske.

Recently, federal legislators showed their support of the AFF and ERC programs with 31 bipartisan representatives signing-on to preserve funding at 2010 levels.

uw CENTER FOR CLEAN AIR RESEARCH Studying roadway pollution

Drivers, bikers, and pedestrians on major roadways are exposed to a variable and complex mix of pollutants from vehicle emissions and road-surface wear. The new University of Washington Center for Clear Air Research (UW CCAR) will study the impacts of these pollutants on human health. "There has been a concern that we've been ignoring exposures people face while they're commuting," said Professor Sverre Vedal, center director.

The center is part of the US Environmental Protection Agency's (EPA) large-scale effort to study complex mixtures of air pollutants, especially their effects on vulnerable populations, including children, the elderly, and people with chronic cardiac or respiratory disease. Three other CCARs were funded at Harvard University, Michigan State University, and one held jointly by Emory University and Georgia Institute of Technology. Each center will receive about \$8 million over five years.

Previous emissions research focused on single pollutants, such as ozone, sulfur dioxide, or particulate matter, microscopic particles of soot and smoke generated by internal combustion engines. However, vehicles also emit numerous other pollutants, including volatile organic compounds that evaporate from fuel, and very little is known about how these compounds interact to affect health. "It's the mix that's important, not necessarily a single compound in that mix," said Vedal.

A mix of disciplines is also crucial to conducting this multifaceted research. The UW CCAR team includes epidemiologists, atmospheric scientists, chemical engineers, toxicologists, physicians, and biostatisticians. Partnering institutions include Washington State University; the Lovelace Respiratory Research Institute in Albuquerque, New Mexico; and University of New Mexico.

For more than 60 years, department researchers have investigated the impact of air pollution on the environment and human and animal health. They have shown that exposure to air pollution contributes to heart disease and respiratory disease, such as asthma in children. Research indicates that people living in close proximity to major roadways are at increased risk for changes in the heart that lead to cardiac disease, and that inhaling emissions can increase Sverre Vedal, director of the new UW Center for Clean Air Research Photo: Sarah Fish



blood pressure, perhaps by causing inflammation in the heart and blood vessels.

Past research has also shown that impacts of exposure depend on distance from a major roadway. "Fresh vehicle emissions are rich in ultra-fine particles," said Vedal. Particles this small lodge deep in the lungs, and can cross into the blood stream, causing systemic damage as they circulate through the body. There are fewer ultra-fine particles as the distance from a roadway increases because as particles age, they collect more organic compounds and increase in size. "Our 'straw man' hypothesis is that aging decreases toxicity of these pollutants," explained Vedal.

Center researchers will collect detailed data on roadway pollutants and ways the mix evolves over time. They will also study health impacts of exposure at the clinical and molecular levels.

Two other centers in the department are providing crucial resources for this work, the Multi-Ethnic Study of Atherosclerosis and Air Pollution (MESA Air) and Disease Investigation through Specialized Clinically Oriented Ventures in Environmental Research (DISCOVER), both directed by Professor Joel Kaufman, also a UW CCAR researcher. These resources include an exposure chamber to study the physiological responses of people and animals to vehicle emissions and the ability to access participants from the MESA study, which includes more than 6,000 men and women in six states. "MESA is a unique cohort that has collected a vast amount of data on cardiovascular disease, including imaging of subclinical measures, such as thickness of arterial walls and calcium deposits in arteries," said Vedal.

Other lead UW CCAR researchers include Professors Timothy Larson, Michael Rosenfeld, Lianne Sheppard, and Michael Yost, and Associate Professor Christopher Simpson.

IMPROVING COMMUNICATIONS BETWEEN LEGAL AND MEDICAL PROFESSIONALS

The symposium, "Your GPS for Ethical and Legal Issues in Occupational Medicine," drew a diverse group of speakers and attendees who had this objective in common: to improve care for injured workers. The event, held January 28 at the University of Washington and sponsored by the Northwest Center for Occupational Health and Safety (NWCOHS), covered complex legal, medical, and regulatory issues. The nearly 50 attendees included physicians, attorneys, nurses, physical therapists, and workers' compensation claim managers.

Adjunct Assistant Professor Jordan Firestone, director of the Occupational and Environmental Medicine Clinic at Harborview, and Annie Bruck, the NWCOHS's assistant director of continuing education, organized the symposium.

Attendees were interested in learning how to ease the burden for injured workers and the health care workers who treat them. "Usually when workers are injured, they're new to the system. They don't know what to do," explained Susan Matt, an attorney and assistant



professor of nursing at Seattle University, who attended the symposium. "Workers can be shuttled between medical and legal professionals, and they can get caught between competing medical and legal interests."

Firestone has long been aware of the need (and potential) for legal and medical professionals to collaborate. He cites his father's career in forensic neuropsychiatry as an example of how law and medicine can flourish when they complement one another. His father, Marvin Firestone, is a former professor at George Washington University in Washington, DC, and now has a medicallegal practice in California. Marvin Firestone presented at the conference, where he described effective techniques for presenting complex medical information that will be scrutinized by the legal system.

Jordan Firestone's presentation focused on the challenges of cross-disciplinary communication when medical and legal professionals address whether a worker's illness or injury is work-related. "Legal and medical definitions of what caused the injury do not always coincide," said Firestone. He explained that medical professionals who believe that a work activity or environmental exposure caused a particular medical condition must explain their conclusions using standard medical-legal principles. "Otherwise the injured worker may not be able to access needed treatment," explained Firestone.

"In the context of workers' compensation," continued Firestone, "health care professionals need to present medical information in language that claim managers can understand. If the claim manager doesn't know why a test is needed or what treatment is appropriate, and the doctor can't explain it in terms the claim manager understands, there are obstacles for patient care."

"Your GPS for Ethical and Legal Issues in Occupational Medicine" was held January 28, 2011.

Photo: ©2011 Photos.com

in the workplace

UW SYMPOSIUM MARKS THE 100TH ANNIVERSARY OF THE TRIANGLE SHIRTWAIST FACTORY FIRE

A century ago, 146 garment workers at the Triangle Shirtwaist Factory in New York City lost their lives in a raging fire. As it swept through the factory, foremen fled without warning seamstresses on an upper floor or unlocking the stairwell door that was the primary escape route. Trapped by flames and the locked door, dozens of women leapt to their deaths before a horrified crowd.

Public outrage over the March 25, 1911 fire spurred governments to develop new regulations and inspection services to prevent future workplace disasters. However, the fight for safe working conditions actually had begun long before the fire, according to Gerald Markowitz, professor of history at the John Jay College of the City University, New York. During the first two decades of the 20th century, workers picketed, struck, and wrote to let the American public know about the negative impacts of industrialization, said Markowitz, a speaker at the symposium, "Responding to Disasters in the Workplace: Lessons from the Past, of the Present, and for the Future." The symposium was held March 31 at the University of Washington and sponsored by the Northwest Center for Occupational Safety and Health, UW Harry Bridges Labor Studies Program, and UW Bothell, Masters of Arts in Policy Studies Program.

"The astounding irony is that we are again debating the need for government oversight of safety conditions in industry," said Professor Noah Seixas, a symposium organizer. Despite the progress achieved in safety and health standards, including the 1970 passage of the Occupational Safety and Health Act, workers are still at risk, said symposium speaker Tom O'Connor, director of the National Council for Occupational Safety and Health, and principal coordinator of the Protecting Workers Alliance. "Fourteen to sixteen workers are killed on the job every day in the United States, and perhaps ten times that many die every day of occupational illness," said O'Connor. During 2010, deaths included those of seven workers caught in a blast and fire at the Tesoro Refinery in Anacortes, Washington.

Workers in Washington at risk of occupational illness include contract truck drivers who shuttle shipping



Fighting the blaze at the Triangle Shirtwaist Factory on March 25, 1911.

Photo: Brown Brothers, March 25, 1911, Kheel Center, Cornell University

containers between Port of Seattle docks, according to symposium speaker Genevieve Aguilar of Puget Sound Sage, a partner in the Coalition for Clean & Safe Ports. She described the drivers as "sharecroppers on wheels," who earn so little they must operate run-down diesel trucks that emit high levels of pollutants, harming the health not only of the drivers, but also of residents in Seattle neighborhoods near the port.

Leo Baunach of the UW affiliate chapter of United Students Against Sweatshops described campaigns to ensure safe working conditions for garment workers producing campus-logo apparel and for food service and laundry workers at companies such as Sodexo, a multinational food service provider that operates food concessions at some UW athletic venues.

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people & places

Professor Timothy Larson, whose primary department is Civil and Environmental Engineering, was given a joint appointment with the department. Running Grass, who is Environmental Justice program manager at the Region 10 US Environmental Protection Agency, was appointed affiliate instructor.

The 23rd annual Environmental and Occupational Health Conference, which was held at Semiahmoo (Blaine, Washington) on January 6-7 and organized by Associate Professor Christopher Simpson, was held in conjunction with the Sixth Annual Public Health Symposium. Both conferences featured research from the University of Washington, University of British Columbia, and Simon Fraser University. Presenters from our department included: Dean Howard Frumkin; Professors Elaine Faustman, Joel Kaufman, and Sverre Vedal; Assistant Professor Victor Van Hee: Senior Lecturer Steven Hecker: Research Scientist Gretchen Onstad; researcher Erin Stamper (MPH, Environmental and Occupational Health, 2009); PhD candidate Jenna Armstrong and PhD student Ryan Blood in the Environmental and Occupational Hygiene program; MS student Allison Crollard (Exposure Sciences); and Stephanie Wong (MS, Exposure Sciences, 2010).

Professor Noah Seixas recently secured a partnership with Renton Technical College's Welding Training Program. Over the next two years, researchers in his lab will measure manganese exposure through environmental and biological sampling.

Also, staff and students from Seixas' laboratory will be studying different types of exposures in confined spaces aboard ships at our local shipyards. Their efforts are part of a larger project that will provide training opportunities to shipyard welders who use ventilation equipment in confined and enclosed spaces.

Professor Elaine Faustman and Health Services doctoral student Janessa Graves (MPH, Environmental and Occupational Health, 2008) were among individuals appointed to represent the School of Public Health in "Generation W," an initiative of UW Impact, which was created to increase awareness and understanding of the role the UW plays in the state of Washington, the nation, and the world. In January, Research Professor Emeritus Jim Woods presented on "Urinary porphyrin measures as a predictive biological marker for autism risk assessment" at the Seattle Children's Autism Center and at the Workshop for Advances in Autism Research sponsored by the Autism Research Institute in Dallas, Texas.

In February, Professor Lucio Costa gave the keynote lecture on neurotoxicology at the Portuguese Society of Pharmacology meeting in Coimbra, Portugal.

In March, Lecturer **Richard Gleason** presented a course, Accident and Incident Investigation, to the US Forest Service and the Bureau of Land Management in Hood River, Oregon.

Research Scientist **Richard Neitzel** and his research on noise and vibration were featured in the February 3 edition of *UW Today*.

The Pacific Northwest Agricultural Safety and Health Center staffed educational booths for agricultural workers at the Annual Agricultural Safety Day on March 2, in Kennewick, Washington. The day-long educational safety and health workshop for employers, supervisors, farmworkers, and safety professionals is co-sponsored by the Governor's Industrial Safety and Health Advisory Board and the Washington State Department of Labor & Industries, with support from industry organizations.

On April 8–9, the Center for Ecogenetics & Environmental Health (CEEH) hosted an exhibit at the Paws on Science Huskies weekend at the Pacific Science Center in Seattle. Through hands-on activities, department researchers and graduate students involved kids in thinking about how genes, environment, and behaviors interact to make a person healthy or sick.

MS student Hee Yeon Kim (Toxicology) received the Korean Society for Toxicology Scholarship Award.

At the invitation of Dawn Boyden, undergraduates from the Student Environmental Health Association visited Lake Stevens High School to teach a lesson about food-borne illness through interactive activities. Students participating were Lani Gabriel (BS, 2010), Kendra Broadwater, Tiana Nizamic, Jordan Song, and Markas Grove (Biochemistry).

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left to right: Christopher Simpson, Elaine Faustman, Richard Neitzel, Hee Yeon Kim, Evan Gallagher, Susan Inman
Photos: Sarah Fish
Photos: Sarah Fish

Boyden has been participating in the Academy for Teaching about Health and Environment Association, a professional development organization offered by CEEH to infuse high school curriculum with environmental and occupational health sciences-related concepts and content.

Two members of the National Environmental Health Science & Protection Accreditation Council, Lynn Burgess from Dickinson State University and Joe Amiotte from the Indian Health Service, visited our undergraduate program as part of the six-year accreditation process. Our program is one of only two accredited undergraduate Environmental Health programs in Washington, Idaho, Oregon, Alaska, and Montana. Nearly 70 tenth-grade students from Cleveland High School in Seattle, visited department laboratories on April 5. Undergraduate program manager Susan Inman connected with Cleveland High School biology teacher Rachel Desler to encourage students to learn more about environmental health sciences.

In order to raise greater awareness about environmental health, members of the Student Environmental Health Association collaborated with Program Coordinator Letty Limbach to design and paint a bus shelter mural for King County Metro on University Avenue in Seattle. Undergraduates, I to r: Tiana Nizamic, Kendra Broadwater, Markus Grove (Biochemistry), Vickie Carper, Lani Gabriel (BS, 2010), and Anna Fretheim. *Phota: Sarah Fish*

environmental health

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COMINGS & COMINGS &

Visiting Scholar Jin-Heon Lee is a professor in the Department of Environmental Education at Kongju National University in South Korea. He is working with Professor Christopher Simpson.

Erin Corwine and Chris Warner are new research coordinators in Professor Noah Seixas' lab.

Elena Reitman is a new program assistant in the UW Nanotoxicology Center.

Mark Davey, who has been a research scientist in our department, is now manager of the UW Center for Clean Air Research.

Jon Sharpe, who was manager of the Community Outreach and Ethics Core in the Center for Ecogenetics and Environmental Health (CEEH), is now the center's administrator.

Rebecca Christ is a new research scientist in the Environmental Health Laboratory.

Facility

COMMUNICATION DIRECTOR Elizabeth Sharpe

CONTRIBUTING EDITORS Janice Camp Adrienne Hidy

CONTRIBUTING WRITER

Cathy Schwartz

Kris Freeman

DESIGNER Cathy Schwartz

PHOTOGRAPHER Sarah Fish

PROOFREADER Karen West

WEB DESIGNER Ly Pham

> DEPARTMENT CHAIR David Kalman

brint

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