Department of Environmental Health

ENVIRONMENTAL HEALTH News

School of Public Health and Community Medicine ▪ University of Washington ▪ Autumn 2001

SCIENCE & PUBLIC POLICY

Shedding their lab coats or hard hats, researchers at the Department of Environmental Health have been bringing their scientific knowledge to the policy table, assisting in the development of informed environmental and occupational health policy decisions.

In this issue you will read how our Department was involved in conducting and reviewing the science behind the proposed standard for arsenic in drinking water as part of a National Academy of Sciences committee. Many other faculty members participate on national and international committees, covering topics that range from methylmercury to preparing for public health emergencies.

The Department has also developed courses with a policy focus, including a new joint master's degree program to train scientists in public policy and public affairs students in environmental health. By participating in such efforts, faculty help assure that science plays a role in shaping public policy and that their research is relevant to the needs of policy makers.

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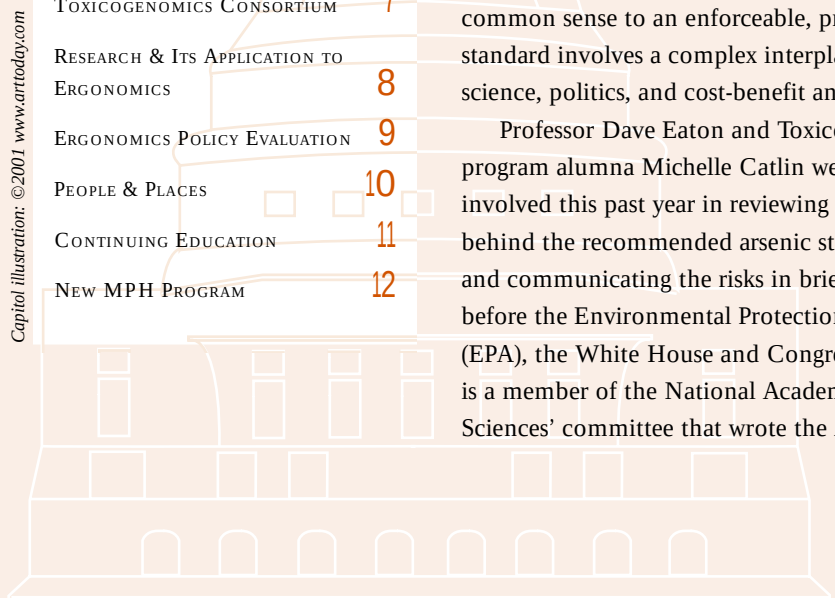

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ARSENIC IN DRINKING WATER

Scientists, policy makers, and lay people all might agree that the public should be protected from arsenic and other toxicants in drinking water. However, moving beyond common sense to an enforceable, protective standard involves a complex interplay of science, politics, and cost-benefit analysis.

Professor Dave Eaton and Toxicology program alumna Michelle Catlin were involved this past year in reviewing the science behind the recommended arsenic standard, and communicating the risks in briefings before the Environmental Protection Agency (EPA), the White House and Congress. Eaton is a member of the National Academy of Sciences' committee that wrote the Arsenic in Drinking Water report published recently by the National Research Council. Catlin, a 1999 graduate of the Toxicology PhD program who works at The National Academies, is the study director for the report.

Some of the scientific evidence for arsenic risks came from Department Chair Dave Kalman's research collaborators, particularly in looking at markers of effect, dose-response issues, susceptibility factors, and other aspects of arsenic health effect. Kalman was a peer reviewer on a National Academy of Sciences/ National Research Council report.

The arsenic standard is an example of the interaction of science and public policy. After years of scientific review, the Clinton

administration decided to phase in an arsenic standard of 10 parts per billion (ppb), to be lowered from 50, which has been the standard since World War II.

When the Bush administration took office, it suspended the Clinton standard and requested the National Academies' report, asking for further evaluation of recent scientific evidence. The new report was intended as an update to an initial National Research Council (NRC) report on Arsenic in Drinking Water, issued in 1999, that served as the basis for the Clinton Administration's proposed lowering of the standard. Although the update looked only at new data published since the 1999 report, nearly 1,000 new scientific papers on the toxicology and epidemiology of arsenic were included in the review. The update, issued in September, reinforced the conclusions of the original report that cancer risks exceed generally acceptable levels of risk at the current standard of 50 ppb arsenic in tap water.

THE EPA BALANCED TOXICOLOGY, RISK ASSESSMENT, AND PUBLIC HEALTH AGAINST THE COST TO RURAL WATER SYSTEMS

Washington state Department of Health

A new standard will lower the amount of arsenic allowed in drinking water

The administration could have set the standard anywhere between 3 and 20 ppb. In setting the 10 ppb standard in October, the EPA balanced toxicology, risk assessment, and public health against the cost to rural water systems that will need to install expensive filtration equipment.

Eaton stated that "it is important for the public to understand that the NRC report evaluated only the scientific information relating to potential risks of arsenic in drinking water at 3, 5, 10 and 20 ppb. The NRC report focused only on the "risk" side of the "risk-benefit" equation–it is imperative that the EPA thoroughly consider actual exposures in the US, as well as the economic costs to communities, in making regulatory decisions that are in the best interests of society."

GRADUATE TRAINING

Risk analysis is an academic emphasis in the Department of Environmental Health. Graduate students can earn a Risk Emphasis in conjunction with an MS or PhD in Toxicology, Industrial Hygiene, or Environmental Health Technology.

Setting effective public policy requires cross-disciplinary training and understanding beyond "exact sciences," said Professor Elaine Faustman, who directs the Institute for Risk Analysis and Risk Communication (IRARC). One of IRARC's research programs is the Center for the Study and Improvement of Regulation, funded by Carnegie Mellon University.

"Historically, scientists have not been very good at knowing what policy makers need, and have not provided it in a form that is useful to inform policy," Faustman said.

Toxicological risks may be particularly hard to communicate, she said, because harm may be long-term, such as cancers related to arsenic in drinking water. "Delayed risks are harder to monitor – our metrics monitor health impacts that are 20 to 30 years after initial exposure," Faustman said. "It's not like falling off a ladder, where the risk is immediate." A broad public health approach would look at overall vulnerabilities in the population, with a goal of preventing adverse effects.

In science, pure and esoteric research is sometimes valued over the applied or practical. Scientists are accustomed to publishing for their peers, Faustman said, but they may not have a "translational approach" that allows them to answer policy makers' questions. "We need people trained to go across that divide."

"Universities play a unique role," Faustman said. In addition to teaching Risk Analysis and directing IRARC, Faustman has been instrumental in establishing a joint master's degree program with the Evans School of Public Affairs (see story at right).

In addition to the Risk Analysis courses that Professor Faustman teaches, several other graduate courses cover policy issues. These include a course on Pesticides and Public Health, taught every other year by Professors Rich Fenske and Matt Keifer, which examines health risks and benefits associated with pesticide use in the United States and internationally.

Professor Fenske also teaches a course on Environmental Risk and Society that examines scientific determinations of environmental risks and explores how affected communities and society evaluate such determinations.

In a course entitled Occupational Health and Safety: Policy and Politics, Senior Lecturers Janice Camp and Sharon Morris provide students with a better understanding of the historical, political, and policy issues in occupational health and safety.

Training scientists in policy ... and vice versa

The Department of Environmental Health and the Daniel J. Evans School of Public Affairs have announced a concurrent master's degree program that will train scientists in public policy and policy professionals in environmental health. The first class will be accepted for autumn 2002.

The concurrent degrees will allow students to expand their knowledge in each of the areas of study while they develop a specialty. Students will be able to complete a Master of Public Affairs (MPA) and a Master of Science (MS) or Master of Public Health (MPH) in three years, rather than the four that would be necessary if the degrees were earned separately.

The program is designed to train professionals who can understand both the science and policy sides of debate, said Professor Elaine Faustman. It is designed to appeal to staff in regulatory agencies, along with Environmental Health majors who will be entering the regulatory arena. Graduates will be able to synthesize the complexities of the worlds of science, management, and policy.

The Environmental Health concurrent degrees (MS or MPH) are structured for students who are interested in environmental health and its use in public health policy and management. Students will be exposed to economic theory, health services, behavioral sciences, and statistical methods. Faculty will be actively involved in curriculum decisions, student advising, and directing research projects.

MS students will be able to choose from three areas of concentration: technology, toxicology, and industrial hygiene. The MPH is a Department-wide degree in general environmental health.

Students interested in pursuing a concurrent degree must apply to the Evans School and Department of Environmental Health separately. Admission procedures for the Evans School MPA program can be found at *http://www.gspa. washington.edu/mpa/* and for the Department of Environmental Health at *http://depts.washington.edu/ envhlth/acad_programs/ acad_programs.html*

EMERGENCY PREPAREDNESS

On the morning of September 11, Senior Lecturer Chuck Treser was in Georgia, beginning what he thought would be a three-day public health preparedness workshop. The meeting adjourned immediately after it started, when jets slammed into the World Trade Center and Pentagon, and public health professionals from around the country scrambled to meet the new challenges of terrorism.

Treser is one of several School of Public Health and Community Medicine faculty working with the Public Health Practice Program Office of the US Centers for Disease Control and Prevention through the Northwest Center for Public Health Preparedness. The preparedness center is part of the School's Northwest Center for Public Health Practice.

Treser and his colleagues have been working with public health practitioners and academics in a six-state region to increase the capacity of local and state public health professionals to respond to a variety of public health problems, including bioterrorism. The region includes Alaska, Idaho, Montana, Oregon, Washington, and Wyoming. The team includes Dr. Mark Oberle, Associate Dean for Public Health Practice; Jack Thompson, director of the School's Northwest Center for Public Health Practice; and Epidemiology Professor James Gale, principal investigator on the Preparedness Center grant.

The Centers for Public Health Preparedness are designed to mobilize the national public health workforce–an estimated 500,000 physicians, nurses, environmental health scientists, health educators, laboratory staff, managers and others practicing on the front lines of public health. The system was put in place in response to a 1997 report, *Public Health Workforce: An Agenda for the 21st Century.* The goal is to ensure front-line public health workers have the skills and competencies required to effectively respond to current and emerging health threats.

The network has three tiers: academic centers in schools of public health; specialty centers, generally university based, with specific expertise; and local exemplar centers that develop advanced applications at the community level. The focus is on three key areas of preparedness for bioterrorism and other urgent health threats:

- integrated communications and information systems across multiple sectors
- advanced operational readiness assessment
- comprehensive training and evaluation.

In addition to UW, the academic centers are at the University of Illinois at Chicago, University of North Carolina at Chapel Hill, Columbia University, University of Iowa, University of South Florida, and Saint Louis University.

Centers for Disease Control and Prevention

A CDC laboratory worker wears a protective suit and face mask to handle hazardous materials

FOR MORE INFORMATION

CDC bioterrorism site, *http://www.bt.cdc.gov/* (English and Spanish)

Northwest Center for Public Health Practice, *http://healthlinks.washington.edu/nwcphp/*

Public Health–Seattle & King County Web site on bioterrorism, *http://www.metrokc.gov/health/bioterrorism/*

Public Health Workforce: An Agenda for the 21st Century (a 69-page pdf file), *http://www.health.gov/phfunctions/pubhlth.pdf*

University of Washington School of Public Health and Community Medicine Bioterrorism Concerns FAQ, *http://depts.washington.edu/sphcm/news/bioterrorism.html*

HELPING MAKE PUBLIC POLICY

Departmental faculty members have served as members of federal panels and as expert advisors to state, federal, and international agencies that set policy for environmental and occupational exposures.

Thomas Burbacher: National Academy of Sciences committee that last year reaffirmed the Environmental Protection Agency's standards for methylmercury exposure

Harvey Checkoway

Harvey Checkoway: working group of the International Agency for Research on Cancer (IARC), which concluded that crystalline silica from occupational exposures is carcinogenic to humans

Lucio Costa: Institute of Medicine/National Academy of Sciences Committee on Gulf War Syndrome

Bill Daniell: Ergonomics Rulemaking Advisory Committee, Washington state Department of Labor & Industries; Institute of Medicine committee and expert panel on Gulf War and Health: Review of the Literature on Pesticides and Solvents

Dave Eaton: National Research Council panel that reviewed the scientific basis for EPA's proposal to lower the drinking water standard for arsenic

Elaine Faustman

Elaine Faustman: chair, National Academy of Sciences Developmental Toxicology Committee; phthalates expert panel, National Toxicology Program's Center for the Evaluation of Risks to Human Reproduction; National Academy of Sciences/National Research Council subcommittee on spacecraft water exposure guidelines; National Academy of Sciences/Institute of Medicine subcommittee on upper reference levels of nutrients; External Advisory Committee, Model Toxics Control Act, Washington state Department of Ecology; birth defects advisory committee, Washington state Department of Health; Washington state Right to Know Advisory Council, governor's appointee representing academic and research communities

Richard Fenske: pesticides and children's health, Washington state Governor's Pesticide Advisory Board; advisory committee of the Agricultural Health Study, National Cancer Institute

Dave Kalman: peer reviewer, National Academy of Sciences Committee on Arsenic in Drinking Water Report, National Research Council

Matthew Keifer: National Academy of Sciences/National Research Committee, subcommittee on methyl bromide; National Panel on Pesticides and National Strategies for Health Care Providers

Jane Koenig

Jane Koenig: consultant to the Environmental Protection Agency (EPA) Clean Air Science Advisory Committee, Air Quality Criteria for Particulate Matter

Sally Liu: studying the susceptibility of sensitive populations to fine particulates in air pollution as part of the EPA's review of its standards for fine particulate matter ($PM_{2.5}$); public health representative, Agriculture Burning Task Force, Washington state Department of Ecology

Michael Morgan: National Research Council committee on air quality in passenger cabins of commercial aircraft

Sharon Morris: Innovations Task Force, state Department of Labor & Industries; NIOSH Board of Scientific Counselors that provides guidance on the Institute's research programs; Washington Governor's Industrial Safety and Health Advisory Committee

Tim Takaro

Tim Takaro: president's advisory board on radiation and workers' health; Department of Energy/Department of Labor's physicians' panel for reviewing workers compensation

Chuck Treser: ad hoc committee developing Washington state response plan for viruses transmitted by mosquitoes and ticks

Gerald van Belle: Peripheral and Central Nervous System Drugs Advisory Committee of the US Food and Drug Administration.

ALICE HAMILTON

A policy pioneer

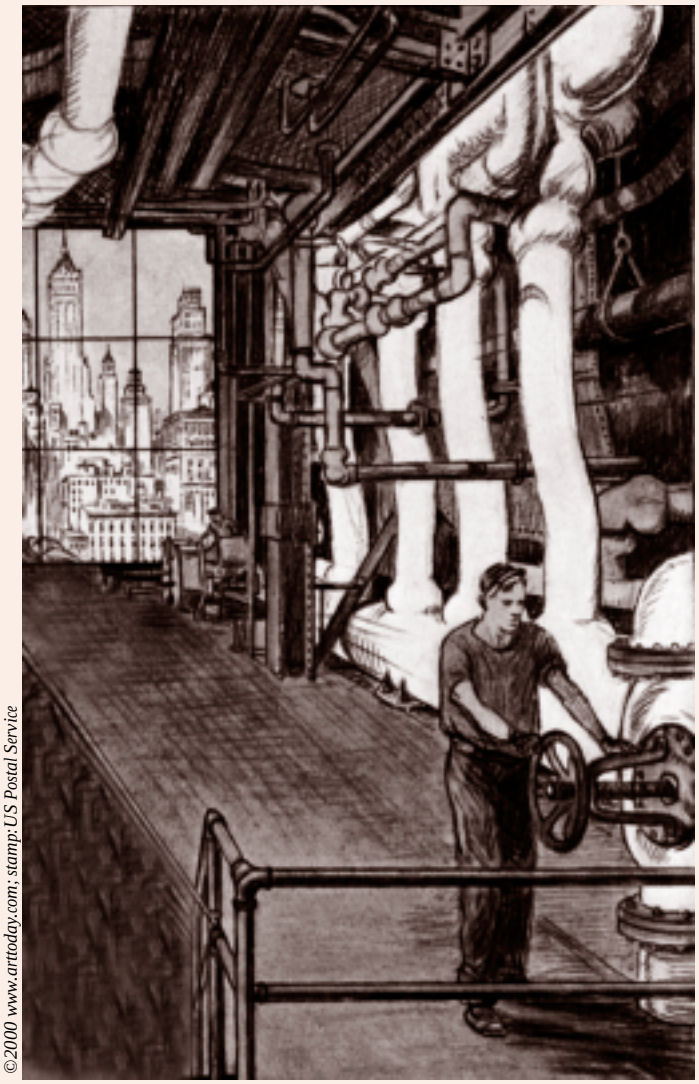
When Alice Hamilton graduated from medical school in 1893, there was no specialty of occupational medicine. There were no standards for safety at work, and employers routinely fired sick workers and replaced them with new ones looking for jobs.

In a career that spanned 50 years, Hamilton pioneered occupational epidemiology and industrial hygiene. Her findings led to sweeping reforms, both voluntary and regulatory.

She began her academic career in 1893 at the Women's Medical College of Northwestern University in Chicago, and also moved into Jane Addams' Hull House, center of the social reform movement in the US. Through Hull House's well-baby clinic she became acquainted with immigrant families, and learned about parents' unsafe working conditions.

Her first public policy role came during the typhoid fever epidemic in Chicago in 1902. She made a connection between improper sewage disposal and the role of flies in transmitting the disease. Her findings led to reorganization of the Chicago Health Department.

She was asked to direct the governor of Illinois' Occupational Disease Commission in 1910, the first such commission in the world. As a result of its findings, several workers' compensation laws were passed in Illinois. She was asked by the US commissioner of labor to replicate her research on a national level, where she looked at the hazards posed by exposure to lead, arsenic, mercury, organic solvents, and radium, which was used in manufacture of watch dials.



Alice Hamilton helped to improve the lives of factory workers

In 1919, Hamilton was appointed assistant professor in a new industrial hygiene program at Harvard, the first woman on Harvard's faculty.

She served on the League of Nations Health Committee in the 1920s, investigating industrial health conditions worldwide, and published the first American textbook on industrial toxins, *Industrial Poisons in the United States*.

After retiring from Harvard in 1935, she became a consultant for the Division of Labor Standards of the US Labor Department. Her survey of the rayon industry led to passage of Pennsylvania's first workers' compensation law. While serving as president of the National Consumers League, she published her autobiography, *Exploring the Dangerous Trades*.

In 1995, when a postage stamp was unveiled in her honor, Harvard Dean of Public Health Harvey Fineberg said Hamilton "was the first physician to use the scientific approach to study threats to health in the workplace."

TOXICOGENOMICS CONSORTIUM

New tools to solve genetic puzzles

Dave Eaton
Professor &
Director, Center for
Ecogenetics and
Enviornmental
Health

The University of Washington and Fred Hutchinson Cancer Research Center are part of a new, federally funded, $37 million research consortium to study how genetic makeup affects an individual's response to various environmental agents. Such research will help answer puzzling questions such as why some people who have never smoked a cigarette develop lung cancer, while others who have smoked heavily for years never show signs of the disease.

The Hutchinson Center/UW Toxicogenomics Consortium, part of a research collective involving academic institutions nationwide, will receive more than $7 million in funding over five years from the National Institute of Environmental Health Sciences (NIEHS).

Researchers will use the tools of genomics to obtain a fundamental understanding of the mechanisms of environmentally induced disease processes. The genome is broadly defined as all of an organism's genetic material.

The long-range goal of the Hutchinson Center/UW partnership is to shed light on genetic differences that make some people more sensitive to various environmental exposures. The consortium's four laboratory-based projects will focus on the effects of various toxic substances on breast-cancer, how exposures to certain pesticides may affect behavior in children, environmental factors that may harm the developing nervous system, and development of laboratory tests that can replace animal testing.

MICROARRAYS

The Seattle-based consortium will rely on the combined strengths of the Hutchinson Center and UW in DNA microarray technology–the use of so called "gene chips" to monitor the expression of thousands of genes at once–and the UW's long-standing expertise in toxicology and environmental health sciences.

The principal investigator of the Seattle consortium, an expert in both environmental sciences and DNA-array technology, is Dr. Helmut Zarbl of the Hutchinson Center's Human Biology and Public Health Sciences divisions. "The ultimate goal is to predict an individual's risk of cancer based on their genetic profile and environmental exposures," said Zarbl, also an associate professor of pathology and an affiliate associate professor in toxicology.

Co-principal investigator of the consortium is Dr. David Eaton, professor in the Department of Environmental Health and director of its NIEHS-funded Center for Ecogenetics and Environmental Health.

"Many chronic diseases–such as most cancers, Parkinson's disease and Alzheimer's disease–are caused by complex interactions between genetics and the exposures to factors in our environment," said Eaton, who is also Associate Dean for Research in the UW School of Public Health and Community Medicine.

Other departmental researchers involved in the consortium are Terry Kavanagh, principal investigator of the Toxicology Core, and Curt Omiecinski, Elaine Faustman, and Lucio Costa, who have research projects funded under the Center. Chris Hassett and Theo Bammler also play important roles in this new Center.

Other academic institutions participating in the consortium are the University of North Carolina, Oregon Health and Science University, Duke University, and the Massachusetts Institute of Technology.

"We know we can stretch the research dollar by having scientists at NIEHS and grantees at universities work in concert," said NIEHS Director Kenneth Olden, "but perhaps more important, we know that bringing ideas together in science increases the advances we achieve."

RESEARCH AND ITS APPLICATION TO

Jennifer Grant

Chris Jensen (left) tests fatigue and recovery of Peter Johnson's right arm

Assistant Professor Peter Johnson recently demonstrated how he and Chris Jensen, a senior researcher from Denmark's National Institute of Occupational Health, measure muscle fatigue in the forearm resulting from low-force work. With electrodes attached on Johnson's lower arm, they quantified muscle activity and fatigue.

"In this laboratory work, we are taking a snapshot of a work day and looking at the resultant muscle fatigue and recovery," Johnson said. "A muscle can do the same average amount of work in different ways, and depending on how the work is structured, we believe it will affect how much the muscle fatigues."

Together, he and Jensen intend to use the data to identify how various work patterns influence fatigue and recovery. These patterns are similar to those found during actual work. Ultimately, their findings may be useful in making workplace modifications.

The two international collaborators specialize in measuring physiological outcomes associated with low-force, but highly repetitive tasks, such as using a computer mouse. Jensen's measurements of muscle activity in the forearms have shown that people are typically working their muscles at less than 10% of their maximal capacity during computer mouse use. Johnson, with his force-sensing computer mouse, has demonstrated that people squeeze the sides of the computer mouse with very low forces, typically just about 0.4 Newtons (roughly 2 ounces of force). Despite these low forces, people are developing problems. The patterns of the forces, the fact that they are often relatively constant and continuous, may be part of the problem.

POLICY IMPLICATIONS

The US Bureau of Labor Statistics has found that office work causes more days of sick leave than manufacturing. Arm and neck ailments are among the slowest to heal, resulting in an average of three weeks sick time.

Low arm and neck problems are common in computer work. People usually don't go to the doctor with this type of complaint, Jensen said, but "continue working the way they always did, and some of them may get into some really serious trouble." In Denmark,

ERGONOMICS

educational campaigns in the workplace, news media, and union publications have created a high level of awareness of computer-related disorders, Jensen said. Employers bring physical therapists and other consultants into the workplace to help fit the work to the workers (fitting the work to the workers is the essence of ergonomics). Adjustable desks and chairs are required at workstations there.

Such awareness is growing in Washington, where a state ergonomics rule was enacted in May 2000. The state Department of Labor and Industries calculated that musculoskeletal injuries cost more than $411 million a year in medical treatment and lost wages, and represent a high toll of pain, suffering, and lost productivity for both employers and workers.

The Washington state rule applies to workers who perform intensive keying more than four hours per day. Mouse use is not covered yet, Johnson said, but the scientific body of evidence is developing about the cumulative effects of the small motions that control mouse work.

Jensen has returned to Denmark, where he continues his research into diseases associated with visual display unit work. He is conducting an epidemiological study among employees at technology companies and evaluating the effect of interventions. Another project looks at variables such as time spent with computer work, type of work, input devices, and environmental factors such as indoor climate and workstation design.

Johnson is developing the new safety and ergonomics lab for future studies, and continues to work on computer-related exposure assessment projects with the School of Public Health at Harvard and the Department of Occupational and Environmental Medicine at Göteborg University in Sweden.

FOR FURTHER READING

Chris Jensen's Department of Research in Visual Display Unit Work, *http://www.ami.dk/english/afdelinger/24.html*

Chris Jensen's Behavior in Information Technology (BIT) study, *http://www.ami.dk/english/projekter/35.html*

Peter Johnson's faculty page, *http://depts.washington.edu/envhlth/about/facultypage/john_page.html*

Ergonomics policy evaluation

What do workers and employers know about ergonomics now that the new Washington state ergonomics rule is beginning to take effect? This summer and fall, the Department's Policy Analysis and Program Evaluation team visited 61 large and small workplaces throughout the state and talked to as many as five managers and five workers at each site to try to answer that question.

"Washington is one of only two states that currently has an ergonomics rule," said Senior Lecturer Sharon Morris, director of the project. "We want to know whether having an ergonomics rule increases ergonomics awareness and prevention activities in the workplace. We're collecting baseline data now and will go back in two years to see whether knowledge and prevention activities have changed."

This study is funded by the Centers for Disease Control and Prevention and conducted in conjunction with the SHARP research program at the Department of Labor and Industries. SHARP mailed an ergonomics survey to more than 10,000 Washington businesses in 1998 and again this year. The work sites for the UW interviews were selected from a sample of the businesses that returned the SHARP questionnaire.

"I believe this is the largest study ever conducted that observes the effects of implementing a major new workplace rule," said Morris. "The results will be helpful to employers, workers and regulators in developing future occupational safety and health policies."

Barb Brooner

Intern Verena Hess climbs a ladder to a worksite interview

Nilo Arnaiz was awarded the Chest Foundation Clinical Research Trainee Award, one of two awarded nationally this year. The award is based on work he will conduct on lung inflammation in aluminum smelter workers, collaborating with Joel Kaufman and Noah Seixas. Arnaiz has been a joint Occupational and Environmental Medicine Fellow and Pulmonary and Critical Care Medicine Fellow. He is also now a postdoctoral fellow on Harvey Checkoway's Environmental and Molecular Epidemiology Training Grant.

Drew Brodkin

Drew Brodkin was appointed to the American Thoracic Society committee to update the 1986 ATS statement on "The diagnosis of nonmalignant diseases related to asbestos."

Lucio Costa was an invited participant for the Neurotoxicity Task Force, European Commission, Institute for Health and Consumer Protection, Joint Research Center in Ispra, Italy, in October, and an invited expert at a workshop on developmental neurotoxicity of pyrethroid insecticides for the European Commission, Directorate General for Health and Consumer Protection in Brussels in November .

Sharon Elliott was elected as chair-elect of the Administrator's Association of the NIEHS Centers Programs at the 59th Environmental Health Sciences Center Director's/Administrators meeting in Austin, Texas, in October.

Elaine Faustman's Center for Child Environmental Health Risks Research received a supplement from EPA/NIEHS and her Institute for Risk Analysis and Risk Communication had a new initiative funded by the University of Arizona/NIEHS.

Sally Liu

Sally Liu organized a workshop on Air Quality Monitoring Technology for the US EPA and Taiwan Environmental Protection Administration: *(http://depts.washington.edu/~tepa/)*. Liu presented three talks during the workshop and presented to the Department of Atmospheric Science and the Institute of Occupational Medicine and Industrial Hygiene at the National Taiwan University after the workshop.

Curt Omiecinski was a guest speaker at a drug metabolism workshop for Africa, hosted by the Department of Pharmacology, University of the Free State, in South Africa in March. His introduced the cytochrome P450 (CYP450) enzyme family and discussed the scientific basis for ethnic variations in drug response and toxicity.

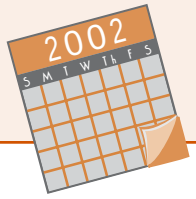
Curt Omiecinski

Omiecinski and Sid Nelson (Dean, School of Pharmacy) will work with colleagues at the University of Arizona NIEHS Center. This is part of a new supplemental grant the Center for Ecogenetics and Environmental Health received to develop capabilities to study the way proteins work inside cells, and how they interact with each other.

Scott MacKay, continuing education director, recently met with Secretary of Labor Elaine Chao. There was interest in the online course that the department's OSHA Training Institute has developed in the past year. Department Chair Dave Kalman noted that the OSHA center has emerged as a leader in this area.

The Department was well represented at the Northwest Occupational Health Conference in Seaside, Oregon, in October, with presentations by the following faculty, staff, and students: Janice Camp, Lee Monteith, Richard Neitzel, Kate Stewart, Matt Keifer, Rick Gleason, Robert Leo, Carolyn Reeb Whitaker, Marie Martin, and Gerry Croteau. Also, nine graduates of the Department presented papers.

Departmental faculty, affiliate faculty, and staff taught several workshops at the annual state-of-the-art conference of the College of Occupational and Environmental Medicine, held in Seattle in late October and early November. Tim Takaro was on the conference planning committee. Presenters included Takaro, Matt Keifer, Janice Camp, Rick Gleason, and Rick Neitzel on hazards of Northwest agriculture, commercial fishing, and forestry; Mike Morgan and Kate Stewart on airplane manufacturing and office ergonomics; Keifer on international health; Harvey Checkoway and Gary Franklin on evaluating causation in occupational disease; Takaro on screening for occupational lung disease; Drew Brodkin on liver toxins; and Dave Eaton on the genomics revolution.



CONTINUING EDUCATION

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

NORTHWEST CENTER FOR OCCUPATIONAL HEALTH & SAFETY

Jan 23–25	Annual Hazardous Waste Refreshers
Mar 7	Essentials for Environmental Health Practice; Home, Community, and Workplace
Mar 8	Pesticide Medicine
Apr 3	Current Issues in Construction Safety
Mar 2	An Aging Workforce: Issues for this Century

OSHA TRAINING INSTITUTE EDUCATIONAL CENTER

Jan 7	OSHA 845: OSHA Recordkeeping Rule
Jan 7–10	OSHA 309A: Electrical Standards (*Portland*)
Jan 8	OSHA 845: OSHA Recordkeeping Rule (*Olympia*)
Jan 14–17	OSHA 501: Trainer Course for General Industry
Jan 15	OSHA 845: OSHA Recordkeeping Rule (*Portland*)
Jan 16	OSHA 845: OSHA Recordkeeping Rule (*Eugene*)
Jan 22	OSHA 845: OSHA Recordkeeping Rule (*Richland*)
Jan 23	OSHA 845: OSHA Recordkeeping Rule (*Spokane*)
Jan 24	OSHA 845: OSHA Recordkeeping Rule (*Boise*)
Jan 28–31	OSHA 600: Collateral Duty for Other Federal Agencies
Feb 4–7	OSHA 201A: Hazardous Materials
Feb 11–14	OSHA 500: Trainer Course for Construction Industry
Feb 25–28	OSHA 204A: Machinery & Machine Guarding Standards (*Portland*)
Feb 25–28	OSHA 301: Evacuation, Trenching, & Soil Mechanics
Mar 4–6	OSHA 503: General Industry Trainer Update
Mar 8, 9, 15	OSHA 225A: Principles of Ergonomics (*Spring Institute*)*
Mar 16, 22, 23	OSHA 222A: Respiratory Protection (*Spring Institute*)*
Mar 18–20	OSHA 502: Construction Industry Trainer Update
Mar 20–22	OSHA 510: OSHA Standards for Construction (*Anchorage*)
Mar 29–30	OSHA 501: Trainer Course for General Industry (*Spring Institute*)*
Apr 5–6	OSHA 501: Trainer Course for General Industry (*Spring Institute*)*
Apr 12, 13, 19	OSHA 226: Permit-Required Confined Space Entry (*Spring Institute*)*
Apr 19–20	OSHA 521: TOSHA Guide to Industrial Hygiene (*Spring Institute*)*
Apr 26–27	OSHA 521: TOSHA Guide to Industrial Hygiene (*Spring Institute*)*

** The Spring 2002 Safety & Health Specialist Certificate Institute will be held at the University of Washington and broadcast via live, two-way videoconferencing in Portland, Oregon, and Richland, Washington*

NEW MPH PROGRAM

The Department of Environmental Health has created a new Master of Public Health degree for students who want to address broader environmental health issues. This two-year, 62-credit program will admit its first class in autumn 2002.

Until now, the department's only MPH option required a MD or PhD degree, and appealed most to physicians who concurrently entered an Occupational and Environmental Medicine residency program. The new MPH option is open to applicants with relevant undergraduate degrees.

Rather than being associated with one of the four Departmental programs (Toxicology, Industrial Hygiene & Safety, Environmental Technology, and Occupational & Environmental Medicine), it will be administered by faculty from all four programs through a Department-wide MPH coordination committee. The newly approved curriculum requires a thesis; a non-thesis option is under review.

Students can enroll in other degree pathways, such as Master of Science or Doctor of Philosophy, at the same time.

For more information, contact the graduate program office at *ehgrad@u.washington.edu* or (206) 685-9331.

THE FINE PRINT

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