For nearly a decade, department researchers have been developing a system to improve the quality of care for injured workers in Washington state. Investigators from the Department of Environmental and Occupational Health Sciences are involved in research and educational activities to identify and raise awareness about workplace hazards, safety solutions, and occupational health best practices. Studies show that early intervention can shorten the length of time an injured employee is disabled and away from work, saving money for employers and taxpayers.

In 2011, evidence from these studies culminated in a new Washington state law, directing the Department of Labor & Industries (L&I) to create a statewide network for providers who treat injured workers. The legislation also calls for expanding access to the state’s Centers of Occupational Health and Education (COHE). By 2015, all of the state’s injured workers will have access to the COHE system, which started in 2002 in Renton and Spokane. This legislation is expected to save the state $218 million over the next four years by returning more workers to good health and helping them get back on the job more quickly after an injury.

COHEs teach occupational health best practices to healthcare providers who treat injured workers. The providers are encouraged to intervene soon after an injury and work with the
injured worker and employer to develop a return-to-work plan. Providers affiliated with the four COHEs (Renton, Spokane, Everett, and Seattle) treat about one-third of workers who file compensation claims in the state. More than 1,000 providers are currently participating in the COHE system.

In a study of more than 100,000 injured workers, researchers found that patients whose healthcare providers adopted COHE’s best practices had, on average, 57 percent fewer disability days, and their medical costs were about $500 lower than those who saw independent physicians. The savings were greater for cases involving back sprain, which can lead to permanent disability.

The study, which was funded by L&I, is published in the December 2011 issue of Medical Care. Many of the authors of the study are involved with the Occupational Epidemiology and Health Outcomes Program in our department. The program uses workers’ compensation data and its own research to improve medical care, update treatment guidelines, and provide information on treatment outcomes to injured workers and physicians. Investigators include Research Professor Gary Franklin, who is also the medical director of L&I; Research Scientists Deborah Fulton-Kehoe and Jeremy Gluck; Occupational Health Nurse Terri Smith-Weller; and Research Coordinator Kathleen Egan. Professor Thomas Wickizer, formerly a professor in the UW School of Public Health and now at The Ohio State University, was the study’s lead investigator.

COHEs save money partly by reducing paperwork and employing health services coordinators to help facilitate case management. Often in workers’ compensation cases, Franklin said, long delays result from communication problems among the healthcare provider, the employer, the injured worker, and the insurer. The longer a worker is off work and on disability, the lower his or her chance of returning to work.

“Work-related disability is a major public health problem that’s largely overlooked in the US,” Franklin said. “This study shows that using occupational health best practices when treating injured workers can have an important effect on their recovery.”

Whether she is seeing patients, teaching students, or meeting with other doctors, June Spector feels connected to a goal she believes in: improving health outcomes for injured workers.

While Spector is new to her position as assistant professor (effective January 1, 2012), she has been involved in the department as an occupational health physician in the Occupational and Environmental Medicine Clinic at Harborview. She is also program director for the Harborview-based Center of Occupational Health and Education (COHE).

Since July 2011, Spector has been speaking with doctors in clinics at Harborview and UW, advocating for the COHE model. By giving an injured worker timely access to providers trained in occupational health practices and coordinating care and communication between healthcare insurers, providers, and employers, the COHE model aims to get the injured worker back to work safely.

Why? “Research indicates that workers who stay away from work longer are less likely to return, at a heavy cost emotionally and financially to the worker,” Spector said.

Spector graduated with an AB in Chemistry from Harvard College in 2001. Her determination to learn about the health issues and exposures that chemists face, and to understand the basics of how the body works, led to medical school. In 2005, she graduated from Yale School of Medicine and then completed a residency in Internal Medicine at the Hospital of the University of Pennsylvania. She pursued an MPH, first at Johns Hopkins School of Public Health and then at the University of Washington in the Occupational and Environmental Medicine program, which she completed in 2010.

Spector’s interests in environmental and occupational health run the gamut. She studied focal dystonia, a muscular disorder often seen in musicians who practice for long periods of time. She leads a Pacific Northwest
Agricultural Safety and Health Center study on heat-related illness in agricultural workers, which is funded by the National Institute for Occupational Safety and Health. And she looks forward to teaching an undergraduate environmental health course.

Her particular focus lies in researching occupational healthcare services in order to promote better care and optimize the patient’s recovery process.

She explains: “The way I think of it is taking the doctor-patient encounter—which is typically one-on-one—to the population level, and thinking about what we can put in place to facilitate workers with a certain condition going through the system in a way that will make the process more efficient and effective.”

Most recently, with other researchers in the Occupational Epidemiology and Health Outcomes Program, Spector helped identify early risk factors for disability in workers undergoing carpal tunnel syndrome surgery.

Getting workers the care they need underlies much of Spector’s work, as does promoting occupational health best practices. She is the first occupational medicine-trained physician to supervise UW medical students who run the Al-Shifa Clinic at Casa Latina, a Seattle-based nonprofit organization that supports day laborers through education and job-skills training. The students screen workers and then direct them to care facilities in the community.

Because many of the injuries and concerns that day laborers face are occupational health-related, Spector said the clinic offers a unique opportunity to teach medical students who may not have had any exposure to occupational medicine.

The number of physicians enrolled in our Occupational and Environmental Medicine (OEM) program may be small, but as graduates, they fill a big need. Employer-supported healthcare programs are putting more emphasis on wellness and disease prevention programs, and OEM practitioners are needed to contribute their expertise in clinical practice and in developing policies and guidelines that keep our workforce healthy.

Since 1977, when the University of Washington OEM program began, more than 100 physicians have graduated with an MPH. Jointly based in the Schools of Public Health and Medicine, the training program is certified by the Accreditation Council for Graduate Medical Education.

Very few OEM programs in the country focus—like ours does—on both research and clinical aspects of occupational health care, said Assistant Professor Victor Van Hee. He directs the OEM residency program at the UW and the OEM Clinic at Harborview Medical Center, where UW residents see patients.

Students in the program already hold a medical degree and have trained in a clinical specialty. They complete coursework in subjects that include toxicology, epidemiology, and biostatistics, and a research project leading to a thesis. Students rotate through a variety of clinics that give them experience in treating occupational injuries and illnesses.

In 2002, the department’s OEM program began admitting doctors from Madigan Army Medical Center, the military hospital serving Joint Base Lewis-McChord in Tacoma, Washington. Colonel Steven Smith, program director of Madigan’s OEM residency program and longtime occupational medicine physician, explained that the need for doctors trained in OEM is growing. “We’re not training at a fast-enough rate to replace the retiring, board-certified, residency-trained OEM doctors,” he said. Our OEM program is working to fill this need by recruiting more physicians to the field.
A new project led by researchers in our department will assess key health issues affecting people who use the Duwamish River or live nearby. The researchers are partnering with two nonprofit groups: Just Health Action (JHA) and the Duwamish River Cleanup Coalition/Technical Advisory Group (DRCC/TAG).

Findings from this health impact assessment will be provided to the US Environmental Protection Agency (EPA) to help inform its selection of a cleanup plan for the Lower Duwamish Waterway, which was designated a Superfund site in 2001. This assessment will be the first of its kind to evaluate a Superfund site and may have far-reaching implications.

“How EPA’s cleanup plan will affect particular communities is not well understood, said Associate Professor William Daniell, an environmental and occupational epidemiologist. “This study will help fill in some of the gaps.”

The assessment will focus on health changes that may result from the proposed cleanup and make recommendations about how to minimize health impacts, maximize health benefits, and reduce health disparities in the affected communities.

The Lower Duwamish Waterway Superfund site is a 5.5-mile stretch of the Duwamish River in South Seattle. Decades of industrial and urban waste have left high concentrations of more than 40 contaminants—particularly arsenic, dioxins, polychlorinated biphenyls, and carcinogenic polycyclic aromatic hydrocarbons—in the shoreline, sediments, fish, and adjacent neighborhoods. Many of these chemicals persist for a long time and have built up to unsafe levels in resident fish and shellfish. People who live near the river, Tribes, and subsistence fishing families are among those most affected by the pollution and pending cleanup plans.

In October 2010, 13 cleanup methods and alternatives were proposed; they varied in how much contamination would be removed from the river, buried under constructed caps, or left to recover naturally over time (see below).

**METHODS FOR CLEANING UP THE DUWAMISH WATERWAY**

- **Removal**
  - Physical removal or dredging of contaminated sediments

- **Containment**
  - Containment or capping (covering with clean material) of contaminated sediments, typically using layers of sand, gravel, and rock

- **Natural Recovery**
  - Covering the pollution with a thin layer of sand or with cleaner sediments from upriver to promote natural recovery
No matter which final plan the EPA releases later this year, it will be controversial.

Substantial costs and time are involved. The costs will be borne by the City of Seattle, King County, Port of Seattle, The Boeing Company, and other riverside industries that are responsible for historic and ongoing pollution at the site. Cleanup of the river will take years to complete, and it will take decades for natural flora, fish, and wildlife to fully recover.

The plan chosen will have enormous impact. It will likely involve residual contamination and continued health risks despite administrative controls like fish advisories and restrictions on river uses. With a cleaner river, more people may be attracted to the area, increasing the number of people affected.

The EPA is completing more than a decade of investigations about environmental and health risks at the site. Its previous health studies have been limited to assessing risk of cancer and other illnesses associated with seafood consumption and contact with contaminated sediment.

“The previous risk assessments are a small part of the whole puzzle,” said Daniell.

In addition to health risks from exposure to the Superfund site, people who live, work, and recreate in this area, one of the most heavily trafficked in the city, are exposed to air and noise pollution and soil contamination. Local residents also face a variety of other health risks, including poverty, crime, underserved public transit, limited neighborhood amenities and services, and food insecurity.

“Research shows these factors increase an individual’s vulnerability to contamination,” said Linn Gould, a health equity consultant at JHA.

Compared to people in King County, those who live in the Duwamish Valley have a shorter life expectancy, higher mortality from lung cancer, higher hospitalization rates for asthma, and less health insurance coverage.

This new study goes beyond EPA’s risk assessments to focus on community-level health effects during and after cleanup. Researchers will collect new data about fishing behaviors of non-tribal subsistence fishers. They will examine whether the cleanup will affect health (positively and negatively) in terms of residual contamination and the need to enforce administrative controls in perpetuity; continuing air and water pollution from other sources; gentrification and displacement of community members; economic revitalization; increased habitat and green space; and changes in dietary behavior and cultural fishing activities.

“We want to ensure the best cleanup and minimize any unintended consequences,” said BJ Cummings, Community Health Projects Manager for DRCC/TAG, which serves as EPA’s Community Advisory Group for the Superfund cleanup. Findings from the assessment and recommendations for mitigation measures will be provided to the EPA during public review of the proposed cleanup plan this fall.

The Duwamish Health Impact Assessment project is supported by a grant from the Health Impact Project, a collaboration of the Robert Wood Johnson Foundation and The Pew Charitable Trusts.
November 4, 2011, marked the University of Washington’s 150th anniversary and the launch of a year’s worth of activities that commemorate the integral role the UW has had in our region. Our department is part of this legacy; our faculty, staff, students, and alumni have helped make the public healthier and workers safer.

This story highlights an important event in Washington state’s history that calls attention to the need for a department like ours, committed to providing service to Washington state workers and to educating environmental and occupational health professionals.

Mount St. Helens’ Eruption

Silica in the Ash

Eruption of Mount St. Helens on May 18, 1980; inset: Amelia Kramer of Ritzville, Washington, sweeps ash off of her sidewalk as a city employee plows ash off the street in this photo taken several days after the eruption of Mount St. Helens.

The May 18, 1980 eruption of Mount St. Helens coated nearly everything downwind with thick gray ash, closing roads and runways. The layers of ash covering essential areas needed to be moved—and fast.

Some initial reports indicated that the volcanic ash was no more hazardous than a nuisance dust—no special precautions were needed. But was there a hidden hazard?

In Washington state, our department’s Environmental Health Laboratory (EH Lab) had the sophisticated equipment to analyze the components of the ash. The state’s other laboratories with x-ray diffraction equipment did not have the industrial hygiene technique that was needed to separate and identify its real hazard—crystalline silica. It wasn’t much later that the Centers for Disease Control and Prevention laboratory in Cincinnati, Ohio, was able to confirm the analysis.

“We found significant amounts of the three forms of silica that could cause health problems,” recalls Lee Monteith, who was supervisor of the EH Lab at the time and who is still on faculty as a senior lecturer emeritus.

Exposure to crystalline-free silica can cause lung disease including silicosis—related to respiratory illness stemming from breathing in environments with silica dust.

The EH Lab’s early analysis of the ash gave state troopers, road crews, other first responders, and the Washington State Department of Labor & Industries inspectors critically important information.

Researchers in the department continue to educate workers about silica hazards. A website, http://depts.washington.edu/silica, provides resources to employers and employees, especially in the construction trades.
Laws prohibiting bisphenol A (BPA) in baby bottles and lead in toys aim to keep children out of harm’s way. Other chemicals in homes and schools may also detrimentally affect children. Bringing people together to share important research findings from scientists in the Pacific Northwest on sources of environmental chemicals and their impact on children was the aim of the February 28 Children’s Environmental Health Research Matters meeting at the University of Washington (UW).

Alan Durning from the Sightline Institute opened the event, which was emceed by Associate Professor Catherine Karr and sponsored by the UW’s Northwest Pediatric Environmental Health Specialty Unit and the Center for Child Environmental Health Risks Research.

The number of chemicals in the environment is dizzying. The Pacific Northwest Center for the National Children’s Study is part of a nationwide effort to better understand the link between the environments in which children live and their physical and mental health, explained Professor Thomas Burbacher, who co-directs the center based at the UW.

Phthalates and BPA may have serious effects on a fetus during critical periods of development, said Sheela Sathyanarayana, an environmental health pediatrician based at the UW and at Children’s Hospital. She has been studying the sources and effects of these two chemicals that mimic normal hormones and may increase the risk of genital disorders and reproductive dysfunction in offspring. The two chemicals are ubiquitous in a wide range of products, but exposure may come primarily from the food supply, she said.

Jenna Armstrong, a PhD candidate in the Environmental and Occupational Hygiene program in our department, shared surprising findings from a study in the Yakima Valley. While concerns have focused on farm families’ exposure to pesticides being applied to agricultural fields, she found measurable levels of a breakdown product from pesticides, a compound that needs to be included in exposure assessments.

When the hazard is known, developing an infrastructure to monitor populations at risk is necessary. Denise LaFlamme at the Washington State Department of Health spoke about efforts to improve the capacity of the state public health laboratory to monitor chemicals like arsenic, especially in residents at average or high risk of exposure. Washington residents, including children between the ages of 6 and 19, have levels of arsenic in their urine that is higher than the national average, she said.

Even when the methods to improve health outcomes are clear, the obstacles for controls are overwhelming. Such is the case in rural Native Alaska. High rates of respiratory disease and illness send Native Alaskan children to the hospital five times more frequently than their white counterparts. One in four homes in this area lack running water and toilets. Troy Ritter from the Alaska Tribal Health Consortium explained that providing water and sanitation could significantly improve health, citing a study he led in four villages that received free piped water.

To follow the conversation on children’s environmental health, visit http://depts.washington.edu/pehsu/conference for a video of the event and information on upcoming webinars every third Tuesday of the month.
Most of us think of occupational injuries and illnesses as they relate to heavy industries, but do we notice hazards that might affect workers at our vacation destinations?

The glitzy facade of Nevada casinos has a dark underside, which a pair of professors from the University of Nevada, Reno, spent a decade penetrating, one working woman at a time. They found distressing tales of repetitive stress injuries, tortured feet, second-hand smoke, and work schedules that weaken family ties.

Jill Jones, who with Susan Chandler is co-author of *Casino Women: Courage in Unexpected Places*, presented in January in the Environmental Health Seminar at the University of Washington and at the University Book Store, an evening event co-sponsored by the department’s Northwest Center for Occupational Health and Safety.

The book documents the lives of women in union and nonunion jobs, ranging from hotel maids and laundry workers to cocktail waitresses, dealers, and executives. As the gaming industry has become more profit-driven, women’s bodies have suffered.

Hotel maids clean the same number of rooms as their predecessors, but “amenities creep” makes the work harder.

Rooms that once had double beds with a pair of pillows now have two queen beds, heavy comforters, and stacks of pillows. Some of the luxury mattresses weigh more than 100 pounds, and can cause back injuries when lifted or turned.

One cocktail waitress, who had worked as a laborer in forestry and trucking, was surprised at the strain of carrying a 25-pound tray of drinks. “You know there’s pain,” this woman said, “when you see cocktail waitresses taking Valium to relax their muscles so they can get through a shift.”

Dealers characterized the casinos as “places of great suffering.” They stand hour after hour at the gaming tables, in high heels, subject to high levels of smoke and noise, doing the same repetitive motions.

Chandler and Jones tell stories about courageous women who stood up to casino management, including one who worked her way up from maid to union president. In the book’s conclusion, the authors express admiration for these women and recognize more than ever what an important role workers have played in our history.
Phillip Buff, who describes his position as “Front desk, and so much more!,” received a 2011 King County Combined Fund Drive Spirit of Service Award on March 14. Buff is the department’s representative to the UW Combined Fund. In 2011, the university community pledged more than $2 million to support 1,500 charities.

Photo: Justin Marx

Professor Evan Gallagher, who is currently on sabbatical, was designated a Distinguished Visiting Scientist at the Commonwealth Scientific and Industrial Research Organisation in Sydney, Australia, where he will focus on marine genomics. He has been working at the Cawthron Institute in New Zealand on the Pacific Oceans Initiative, a multinational program concerned with the ecological health of populations that rely on the Pacific Ocean.

Dean Howard Frumkin announced the School of Public Health strategic plan for 2012–2017 at the January 13 “All Hands Meeting.” Professor and Associate Chair Richard Fenske was the co-chair of the Strategic Planning Steering Committee, which also included other department members: Senior Lecturer Janice Camp and Graduate Student Services Manager Rory Murphy.

The annual Environmental and Occupational Health Conference at Semiahmoo (Blaine, Washington) on January 5–7 was organized by Associate Professor Christopher Simpson, Janice Camp, and Program Coordinator Alicia Pearce. In conjunction with the annual Public Health Symposium, the conference featured research from the University of Washington (UW), University of British Columbia, and Simon Fraser University. There were approximately 140 attendees.

Also in January, June Spector accepted an assistant professor appointment, Professor Daniel Luchtel retired and was given emeritus status. Clem Furlong was appointed adjunct professor, Sara Adar was appointed affiliate assistant professor, and Guy Silvey, Robert Duff, and Ronald Tubby were appointed affiliate instructors. In February, Professor Timothy Larson (Department of Civil & Environmental Engineering) and Associate Professor Catherine Karr (Department of Pediatrics) assumed joint appointments with the department.

In February, Senior Lecturer Chuck Teser participated in a site visit of the Environmental Health program at East Tennessee State University.

Affiliate Professor Steven Gilbert curated the science and history features for the *Particles on the Wall* exhibit that focused on Hanford and was on display at the UW Odegaard Library from January 9 to March 29.


Professor Lianne Sheppard joined the Scientific Advisory Board panel to review the US Environmental Protection Agency’s draft Toxicological Review of Libby Amphibole Asbestos, a type of asbestos that results from the mining and processing of vermiculite in Libby, Montana.

*—continued on page 10*
On March 1, at South Seattle Community College, Senior Fellow Julie Fox and Sheryl Magzamen, a former senior fellow, presented on the health effects of diesel and a community-based air pollution research project in the Duwamish. The presentation was part of the Georgetown Community Health Fair organized by UW School of Nursing students, including Rachael DeSouza, a master’s student completing concurrent degrees in Occupational Health Nursing and Environmental and Occupational Health. In April, UW 360 aired a segment about the Duwamish research project funded by the Kresge Foundation and other air pollution research. View the program at http://www.uwnw.org/wu360/.

Butch de Castro, an assistant professor and director of the Occupational Health Nursing program in the School of Nursing, is the new deputy director of the Northwest Center for Occupational Health and Safety.

Affiliate Professor Andrew Dannenberg is working with a new subcommittee of the Transportation Research Board focused on transportation and health. The board is part of the National Research Council based in Washington, DC.

PhD student Vanessa Galaviz (Environmental and Occupational Hygiene) receives a Community Volunteer Recognition Award at the Martin Luther King, Jr. Tribute event on January 12. Butch de Castro (left) also received the same award.

The Public Health Café in February, sponsored by the Center for Ecogenetics and Environmental Health, featured Sharon Terry, president and CEO of the Genetic Alliance. She presented on building better biobanks.

The first All-School Faculty Meeting was held on April 16. Professor Michael Yost chairs the School of Public Health Faculty Council, which helped plan this seminal meeting.

Janice Camp, longtime director of the Field Research and Consultation Group (Field Group), recently accepted the position of Educational Outreach Director in the department. Research Industrial Hygienist Marty Cohen will be the interim director of the Field Group.

Research Industrial Hygienist Nancy Simcox organized a UW event on Workers Memorial Day (April 27) to commemorate those who died in 2011 from a work-related injury or illness in King County.

Nancy Simcox, Professor Marilyn Roberts, and graphic designer Cathy Schwartz developed a new resource on MRSA for firefighters. http://depts.washington.edu/frcg/.

In honor of International DNA Day on April 20, Affiliate Professor Gilbert Omenn, former dean of the School of Public Health, gave a lecture at the UW focused on genomics in public health.


Boris Reiss, a PhD student in the Environmental and Occupational Hygiene program, won a 3M Industrial Hygiene Scholarship—one of only four winners nationally.

MPH student Toluwalose Okitka (Environmental and Occupational Health) won a $1000 travel scholarship to attend the Health Impact Assessment national meeting on April 3–4 in Washington, DC.

Undergraduate Andy Tang received a 15-month Teach For America’s Rising Leaders Fellowship, which provides leadership training to address educational inequity on campuses or in communities, and supports participation in the Rising Leaders Summit in Washington, DC, March 15–17.
At the first Peter A. Breysse Memorial Lecture on March 9, Patrick Breysse gave a special presentation, recounting events in his father’s more than 40-year tenure in the industrial hygiene profession. He also shared some of his own research that modeled his father’s commitment to improving indoor air quality and public health. Patrick Breysse is professor and director of the Division of Environmental Engineering in the Bloomberg School of Public Health at Johns Hopkins University.

The March event officially launched the endowed lectureship, which will fund speakers to share new ideas and inspire faculty, staff, and students to continue Peter Breysse’s legacy.

Pictured above are Patrick Breysse (at right) and Dean and Professor Howard Frumkin.

Our department released its 2009–2011 biennial report. Request a copy by email (ehadmin@uw.edu) or view online at: http://bit.ly/biennial-report-09-11

JUN 8 Our department’s Graduation Ceremony
JUN 8 School of Public Health Graduation
JUN 9 University of Washington Commencement
JUN 23 Occupational Health Nursing Institute
OCT 11–14 Society of Advancement of Chicanos and Native Americans in Science National Conference in Seattle
OCT 28–NOV 1 International Society of Exposure Science Conference in Seattle

Go Green
Get your newsletter by email. Subscribe at: http://depts.washington.edu/envhlth/subscribe.php

Connect
http://www.facebook.com/envhlth
http://twitter.com/UWDEOHS
LinkedIn: UW Department Environmental Occupational Health Sciences

© 2012 Department of Environmental and Occupational Health Sciences, University of Washington

ISSN number 1548-1875

PLEASE ADD UNION BUG