Department of Environmental and Occupational Health Sciences
ENVIRONMENTAL HEALTH News
School of Public Health ■ University of Washington ■ Spring–Summer 2009

We're planning to change the newsletter to better fit your needs. So, tell us what you think in a short 8-question survey: *http://www.tiny.cc/Environmental*

BEYOND THE IVORY TOWER

Despite changes in our economy and strained resources, we continue to value what you value: clean air, clean water, safe food, and safe workplaces. These fundamentals are the focus of our research, and in turn, our motivation to transfer and translate research findings and technologies into highly effective prevention practices. Our work at the university, colloquially referred to as the "ivory tower," remains strongly connected to the societal needs of our state.

This issue illustrates the important contributions our department researchers and graduates make to the field of environmental and occupational health. We profile a faculty member, a staff scientist, and an alumnus. We also celebrate our graduates and the work they have done in the department.

INSIDE

TWO SIDES OF THE SAME COIN

When Department Chair Dave Kalman joined the faculty in 1978, the School of Public Health was only eight years old. He had just received his PhD in Chemistry from the UW, and he was set to work in industry. But then he got a call. He was asked to take a position in the Department of Environmental Health studying toxic chemicals in the environment. Kalman said yes, and the rest is history. Thirty years later, he is Chair of our department.

During Kalman's tenure, he's seen the breadth of opportunities offered in the department for training practitioners grow alongside an increasing interest in science-based environmental research as key to excellence. "The programs aren't and haven't been static," he explains. "They have evolved to make students ready for careers in public health as the field continues to expand." Both first-class research and practice are needed. Kalman sees tremendous value in these two sides of the same coin: offering courses and experience to meet the needs of students entering careers as practitioners in environmental and occupational health, and at the same time, expanding classes to teach and train students in basic scientific research.

The research being done in the department has many practical applications, too, insists Kalman. One example, he says, is in ergonomics; researchers are studying how fatigue and muscle activity, known to increase risks of workplace injuries such

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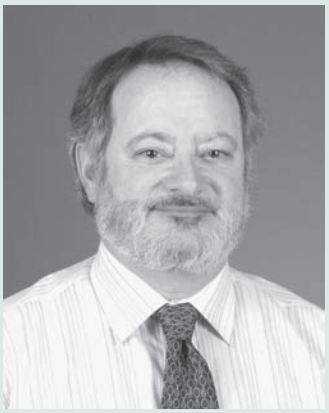
Photo: Cheryll (Sorensen) Root



Carol Martin

Environmental and occupational health problems continue to be intellectually challenging, says Dave Kalman.

as carpel tunnel syndrome, are linked to workstation design. Another example is in toxicology, where our researchers are studying what underlies chemical injury.

Environmental and occupational health problems continue to be intellectually challenging, says Kalman. "Problems don't lend themselves to a single approach," he explains, and so the field is inherently interdisciplinary. Professionals who come from a fundamental discipline like biology, engineering, or like he did, from chemistry, enter the field of environmental and occupational health sciences looking for ways to apply theory; they want to see an outcome and see how they can have an impact on the world, influencing the conditions people live with.

Despite the current economic climate, Kalman predicts continued opportunities for our department's graduates. For the public, the importance of what we do, what we work on as a department has never gone away, says Kalman. People have remained interested in the quality of their health, in the quality of the environment, and how the two interact. But he cautions that the opportunity depends on how well the "graduate is able to convert skills to make a livelihood. A person has to be prepared for change, and never feel like an education is complete."

Beginning July 1, Kalman will take advantage of a year-long sabbatical to continue work in Southeast Asia. In addition to ongoing research on environmental pollutants in India and Bangladesh, he has been invited to participate in research or teaching in Vietnam, Thailand, Cambodia, Laos, and Taiwan. Kalman also plans to spend some time in Olympia to better understand the legislative process.

CREATING HER OWN PATH

Marina Guizzetti, a research scientist in our department, says the "human perspective" motivates her research, even while her job has kept her in the lab working with cells for most of her career. Originally from the northern Italian region of Lombardy, she received her master's degree in Cell Biology from the University of Pavia and a PhD in Toxicology from the University of Milan.

In 1994, she moved to the US after accepting a postdoctoral fellowship in Professor Lucio Costa's laboratory. Her former academic mentor had put her in touch with Costa, who was studying molecular mechanisms that lead to fetal alcohol syndrome, one of the leading causes of mental retardation and birth defects.

Since then, Guizzetti has been studying novel molecular mechanisms involved in brain development and how they are affected by alcohol exposure. In particular, she has been researching the role of glial cells in brain development and how ethanol, by affecting glial cell functions, may profoundly affect the brain's architecture. Glial cells have long been considered the support system for neurons, the "glue" that holds them in place. However, in the last two decades, researchers have discovered new and important roles that these cells play.

For example, several metals accumulate in a type of glial cells called astrocytes, explains Guizzetti. Previous studies have shown that these metals, including lead, manganese, methylmercury, and organotin compounds, can alter astrocyte functions. The studies have also suggested that astrocytes may mediate some of the neurotoxic effects of these compounds during brain development and during occupational exposure.

Guizzetti says her visit to one of the clinics in the Washington State Fetal Alcohol Syndrome Diagnostic & Prevention Network (FAS DPN) made her research "personal." Since 1993, the FAS DPN has diagnosed more than 2,000 patients, and is linked to the UW Center on Human Development and

Jeff Frkonja

Marina Guizzetti

Disability, where Guizzetti is a research affiliate. "You can see the real effects [of alcohol exposure]," says Guizzetti. One of the cases still resonates with her—that of an 18-year old boy whose life was severely affected by fetal alcohol exposure; he couldn't keep a job, couldn't perform tasks that are normally expected of someone his age, she says.

"Understanding the mechanisms involved in the developmental effects of ethanol can lead to early treatments in the form of dietary supplements for pregnant women or infants," says Guizzetti.

Research on fetal alcohol syndrome isn't published much in Italy, says Guizzetti, adding that drinking alcohol during pregnancy isn't much talked about either, not like it is here in the US.

She moved to the US, eager to be involved in her own research. Compared to her experience in Italy, in the US, she can "make her own path," Guizzetti says. A few years ago she began to investigate whether some of the neuro-developmental effects of ethanol may be caused by changes in cholesterol regulation during brain development. She received initial funding from the UW Alcohol and Drug Abuse Institute in 2003, followed by grants from the National Institutes of Health in 2005 and 2008.

In addition to her research, she regularly mentors graduate students and gives lectures in Costa's graduate courses on plant and animal toxins as well as the role of glia in neuro-toxicology.

Guizzetti advises students interested in research to be motivated, to find out what really interests them. Environmental health, she explains, is important to many aspects of life.

PUBLIC HEALTH IS ABOUT EDUCATION

In May, Jude Van Buren returned to her *alma mater* as Director of Environmental Health & Safety, a department at the UW that supports and monitors workplace safety and health practices at the university. She brings with her a wealth of experience, a passion for applied public health, and a philosophy that underlies her work: public health is about education.

In 1973, Van Buren received her associate's degree in nursing. She then was a Peace Corps public health nurse in Ecuador and Paraguay, where she learned about the need for sanitation and the importance of environmental health. She returned to the US and started the DEOHS bachelor's program in Environmental Health. She said her experience as an undergraduate in our department and background in nursing influenced her interest in applied public health. She went on to receive a master's and then a doctorate of Public Health degree from The Johns Hopkins School of Hygiene and Public Health in 1997.

After graduation from the UW in 1984 and before moving to Maryland, she was a sanitarian for the Tacoma-Pierce County Health Department. She worked in Maryland and then in Washington at the state health department, managing food safety programs, chemical and physical hazard programs, and performing epidemiological evaluations. Van Buren also taught environmental health at The Evergreen State College in Olympia. Most

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Jude Van Buren returns to her alma mater *as Director of Environmental Health & Safety.*

Sarah Fischer

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recently, she was Director of the Division of Epidemiology, Health Statistics, and Public Health Laboratories at the Washington State Department of Health.

"It's been a journey on an interdisciplinary path," Van Buren said of her career. Each subsequent position, she says, has enabled her to "understand a bit more about how environmental agents, infectious or non-infectious, can impact the human body and how exposures can be reduced or eliminated."

She has also enjoyed working with "dedicated, curious, and creative people that really want to make a difference." Public health professionals, Van Buren explains, continually seek to learn and look for ways to improve the public's health, qualities that are "so essential in a field as dynamic as ours."

She explains that a background in both public health nursing and environmental health "helps you understand the public health needs from soup to nuts. Public health nurses typically work one on one with individuals and their families, such as helping sick children who are missing vaccinations or having diarrheal disease from drinking contaminated water." Working in environmental health, Van Buren says, is more of a "10,000 or 30,000-foot holistic prevention perspective." Environmental health interventions work to ensure clean drinking water and sanitation for whole communities—not just the individual. Her research addressing lead poisoning, an environmental exposure issue for children, combined these two disciplines and found that "good nutrition appears to act to impede the uptake of lead in the GI tract."

"I think public health is about education, trying to teach and trying to spread the word about what causes illness and disease, and how to prevent exposure and disease," says Van Buren.

She offers students this advice: "Be curious. Explore. Get experience. Get into an issue that interests you. Getting experiential knowledge either in a research project or out in the field working, you really can apply all of that science coursework that you've worked so hard to get through. The more that you can apply it, I believe, the more it will stay with you when you are out working in the world."

GRADUATE RECOGNITION CEREMONY

JUNE 11, 2009

Our department's 2009 graduation ceremony marked an important milestone for the graduates receiving their degrees.

Keynote speaker Robert McClure, former environmental reporter for the *Seattle Post-Intelligencer* and vice president of Investigate-West, urged graduates entering careers in public health to take Paul Peronard's example. Peronard, an Environmental Protection Agency official, called attention to a mine contaminated with asbestos, which was sickening miners and their families in Libby, Montana. "The people trust you to keep us safe," said McClure, and charged graduates with communicating risks to the public.

The responsibility graduates felt as "stewards" of the public's safety and health was evident in many of the graduate's personal statements, read one by one as the students received their degrees, and was also evident in the speeches of the speakers.

Speaker Eric Tanenbaum described his fellow undergraduates as idealistic, passionate, as well as committed "to protect the public."

The graduate program speaker, Joseph Nelson, highlighted changes in health policy and emerging diseases in Washington state, including the West Nile virus and H1N1 flu. "I don't think there could be a better time to graduate in environmental health," said Nelson. "The world needs us."

With a bouquet of flowers, the undergraduates thanked Undergraduate Program Manager James Meadows, who will be leaving the department to attend law school in Wisconsin. The ceremony was followed by a reception at the University of Washington Club.

2008-2009 ACADEMIC DEGREES

This year the Department of Environmental and Occupational Health Sciences awarded 16 Bachelor of Science degrees, 18 Master of Science degrees, 8 Master of Public Health degrees, and 5 Doctor of Philosophy degrees.

AUTUMN 2008

Eva Browne, MS
Beibei Cai, PhD
Devasmita Chakraverty, MPH
Julia Claussen, BS
Alexis Michele Knoeber Jensen, BS
Sarah Lowry, MPH
Isaac Mohar, PhD

WINTER 2009

Stephen Krival, MS
Danielle M. Parette, MS
Michael Rommen, BS
Kenneth A. Scott, MPH
Kathryn VanDeMark, PhD

SPRING 2009

Kevin Aranas, BS
Jacob Braden, MS
Elise Buchholz, BS
Timothy Carter, MS
Eric Coker, MS
Travis Cook, MS
Natasha Curren-Mah, BS
Lauren Dunbar, MS
Cassandra Fok, MS
Candice Suping Huang, MS
Wei-Lun Huang, BS
Edwin Long, MPH
Karen Masakane, BS
Frew Meshesha, BS
Zarina Morrill, BS
Nathan Alphonso Ng, BS
My Dung Thi Nguyen, BS
Erin Stamper, MPH
Eric Tanenbaum, BS
Jackelin Tran, MS
Randy Treadwell, MPH

SUMMER 2009

Sarah Armel, MS
Hamilton Bennett, MS
William Callis, MPH
Diana Ceballos, PhD
Ling Cui, MS
Aminta Dang, BS
Laurel Jennings, MS
Kenneth Kuhn, MPH
Tingting Li, PhD
Judy Louie, BS
Joseph Nelson, MS
Christina Rohlik, MS
Luke Swart, BS
Phayong Thepaksorn, MS

UW Commencement 2009 (l to r): Natasha Curren-Mah, Kevin Aranas, My Dung Thi Nguyen, and Zarina Morrill.

Chuck Treser

STUDENT RESEARCH DAY, MAY 28, 2009

At our annual Student Research Day, one second-year master's student from each graduate program was selected to present an oral summary of his or her thesis or project research. The remainder of the graduating master's students and selected doctoral students presented posters of their work. Thesis abstracts are available online at http://depts.washington.edu/envhlth/research_day/srd_09.php. Faculty preceptors are listed in parentheses.

MERCURY EXPOSURE AND AUTISM

Sarah Armel, MS, Toxicology (*James Woods*)

Recent findings showed the urine of children with autism to have increased concentrations of porphyrins, chemical compounds also found in larger concentrations in adults exposed to mercury. Prolonged mercury exposure may damage neurological and neurobehavioral systems. Armel compared porphyrin levels in same-aged children with and without autism. Her results showed that porphyrin concentrations are naturally high in young children and decline by as much as three-fold between ages 2–12. These preliminary findings are inconsistent with the theory linking autism to mercury exposure and suggest that careful age-matching is necessary in studies using porphyrins as biomarkers.

CONCENTRATING AQUATIC VIRUSES

Hamilton Bennett, MS, Environmental Health (*Gwy-Am Shin*)

Concentrating viruses from water is often a necessary first step toward determining their presence in the environment. Bennett's study evaluates a novel filter for recovering viruses from both deionized and marine water, using bacteriophage MS2, and human pathogens Adenovirus type 2 and Poliovirus type 1. Her research has found that not only are recovery efficiencies acceptable, but the filtration method offers a number of improvements over current EPA-recommended practices.

CHROMIUM VI AND EXPOSURES

Timothy Carter, MS, Occupational and Environmental Exposure Sciences (*Michael Morgan*)

Chromium VI is a recognized carcinogen that damages the lung, kidney, and liver. Carter monitored occupational exposures to chromium VI among workers performing chrome electroplating and chromate spray-painting. His study investigated airborne particle size distribution and chromium uptake. He found that electroplaters had higher urinary chromium levels and were exposed to a significantly greater fraction of respirable size chromium VI particles than spray-painters.

DIVER RISK FOR "THE BENDS"

Edwin Long, MPH, Occupational & Environmental Medicine (*Sverre Vedal*)

Decompression sickness (DCS), or the "bends," affects divers when they ascend from the ocean bottom back to the surface. Gas bubbles, venous gas emboli (VGE), form in the blood and may result in pain and neurological problems. Long tested whether a diver's ascent from colder to warmer ambient temperatures during decompression may decrease the risk of DCS. He measured VGE in 67 divers after different time intervals under water and their thermal conditions. If a strong association can be shown between diver thermal status and VGE, then the use of VGE as a predictor of DCS is warranted, potentially changing the way decompression tables are developed.

DISTANCE FROM ROADWAYS

Erin Stamper, MPH, Environmental and Occupational Health (*Joel Kaufman*)

Living near roadways has been linked to cardiovascular morbidity and mortality. Correctly identifying residents' exposure with minimal error is critical, given the variation of air pollution around different types of roads. Past research has shown that "street geocoding," commonly used in large-scale studies, can overestimate the number of individuals who live near major roadways. In this investigation, Stamper compared the proximity of study participants to roadways in California, Minnesota, and New York, using a variety of measurement tools and methods. She found variation existed within 100 meters from the roadways, but also that any inaccuracies can be explained by factoring in the types of roads where participants reside.

Sarah Armel

Hamilton Bennett

Timothy Carter

Edwin Long

Erin Stamper

STUDENT POSTER SESSION

Environmental Health, MS

Laurel Jennings (*John Kissel*) Assessing toxicant movement in the Puget Sound using a multi-compartmental box model

Christina Rohlik (*J. Scott Meschke*) Characterization of bioaerosols and bacterial surface contamination at a large Washington dairy operation

Occupational & Environmental Exposure Sciences, MS

Jacob Braden (*Michael Yost*) Modeling the fate of diesel particulate matter emissions from a selected marine vessel using CALPUFF View Version 2.3

Eric Coker (*Yost*) Measurement of gasses by UV-DOAS for a reference spectral library

Ling Cui (*Peter Johnson*) Physical exposure difference between children and adults when using different computer input devices

Lauren Dunbar (*Meschke*) Endotoxin electrochemical detection method for use in bioaerosol personal sampling device

Joseph Nelson (*Noah Seixas*) Characterization and prediction of shipyard welders' exposure

Phayong Thepaksorn (*Yost*) Measurements of ambient NO using an ultraviolet differential optical absorption spectroscopy (UV-DOAS)

Jackelin Tran (*Morgan*) Effects of glove material and thickness on permeation by solvents commonly used in the auto painting industry

Toxicology, MS

Candice Suping Huang (*Lucio Costa*) Relative cytotoxicity of five polybrominated diphenyl ether congeners (BDE-47, -99, -100, -153, and -209) in mice cerebellar granule neurons

Environmental and Occupational Health, MPH

Randy Treadwell (*Matthew Keifer*) Introduction of a portable cholinesterase monitoring kit into clinical practice: A normalization process model approach

Occupational and Environmental Medicine, MPH

William Callis (*William Daniell*) The relationship between self-reported morale and post-deployment mental illness: A retrospective cohort time to event analysis

Kenneth Kuhn (*Jordan Firestone)* Evaluation of the health care utilization and exposure to Jet-Propellant-8 (JP-8) in United States Army soldiers returning from deployment to Operations Iraqi and Enduring Freedom

Toxicology, PhD

Kellie Fay (*Terrance Kavanagh*) Comparative analysis of short-term vs. long-term culture of primary mouse hepatocytes for modeling *in vivo* responses to acetaminophen

Environmental & Occupational Hygiene, PhD

Diana Ceballos (*Yost*) Isocyanate surface sampling in the Puget Sound collision repair industry and objective color scale for the SWYPE surface sampling technique

PEOPLE & PLACES

The National Institute for Environmental Health Sciences awarded $2.4 million to renew support for the **Superfund Basic Research Program** led by Professors **Harvey Checkoway** and **Evan Gallagher.** The Program first received funding in 1987.

In February, the UW Climate Impacts Group (CIG) delivered an assessment of Washington state to the Department of Ecology and the Department of Community, Trade, and Economic Development. Professors **Michael Yost** and **Richard Fenske,** Adjunct Assistant Professor **Catherine Karr,** and Research Scientist **Cole Fitzpatrick** contributed with assessments of heat events and air pollution. Karr also presented at a conference hosted by CIG to discuss the implications of the findings.

Karr and Industrial Hygienist **Nancy Beaudet,** both with our **Pediatric Environmental Health Specialty Unit** (PEHSU), traveled to Vietnam, where they provided pediatric environmental health training in venues organized by Project Vietnam to more than 225 health care providers. Funders included the Environmental Protection Agency, **UW Collaborative Center for Healthy Work and Environment** (CCHWE), UW Harry Bridges Center for Labor Studies, and PEHSU.

Chris Simpson was promoted to Associate Professor and **Sally Liu** was promoted to Affiliate Professor. Both promotions are effective July 1, 2009.

In April, Professor **Matt Keifer** and Associate Professor **Bill Daniell** conducted a week-long researcher training course at Burapha University in Thailand, part of a year-long training and mentorship program through the CCHWE. The Center is supported by the National Institutes of Health Fogarty International Center.

The **UW Northwest Center for Occupational Health & Safety** issued a report on workplace injury and illness from 2000–2005 in the Northwest's four-state region—Washington, Oregon, Idaho, and Alaska.

In partnership with the Tribal Solid Waste Advisory Network and the Washington State Patrol, our **Continuing Education (CE) Program** conducted a "meth lab" awareness course for the Quinault Indian Nation in Taholah, Washington, to recognize abandoned sites that have been used for clandestine methamphetamine production.

In June, our **CE Program** also helped sponsor and plan the "Nanotechnology Health and Safety Forum" in Seattle. Professor **Yost** presented on the science of exposure assessment.

In partnership with the **Community Outreach and Education Core** at the **Center for Ecogenetics and Environmental Health** and the Northwest Indian College, Outreach and Education Manager **Jon Sharpe** administered a written survey exploring environmental health from a Native perspective to attendees of the American Indian Higher Education Consortium in Missoula, Montana.

At the Society of Toxicology (SOT) meeting in March, Professor **Elaine Faustman,** director of the **Pacific Northwest Center for the National Children's Study** (NCS), presented "The importance of the NCS for toxicology and for exploring gene-environment interactions." Also, **Institute for Risk Analysis and Risk Communication** researchers won two awards. "Cadmium-induced differential toxicogenomic response in resistant and sensitive mouse strains undergoing neurulation" was a finalist for best paper published in *Toxicological Sciences*. "Computational models of ethanol-induced neurodevelopmental toxicity across species: Implications for risk assessment" received the 2009 Teratology Society James G. Wilson Publication Award for best paper published in *Birth Defects Research*. Also at SOT, Affiliate Professor **Steven Gilbert** and Phil Wexler from the National Library of Medicine (NLM) established the first-ever Toxicology History Room. Gilbert founded and directs the Institute of Neurotoxicology and Neurological Disorders. The Institute and Toxipedia, a wiki-website, received funding from the NLM to establish the World Library of Toxicology. The Institute also received funding from King County to establish IPMopedia, a site focused on integrated pest management and green gardening.

In April, the **Pacific Northwest Agricultural Safety and Health Center's** Director of Outreach, **Helen Murphy,** led a workshop on ladder injuries at the Washington Community Health Worker training, co-sponsored by the Center.

In April, Lecturer **Kate Stewart** returned from Nicaragua, where she was a Fulbright scholar and taught an applied ergonomics course to working professionals at the Universidad Nacional Autónoma de Nicaragua. Stewart also participates in a sub-commission that provides guidance to their federal government on instituting a national ergonomics regulation as part of the country's health and safety laws. Currently, no other developing country in the world has measures to minimize musculoskeletal exposures.

In June, Professor **Noah Seixas** presented "Hearing conservation challenges in the construction industry" at the International Conference on Rehabilitation of Deafness, Deafblindness, Language and Hearing Disorders in Montreal, Canada. Also in Montreal, doctoral student **Ryan Blood** presented "Whole body vibration exposures in forklift operators: Comparison of a mechanical and air-ride seat" at the International Conference on Whole-Body Vibration Injuries.

In April, Research Industrial Hygienist **Venetia Runnion** presented "Shipyard welders' hexavalent chromium exposures: OSHA regulations & compliance issues" to the American Equity Underwriters National Safety Committee Meeting in Long Beach, California. In May, she presented "Composite materials, carbon fibers & nanofibers: Exposure assessment and control" at the Boeing/ International Association of Machinists' Inter-Regional Safety Monitor Training.

In March, doctoral student **Rick Neitzel** gave a talk, "Evaluating dynamic exposures," to the American Industrial Hygiene Association–Northern California Section in Berkeley, California.

Six undergraduates from a national pool of applicants were selected for the Environmental Health Research Experience Program, a nine-week, summer experience for students interested in environmental health science research. Each student pairs with a faculty mentor (listed in italics). UW undergraduates include: **Mehak Aluwalia** (***Scott Meschke***); **Mark Crippen** (***Marilyn Roberts***); and **Kelsey Smith** (***Chris Simpson***). Undergraduates from other universities include Dominique Bibbins (***Matt Keifer***); Ashley Hammerbeck (***John Kissel***) and Anne Roubal (***Lianne Sheppard***).

Rick Neitzel

Brian High

AWARDS

Graduate Program Manager **Rory Murphy** received the UW Graduate School's first annual Graduate Program Assistant Service Award.

Brian High, a computing support specialist, won the department's 2009 Distinguished Staff Award. Other nominees were **Eric Vigoren, Dianne Botta, Mike Espinoza, Cody Tuthill, Venetia Runnion, Helen Murphy, Phillip Buff, Khoi Dao, Catherine Alexander, Cathi Carol, Marty Cohen,** and **Jeff Shirai.**

Rick Neitzel was awarded the 2009 Gilbert S. Omenn Award for Academic Excellence for a doctoral student from the UW School of Public Health.

Professor **Terrance Kavanagh** received the Outstanding Faculty Mentor of the year from the department's Student Advisory Committee.

Doctoral student **Tingting Li** received the department's Outstanding Graduate Student Award. **Eric Tanenbaum** received the department's Outstanding Undergraduate Student Award.

Undergraduate **Michael Rommen** was the the Jack Hatlen Scholarship winner.

Graduate student **Laurel Jennings** received the Student Community Service Award from the School of Public Health.

Lecturer **Rick Gleason** was nominated for a UW Distinguished Contribution to Lifelong Learning Faculty Award.

Research Scientist **Xiaozhong Yu** was nominated for the 2009 UW Distinguished Staff Awards.

CONFERENCE PRESENTATIONS

Departmental presenters and alumni in bold green type

Air Quality and Health Workshop
March 26–27, Vancouver, Canada

Kaufman J. Air quality and chronic heart disease (Acute and chronic effects)

Vedal S. Evidence and air pollution health interventions

American Thoracic Society
May 15-20, San Diego, CA

Adar SD, Hallstrand TS, **Kaufman JD, Liu LJS.** Changes in pulmonary function in childhood are associated with exposures to traffic from school bus exhaust and residential proximity to roadways

Campen MJ, Buntz J, Lund A, Seagrave J, **Vedal S,** Mauderly J, McDonald J. Vascular effects of vapor and particulate phases of traffic-related air pollution: Initial results from the NPACT Initiative

Hinckley Stukovsky K, **Sheppard L,** Caldwell E, **Vedal S, Kaufman JD,** Goss CH. Cross-sectional lung function effects of ambient air pollution in children with cystic fibrosis

Koenig JQ, Mar TF. Relationships between visits to emergency departments for asthma and ozone exposure in Greater Seattle

Krishnan RM, **Adar SD, Van Hee V,** Jorgensen N, O'Neil MS, Polak J, Barr GR, **Kaufman JD.** Vascular responses and long-term ambient air pollution: The Multi-Ethnic Study of Atherosclerosis and Air Pollution (MESA Air)

Roisman R, Van Hee V, Sheppard L, Vedal S. Respiratory health effects among children in a pulp mill community: Comparison of a nearest monitor and a geostatistical approach to exposure estimation

Rosenberg SR, **Adar SD,** Gupta RS, Kalhan R, **Kaufman JD,** Weiss KB, Zhang X, Smith LJ, Daviglus ML. Childhood asthma prevalence in Chicago is associated with living close to highways

Semmens EO, O'Neill MS, **Van Hee VC, Kaufman JD.** Gene-air pollution interactions and arterial stiffness: The Multi-Ethnic Study of Atherosclerosis (MESA)

Vedal S, Kim S-Y, **Sheppard L, Adar SD,** Diez Roux AV, O'Leary DH, **Kaufman JD.** Chemical components of ambient particulate matter and atherosclerosis: Cross-sectional relationships in the Multi-Ethnic Study of Atherosclerosis and Air Pollution (MESA Air)

Yip NH, Ahmed FS, Hoffman EA, **Vedal S,** Smith LJ, Barr RG. Overlap of quantitatively-defined emphysema with airflow obstruction, Chronic bronchitis and asthma in a population-based cohort. The MESA-Lung Study

America Society for Microbiology
May 17-21, Philadelphia, PA

Dunbar L, Dengler E, Gorder R, **Beck N,** Novosselov I, **Meschke JS.** Development of a novel personal bioaerosol sampling device for collection and electrochemical detection of endotoxin

Rohlik CM, Lee KJ, Ray L, **Meschke JS.** Characterization of bioaerosols and bacterial surface contamination at a large Washington dairy operation

American Industrial Hygiene Conference & Expo
May 30–June 4, Toronto, Canada

Camp JE. Supply chain occupational health and safety in China

Coker E. Measurement of air pollutants using ultraviolet differential absorption spectroscopy

Croteau G. Engineering controls for reducing wood dust exposures during sanding

Croteau G, Camp J. Glass and metal arts exposure assessment

Monteith LE. Diffusive samplers

Neitzel R, Daniell W, Sheppard L, Davies H, Seixas N. Assessment of occupational noise exposures using subjective and objective measures

Nelson J, Seixas N, Camp J, Runnion V, Dills R. Characterization and prediction of shipyard welders' exposure

Runnion V, Nelson J, Wang R, Speyer G. Evaluation of CrVI exposure determinants among welders

Occupational and Environmental Exposure of Skin to Chemicals
June 14–17, Edinburgh, Scotland

Kissel JC, Shirai JH, Smith JA, Parker AN, Nevhage BA. Explaining children's exposure to pesticides: The Persistent Low-Level Ambient Contact Exposure (PLACE) hypothesis

Shirai JH, Kissel JC. Application of the Kasting-Miller-Bhatt model to historical investigations of the dermal absorption of chlorpyrifos

Stumbaugh KL, Shirai JH, Spalt EW, Kissel JC. Human *in vivo* comparison of dermal absorption from water and soil using DEET as a model compound

Air and Waste Management Association Annual Conference
June 16–19, Detroit, MI

Ireson RG, Zielinska B, **Davey ME, Liu L,** Hesterberg TW. Using multiple tracers to quantify in-vehicle self pollution, and examination of the magnitude and characteristics of other source contributions

Larson TV, Zelinska B, **Webber W,** Ireson R, **Liu L.** Source apportionment of PM2.5 inside two diesel school buses using weighted partial least squares regression and chemical mass balance

Mauderly J, Burnett R, Castillejos M, Ozkaynak H, Samet J, Stieb D, **Vedal S,** Wyzga R. Health assessment aspects of multipollutant, results-based air quality management

CONTINUING EDUCATION

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.

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.

OSHA 500 Trainer Course in OSHA Standards for the Construction Industry
- Jul 13–16 *Portland*
- Aug 3–6 *Seattle*
- Oct 5–8 *Portland*
- Nov 16–19 *Anchorage*
- Nov 16–19 *Seattle*

OSHA 501 Trainer Course in Standards for General Industry
- Aug 10–13 *Portland*
- Sep 14–17 *Seattle*
- Oct 19–22 *Richland*
- Nov 30–Dec 3 *Anchorage*
- Dec 14–17 *Boise*

OSHA 502 Update for Construction Industry Outreach Trainers
- Aug 3–5 *Portland*
- Nov 9–10 *Seattle*

OSHA 503 Update for General Industry Outreach Trainers
- Aug 5–7 *Portland*
- Nov 12–13 *Seattle*

OSHA 510 OSHA Standards for the Construction Industry
- Jul 20–23 *Seattle*
- Aug 17–20 *Seattle*
- Sep 14–17 *Portland*
- Oct 19–22 *Seattle*
- Oct 19–22 *Anchorage*
- Nov 2–5 *Richland*
- Nov 30–Dec 3 *Portland*

OSHA 511 OSHA Standards for General Industry
- Jul 6–9 *Richland*
- Aug 17–20 *Seattle*
- Sep 21–24 *Boise*
- Oct 13–16 *Portland*
- Oct 26–29 *Seattle*
- Oct 26–29 *Anchorage*

OSHA 521 OSHA Guide to Industrial Hygiene
- Jul 27–30 *Seattle*
- Aug 17–20 *Boise*
- Sep 14–17 *Portland*
- Sep 28–Oct 1 *Anchorage*
- Dec 14–17 *Seattle*

OSHA 2015 Hazardous Materials
- Oct 5–8 *Richland*
- Nov 30–Dec 3 *Portland*

OSHA 2045 Machinery & Machine Guarding Standards
- Aug 3–6 *Portland*
- Sep 28–Oct 1 *Seattle*

OSHA 2225 Respiratory Protection
- Oct 5–7 *Portland*

OSHA 2250 Principles of Ergonomics
- Sep 1–3 *Seattle*
- Dec 7–9 *Portland*

OSHA 2264 Permit-Required Confined Space Entry
- Jul 6–8 *Seattle*
- Aug 3–5 *Richland*
- Aug 31–Sep 2 *Portland*
- Sep 21–23 *Anchorage*
- Nov 30–Dec 3 *Seattle*

OSHA 3010 Excavation, Trenching & Soil Mechanics
- Aug 17–20 *Richland*
- Oct 13–15 *Seattle*
- Nov 2–4 *Portland*

OSHA 3095 Electrical Standards
- Jul 27–29 *Richland*
- Aug 10–12 *Seattle*
- Nov 2–4 *Portland*
- Dec 14–16 *Anchorage*

OSHA 3110 Fall Arrest Systems
- Jul 6–8 *Portland*
- Sep 21–23 *Seattle*
- Dec 7–9 *Richland*

OSHA 5400 Maritime Train-the-Trainer
- Nov 2–5 *Seattle*

OSHA 6000 Collateral Duty Course for Other Federal Agencies
- Oct 5–8 *Seattle*
- Dec 7–10 *Portland*

Supervisory Safety & Health Duties
- Aug 24–26 *Seattle*

ONLINE OSHA 10-hour Construction

CONTRACT OSHA 10-hour General Industry

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Jul 13	Annual Hazardous Waste Refresher (*Seattle*)
Jul 14	DOT Hazardous Materials Transportation (*Seattle*)
Jul 15	Annual Hazardous Waste Refresher (*Olympia*)
Jul 16	Annual Hazardous Waste Refresher (*Seattle*)
Aug 11–13	Hazardous Materials Requirements of the Building, Fire & Mechanical Codes (*Redmond*)
Oct 1	The Puget Sound Occupational and Environmental Medicine Grand Rounds on Nanotechnology (*Seattle*)
Oct 6	Systems of Safety and Human Performance: Injury Prevention for the 21st Century (*Tacoma*)
Oct 8	Occupational Health Policy: Global Issues, Local Solutions (*Vancouver, BC*)

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