

DEPARTMENT OF ENVIRONMENTAL HEALTH

# ENVIRONMENTAL HEALTH

## *NEWS*

SCHOOL OF PUBLIC HEALTH AND COMMUNITY MEDICINE ■ UNIVERSITY OF WASHINGTON ■ WINTER 2000

## CONSTRUCTING A SAFER WORKPLACE

*At a time when most industries are experiencing declining rates of workplace fatalities and serious injuries, the construction industry stands out as an opportunity for dramatic improvements.*

*Construction exposes workers to slippery surfaces, falls from heights, heavy lifting, power tools, traffic accidents, and other occupational hazards. The Puget Sound region's hot pace of construction and full-employment economy increase exposure to these hazards.*

*Some recent developments offer promising solutions. The Department of Environmental Health is working on several initiatives with labor, management, and the state Department of Labor and Industries.*

*This issue of Environmental Health News will describe recent examples of how the department's faculty, staff, and students have worked with others to address these challenges through research, consulting, and continuing education.*

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When Mark Hendricks started in the construction industry a quarter-century ago, he knew of a major contractor that considered 15 or 20 fatalities a year to be a reasonable cost of doing business.

Today, zero is the goal and Hendricks, as safety, quality, and loss prevention director for Baugh Construction, is part of a cooperative effort of labor, industry, and the University of Washington to reduce construction injuries and fatalities as low as possible.

As many other industries have improved their safety records, construction stands out with relatively high rates of occupational disease, injury, and fatality. The most recent Bureau of Labor Statistics report says the construction industry accounts for one of every six fatal work injuries, although the industry employs only one in 17 of the nation's workers.

Dr. Knut Ringen, an independent researcher who works with the Washington State Building and Construction Trades Council, said, "There is no excuse for the injury rates we are seeing today. I don't expect we'd ever see construction work without injury, but it should be about 80% better than it is today – it is still too cheap to injure workers."

*continued on page 2*

## UW INVOLVEMENT

“There have been some new developments that signal a tremendously positive sign of health in this industry,” said Dr. Noah Seixas of the Department of Environmental Health’s Industrial Hygiene and Safety faculty. “Labor and management are sitting down together to grapple with worker safety and health. It’s just beginning, but it is a great sign—an indication that they are willing to work together and with the university.”

Some of the region’s major contractors—such as Baugh—have taken a leadership role on worker safety, said Dr. Bill Daniell of the Occupational and Environmental Medicine program. “This seems unique to the Puget Sound area, that major contractors have made safety and health a priority.”

Labor is involved through the Center to Protect Workers’ Rights, part of the Building and Construction Trades Department, AFL-CIO. Labor and industry are working together through the Puget Sound Safety Summit, which meets monthly to offer safety and health education at no cost.

Safety is important to construction companies and their workers because of the potential for death or serious injuries. “Construction injuries are not little owies; they are big owies,” Dr. Daniell said, noting the high rate of fatalities and career-ending injuries.

## HEARING CONSERVATION

Dr. Daniell serves as a consultant to several hearing conservation programs and has served as affiliate medical consultant to the state Department of Labor and Industries division of WISHA services. He is involved with a three-year, trades-based statewide hearing conservation program, starting this year with a pilot project in Pierce County.

For years, hearing loss was taken for granted by construction workers, but that seems to be changing.

Dr. Seixas is heading a five-year study of noise exposures and damage to hearing that seeks to enroll 400 construction apprentices in a study that will follow them as they go from job to job (see page 4).

Drs. Seixas and Daniell are advising a joint labor-management committee effort to set up an industrywide hearing loss fund that addresses the issues of a mobile workforce. Employers would contribute to the pool, and claims would be made against it, somewhat like the funds set up more than a decade ago to handle claims of asbestos-related illness.

## APPRENTICESHIP PROGRAMS

One way to reduce future claims is to work preventively with apprenticeship programs, Dr. Seixas said. “The apprenticeship programs are fantastic organizations, and for us, they represent an excellent point of entry to change how work is done in the future,” he said.

In addition to the apprentice hearing conservation program, Dr. Seixas is heading a lung disease prevention project with the apprenticeship programs for Cement Finishers and Brick and Tile Masons (see page 4).

Dr. Seixas is working on this project with Dr. Steve Guffey of the Industrial Hygiene and Safety program; Mary Ellen Flanagan, a Certified Industrial Hygienist with the Field Research and Consultation Group; and graduate students Gerry Croteau and Maria Majar.

They are examining various controls for the fine silica dust generated from concrete or stone grinding or cutting. Silica poses a serious—though preventable—hazard of lung disease.

A related project—with a major contractor—has Carrie Loewenherz, a research industrial hygienist with the Field Group, working with Baugh Construction to evaluate several ways for controlling silica dust from concrete grinding and sanding operations.

In the various studies, workers help evaluate the acceptability of various prevention measures. For example, dust control shrouds on machines might effectively reduce silica exposure, but be unacceptable to workers because they block the view of the work surface.

“We need to work with the industry to find out what works best for them,” Flanagan said.

## INCENTIVES

Industry is motivated by the difficulty in recruiting young construction workers and retaining older ones, Baugh’s Hendricks said. When he goes to high school trade fairs, students tell him construction work is unattractive because they think it “hurts people a lot.” Younger workers don’t want to be hard of hearing when they’re 40.

“Safety is no longer a controversial issue in the construction industry,” he said, “as it may have been five years ago. Historically, industry’s top priorities have been money, construction schedule, and quality. Safety is becoming an important value because it enhances the other priorities.”

Escalating workers’ compensation premium rates have

gained the attention of company officials, said consultant Ringen. Between 1985 and 1995, workers' compensation premium rates rose about 15% a year.

Dr. Daniell's research shows that claims for occupational hearing loss have increased more than tenfold in Washington state in the past decade and the cost of compensation has risen even more sharply.

"Industry is almost ahead of the UW on this," he said. "Contractors have incentives to reduce injuries." For example, major contractors may require subcontractors to meet health and safety criteria before they can bid on a project.

As a consultant, Dr. Daniell is making sure labor and industry have the data they need to make construction a safer field.

## OTHER DEH INVOLVEMENT

Other departmental involvement with the construction industry includes:

- The Field Group has hired Jason Griffith as a research ergonomist, focusing on smaller contractors in residential construction. He is studying why general residential contractors have among the highest rates of musculoskeletal injury claims with L&I.
- Dr. Tim Takaro of the Occupational and Environmental Medicine clinic at Harborview conducts medical monitoring of construction workers, as well as production workers, from the Hanford Nuclear Reservation.
- The School to Work program is working with Washington state high schools to integrate health and safety training into the classroom. A proposed training course would provide credit toward entry into construction apprenticeship programs.
- The Continuing Education program is offering several construction safety courses this spring and summer. A course on changing guidelines for wood dust exposure will be offered April 5 in Bellingham, cosponsored by the Occupational and Environmental Hygiene Program at the University of British Columbia. Also, the OSHA Education Center will offer a series of trainer courses in federal and state occupational safety and health standards for the construction industry. See page 10 for more information.

## FOR FURTHER READING

Bureau of Labor Statistics census of fatal occupational injuries <http://stats.bls.gov/oshhome.htm>

Center to Protect Workers' Rights <http://www.cpwr.com/>

Department of Environmental Health Field Research and Consultation Group <http://depts.washington.edu/frcg/>

Department of Environmental Health Focus on Construction Industry Safety and Health <http://depts.washington.edu/cnstsaf/>

Dickerson, O. Bruce. Cathedral workers during the Middle Ages. *J Occup Med* 1967 Dec; 9(12):605-610.

*Morbidity and Mortality Weekly Report*. Improvements in Workplace Safety—United States, 1900-1999. June 11, 1999; 48(22); 461-469.

NIOSH construction topics <http://www.cdc.gov/niosh/cntopics.html>

OSHA construction topics <http://www.osha-slc.gov/html/construction.html>

OSHA noise and hearing conservation program resources <http://www.osha-slc.gov/SLTC/noisehearingconservation/index.html>

OSHA construction, concrete and masonry resources <http://www.osha-slc.gov/SLTC/constructionconcrete/index.html>

OSHA general construction resources <http://www.osha-slc.gov/SLTC/constructiongeneral/index.html>

Ramazzini, Bernardino. *Diseases of Workers*. Trans. by Wright, Wilmer Cave, from *De Morbis Artificum*, 1713. Hafner, New York, 1964.

Washington state data on workplace fatalities <http://www.wa.gov/lni/sharp/face/>

## SILICA CONTROL AMONG MASONS

High occupational exposures to crystalline silica can result from dust-generating construction activities such as cutting, grinding, drilling, sandblasting, demolition, and cleanup.

Continued exposure to relatively low concentrations of crystalline silica can result in silicosis—the development of fibrotic nodules that can severely impair lung function.

The few studies that have characterized occupational crystalline silica exposures during construction activities have found levels that substantially exceed the allowable time-weighted, personal exposure level for silica. Fewer studies have defined the effectiveness of available dust control measures.

Dr. Seixas' study group, including Mary Ellen Flanagan, Dr. Steve Guffey, and graduate students Gerry Croteau and Maria Majar, will assess several controls for reducing silica exposure during cutting and grinding activities in masonry construction. Control measures include using a water spray or vacuum cleaner with a shroud tool enclosure.

The evaluations are being conducted under controlled field conditions at the International Masonry Institute in Seattle. For each dust-generating activity, the different treatments will be replicated three times. Respirable dust will be collected in the personal breathing zone and will be analyzed for total mass and, using infrared spectrometry, for crystalline silica.

By defining the efficacy of different dust controls, the study is designed to encourage the use of existing control measures and promote the development of more effective ones.

## APPRENTICE HEARING CONSERVATION PROGRAM

Noise-induced hearing loss is among the most common occupational afflictions of construction workers. Hearing loss usually progresses unnoticed until it begins to interfere with communication, diminish the quality of life, and pose a serious safety hazard. Noise exposures in construction are high and unpredictable.

Dr. Noah Seixas' study will monitor exposure among newly-hired construction apprentices and controls (UW graduate students) and characterize the effects of noise exposure on hearing acuity over four years. It will use standard audiometric tests and a new, more sensitive test called distortion product otoacoustic emissions (DPOAEs). This will be the first prospective study of DPOAEs.

Four hundred construction apprentices and 100 graduate students will be recruited into the study. Each subject will be given an audiometric exam and DPOAE measurements every six months. Baseline and follow-up questionnaires will be used to characterize other risk factors for hearing loss, nonoccupational exposure to noise, characteristics of work, and use of hearing protective devices. Noise exposure will be monitored twice yearly on each subject using noise dosimeters in conjunction with time/activity cards.

These data will be used to estimate individual hearing loss over time. Analyses will evaluate the relationships between noise exposure and measurable changes on the hearing tests.




Mary Ellen Flanagan

*A UW mason wears a powered air purifying respirator while tuck-pointing to remove mortar for brick restoration at the Odegaard Undergraduate Library on campus*



Rick Neitzel

*A jackhammer operator wears a dosimeter on his shoulder to measure noise*



The itinerant nature of construction work is nothing new. The great cathedrals of Europe were built by artisans who traveled from one city to the next with few household goods. Makeshift lodges were built alongside the rising cathedrals or—to ease the transport of stone—right at the quarry.

Although the building trades differed from those today, the hazards were similar.

Falls were a leading cause of death, though often poorly documented. In the 12<sup>th</sup> and 13<sup>th</sup> centuries, European cities competed to build the highest cathedral, but several of the cathedrals' superstructures fell during the race for height. In France, the Beauvais Cathedral vault collapsed twice during construction, the second time while builders were attempting to reach 157 feet.

Injuries or fatalities were rarely recorded unless they involved leading figures, such as the architect William of Sens. In the 1170s, he fell from a scaffold at Canterbury Cathedral and his injuries obliged him to return to France.

Bernardino Ramazzini, in his landmark 1713 book, *De Morbis Artificum* (Diseases of Workers), noted injuries specific to various trades. Painters had blackened teeth and melancholia, lathe-turners fatigue and eye injury, workers with gypsum and lime had lung and bowel diseases, brick makers suffered the effects of weather exposure and inferior foods, and the blacksmiths who fashioned nails, masonry reinforcements, and latches had sore eyes.

Ramazzini did not consider carpentry especially injurious, though it “is a toilsome business and greatly fatigues the workers.” He said, “for carpenters I have no precautions to suggest except this: They should be moderate and not overwork, lest they bring diseases on themselves by being too much set on making money.”

# GENETIC FACTORS



Kathy Saubier

*Drs. Lucio  
Costa and  
Clement  
Furlong  
in the lab*

Two new employees at an extermination company spend eight hours handling the same pesticides in the same sorts of conditions. By the end of their first day on the job, one worker is nauseated, dizzy, and has a pounding headache. However, the other feels just fine. The difference in the reactions of these fictional workers may be genetic.

DEH Professor Lucio Costa, Dr. Clement Furlong, UW Department of Medical Genetics, and other investigators at the UW Center for Ecogenetics and Environmental Health are studying how genetic differences affect the ways people react to organophosphate pesticides.

Organophosphates include chlorpyrifos, used in flea collars and on crops, and diazinon, used to control ants and cockroaches. These pesticides kill by overloading the nervous system, causing muscle spasms and paralysis.

The enzyme paraoxonase is a key to understanding pesticide exposures. Paraoxonase is one of series of enzymes that digest, or detoxify, organophosphates by breaking them into smaller, less toxic molecules. Variations in the gene that codes for paraoxonase can affect how much we make, causing one person to produce up to 15 times as much paraoxonase as another.

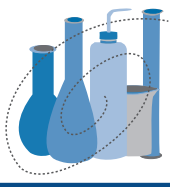
That might have happened in the fictional example above. The new employee who got sick

probably had low levels of paraoxonase in his or her blood serum. The worker who didn't suffer symptoms probably had naturally high levels, enough to detoxify any pesticides that seeped into the skin. When Furlong took blood samples from a group of full-time pesticide applicators, he found that all were high paraoxonase producers. Low producers evidently don't stay with this type of work, probably because working with pesticides makes them feel ill.

This research has important implications for children's health. "Paraoxonase levels in the blood of newborns are very low," says Furlong. "Children don't start producing adult levels of the enzyme until they are one or two years old." Therefore children tend to be more vulnerable to organophosphate pesticides than adults. Because they crawl and like to put things in their mouths, infants are also much more likely than adults to expose themselves to pesticide residues on carpets, pet fur, and lawns.

The children of agricultural workers may be especially at risk from pesticide residues that their parents and siblings carry home on their skin, clothes, and shoes. Therefore Costa, Furlong, and other researchers from the Center for Ecogenetics are working with the UW Children's Environmental Health Research Center to study the effects of pesticide exposures in agricultural areas such as Wenatchee. The ultimate goal of the child health study is to reduce or eliminate pesticide exposures to children.

*—Krisandra Freeman  
adapted from Northwest Science & Technology  
Winter 2000, pp. 35-37*



These pesticides  
kill by  
overloading the  
nervous system,  
causing muscle  
spasms and  
paralysis

# LINKING

## INTERNATIONAL SCHOLARS

*The Department of Environmental Health is nationally recognized as a center for research into the health hazards of pesticides. This knowledge is extended internationally through a program called the International Scholars in Occupational and Environmental Health.*

UW researchers work with colleagues in Central America and Southeast Asia through a program funded by the National Institute for Occupational Safety and Health (NIOSH) and by two of the national institutes of health: the Fogarty Institute and the National Institute of Environmental Health Sciences (NIEHS).

In the past year, the UW has hosted two visiting scholars from Thailand, three from Vietnam, two from Nicaragua, and one from Costa Rica. "It has given us a chance to see how field work looks in this country," said Dr. Aurora Aragon, a physician and coordinator of research in Occupational Health at the Department of Preventive Medicine, Nicaragua Autonomous National University.

She and colleague Luis Blanco Romero, a lecturer in Occupational Health at the Nicaraguan university, were in Seattle for two weeks in January. They met with faculty in Occupational and Environmental Medicine, Epidemiology, and Industrial Hygiene and Safety; made a site visit to agricultural areas in the Yakima valley; attended a Washington state applicator certification course; spent a day with the Field Research and Consultation Group; and spent a day in the Occupational and Environmental Medicine clinic at Harborview Medical Center.

In February, Drs. Matthew Keifer and Joel Kaufman from DEH, and Dr. Cary Jackson from Internal Medicine went to Nicaragua to teach an occupational epidemiology course.

The program is part of worldwide cooperation to study and control pesticide exposures in developing nations, Dr. Aragon said. Some of her research is funded by Swedish and Danish agencies and she has published in several Scandinavian journals.

Problems of pesticide exposure are different in Latin America, Dr. Aragon said. "People are more exposed there. We have no training, certification, or regulation,"

although pesticides are used heavily on crops such as corn. Dr. Aragon is looking at ways to reduce pesticide exposures. She was particularly pleased to meet Dr. Richard Fenske, who pioneered a fluorescent tracer technique that has been used in Nicaragua (see *Environmental Health News*, spring-summer 1999). "It was special to learn [the technique] from him," Dr. Aragon said.

Dr. Fenske sees the fluorescent tracer technique as particularly applicable in a country where training isn't formalized, because it allows workers to participate in their own evaluation. After applying pesticides, a fluorescent dye shows up under long-wave ultraviolet light that allows them to see the patterns on their own skin. "They can see how they get exposed, and they become part of the solution," he said. "I have seen remarkable changes overnight in work habits."

Romero said he welcomed the chance to learn more about industrial hygiene, a field that isn't emphasized in Nicaragua as much as occupational medicine and toxicology.

Before they left Seattle, Aragon and Romero visited University Bookstore and packed their luggage with as many reference books as possible.

"This visit has been an inspiration—I see how things could be in our country," Dr. Aragon said



Kathy Hall

*Dr. Drew Brodtkin (left) shows Luis Romero and Dr. Aurora Aragon around the Occupational and Environmental Medicine clinic at Harborview Medical Center*

# SETTING STANDARDS *mercury presents a challenge*

Setting a standard for an environmental pollutant can be challenging, particularly for mercury, emitted by power plants, pulp mills, and waste incinerators.

Airborne mercury has decreased steadily in recent decades to levels that don't pose a risk to most people. Yet mercury can be toxic to developing fetuses, causing delays or defects in neurological development. The dilemma is how to protect this sensitive population without overregulating for most people.

Rain can carry mercury vapor into streams and oceans, where it is converted by microbes in the sediments into the organic form methylmercury. Methylmercury accumulates as it goes up the food chain and is found primarily in the fish muscle (fillets) bound to proteins. Although methylmercury is the largest concern, organic mercury discharges also can be a problem.

Anyone who eats fish will ingest some methylmercury. The greatest risk is to women who are pregnant, plan to become pregnant, or are nursing.

Most people's fish consumption is within safe limits, but members of a culture whose diet is highly dependent upon fish or people who eat frequent helpings of large, predatory fish such as swordfish or shark might want to limit their intake.

Associate Professor Thomas Burbacher, who has researched mercury's effects for 20 years, serves on the National Academy of Sciences committee investigating mercury exposure standards.

The National Academy expects to release its report on methylmercury this summer. The state currently is developing draft recommendations for tolerable daily intake (TDI) of fish.

Because prenatal methylmercury exposure is still a matter of controversy, the National Academy committee is analyzing the positions of three federal agencies whose recommendations vary by a factor of five.

The US Food and Drug Administration (FDA) has jurisdiction over fish sold in restaurants and

markets. Its mercury standard allows 1 part per million (1 ppm) of methylmercury in fish.

The US Environmental Protection Agency (EPA) is charged with stopping pollution at its source. In 1997, EPA suggested a limit of 0.2 parts per million of methylmercury in fish. That standard is five times lower than one proposed by the federal Agency for Toxic Substances and Disease Registry (ATSDR), which oversees the Superfund cleanup program.

The new EPA standard created a lot of interest. A 1998 article in *Environmental Science and Technology* criticized EPA's recommendations for potentially discouraging people from eating fish, which has known health benefits. The journal *Science* (December 1997) noted that "an adult woman of average weight who weekly consumes four ounces of commercial fish with average mercury concentrations would be exposed to mercury levels more than double EPA's reference dose." For comparison, a regular-sized can of tuna contains six ounces.

Animal studies and a few human epidemiological studies supply the basis for the varying agency recommendations.

The state Department of Health has been working with native tribes and sports fishers to determine whether some fish or fishing methods may be most hazardous, said Koenraad Mariën of the department's Office of Environmental Health Assessment Services.

Since older fish accumulate more methylmercury in their body, he said, salmon species with longer life cycles would carry a higher concentration. Bottom-feeding fish, especially in polluted waters such as Commencement Bay and Elliott Bay, also contain more methylmercury.

Mariën is still gathering data, which will eventually be incorporated into a Department of Health advisory for a Tolerable Daily Intake.

## CONFLICTING STUDIES

With methylmercury, as with most poisonous substances, the young are particularly vulnerable. Children prenatally exposed to high levels of mercury can suffer blindness, deafness, cerebral



Dr. Thomas

Burbacher

serves on the

National

Academy of

Sciences

committee

investigating

mercury

exposure

standards



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palsy, and other serious physical effects. Some studies have found that moderate to low exposure can result in mental deficiency, abnormal reflexes, and retarded motor development. Mothers continue to pass mercury to their children during breastfeeding.

In the late 1950s, Japanese people accidentally ate fish from Minamata Bay after an industrial operation dumped mercury into the water. In Iraq in 1972, people ate bread made from wheat treated with a mercury-based fungicide. In both cases, people died or were hospitalized, and babies died or were born with birth defects.

Autopsies were performed on a small number of children who were in their mother's womb when exposed to methylmercury and who later died. Examinations of their brain tissues showed many abnormalities, attributed to mercury exposure. During development, neurons in the brain failed to migrate into correct locations.

#### CHILD EFFECTS

Results were less conclusive from a long-term, mother-and-child study in the Seychelles islands north of Madagascar. Seychelles residents typically eat nearly a dozen meals of fish per week. Researchers from the University of Rochester tracked 800 children from before birth to age eight, and found no harmful effects of mercury at blood levels up to 20 times the US average. Findings were published in the *Journal of the American Medical Association*.

The findings from the University of Rochester researchers differ from those of a Danish team that looked at a fish-eating population in the Faroe Islands, east of Iceland. The Danish investigators found that children who had been exposed to mercury before birth exhibited slight abnormalities in development at age 7. However, Faroe Islanders eat whale meat as well as fish, making the findings less applicable to US populations.

Dr. Burbacher said several scientific issues might explain the different results obtained by different researchers. Researchers need to look at other substances being consumed, such as PCBs in whale

meat. Some developmental assessments may be more sensitive than others. Some researchers are now looking at "behavior domains," such as information processing, hearing, and vision.

Meanwhile, Dr. Brubacher, UW's Dr. Rafael Ponce, and Dr. Lawrence Duffy of the University of Alaska Fairbanks, and members of their research teams, have conducted a three-year study of methylmercury in fish in Alaska. Their study is supported by grants from the department's Center for Ecogenetics and Environmental Health, funded by the National Institute of Environmental Health Sciences, and from the University of Alaska's Cooperative Institute for Arctic Research. They studied mercury in fish from rivers of the Yukon-Kuskokwim delta, near Bethel. The Yukon-Kuskokwim watershed includes deposits of gold, mercury, copper, and tin. Earlier studies showed high concentrations of mercury in sediments near mining sites.

Of the 21,000 residents of the delta, 86% are Ypu'ik or Athabaskan Alaskan natives who rely heavily on wildlife resources for their food. Not only do they eat fish, but they hunt and consume mammals that eat fish.

During 1997, sever species of fish from the rivers of the Yukon-Kuskokwim system were surveyed for mercury in muscle tissue—pike, Dolly Varden trout, grayling, burbot, sheefish, suckerfish, and whitefish. Results were published in the October–December 1998 issue of *Alaska Medicine*. Using the controversial EPA standard of 0.2 ppm, 24% of the fish exceeded the critical value for human consumption and 58% exceeded the critical value for consumption by wildlife such as fish-eating birds and river otters.

However, in a telephone interview from Alaska, Dr. Duffy told *Environmental Health News* that only three fish exceeded the FDA limit of 1 ppm. He said the levels of mercury were "comparable to levels in the lower 48 states or less."

Those studies and others will be considered by the National Academy of Sciences panel, the EPA, and the state Department of Health in deciding how to best address the challenge of mercury.

—Patricia Coburn contributed to this article



## For Further Reading on Methylmercury

- Davidson PW, Myers GJ, Cox C, *et al.* Effects of prenatal and postnatal methylmercury exposure from fish consumption on neurodevelopment: Outcomes at 66 months of age in the Seychelles Child Development Study. *JAMA*. August 26, 1998; 280(8): 701-707.
- Duffy LK, Rodgers T, Patton M. Regional health assessment relating to mercury content of fish caught in the Yukon-Kuskokwim Delta rivers system. *Alaska Med* 40(4):75-77, 89.
- Egeland GM, Middaugh, JP. Balancing fish consumption benefits with mercury exposure. *Science*. December 12, 1997; 278(5345):1904-1905.
- EPA mercury update: Impact on fish advisories <http://www.epa.gov/ostwater/fish/mercury.html>
- Marien, K. Evaluation of evidence related to the development of a Tolerable Daily Intake for methylmercury. Washington state Department of Health Report, May 1999.
- National Research Council's Committee on Toxicological Effects of Mercury <http://www.nationalacademies.org/cls/best/mercury.html>
- New York Times* Nov. 2, 1999, New efforts to uncover the dangers of mercury. Health and Fitness section.
- US Food and Drug Administration, Mercury in fish: Cause for concern? <http://www.fda.gov/opacom/catalog/mercury.html>
- Washington state fish advisories [http://www.doh.wa.gov/ehp/oehas/EHA\\_fish\\_adv.htm](http://www.doh.wa.gov/ehp/oehas/EHA_fish_adv.htm)
- White House calls for mercury workshop. *Environmental Science and Technology*, October 1, 1998; 32(19):444A-445A.

To confirm this schedule or find more information about these courses, call (206) 543-1069, or visit the Continuing Education site on the Web at <http://depts.washington.edu/envhlth/conted.html>. Unless noted, all classes will be in Seattle. Upcoming courses:

### NW CENTER FOR OCCUPATIONAL HEALTH & SAFETY

- April 5 Wood Dust Exposure: The Coming Guideline and How It May Affect the Woodworking Industry (*Bellingham, WA*)
- April 28 Environmental Health Issues in Children: What Pediatricians and Other Primary Care Providers Need to Know (*rescheduled date*)
- May 3-5 Occupational Hazards to Health Care Workers

### OSHA TRAINING INSTITUTE EDUCATIONAL CENTER

- Mar 21-24 500 Trainer Course in OSHA Standards for the Construction Industry (*Portland*)
- Mar 21-24 204A Machinery and Machine Guarding Standards (*Portland*)
- Mar 27-30 222A Respiratory Protection (*Anchorage*)
- Apr 4-7 222A Respiratory Protection (*Boise*)
- Apr 10-12 226 Permit-Required Confined-Space Entry
- Apr 24-27 201A Hazardous Materials
- May 8-11 510 OSHA Standards for the Construction Industry
- May 15-18 500 Trainer Course in OSHA Standards for the Construction Industry
- May 22-25 309A Electric Standards (*Portland*)
- June 5-8 501 Trainer Course in OSHA Standards for General Industry
- June 19-22 521 OSHA Guide to Industrial Hygiene (*Portland*)



*Harvey Checkoway*

*Janice Camp*

*Jane Koenig*

*Gerald van Belle*

Several investigators from the EPA Northwest Center for Particulate Matter (PM) and Health attended the recent PM2000 meeting in Charleston, SC Jan. 25–28 (see Autumn 1999 issue of *Environmental Health News*). PM2000 was a significant meeting because it was the last chance to present data for peer review in time to be included in the EPA's Criteria Document on particulate matter.

Although the meeting was affected by large white particles (snow), it was packed full of more than 180 presentations and posters. Department of Environmental Health researchers presented the following studies:

- a preliminary study showing a lack of associations between sudden cardiac arrest and PM (**Harvey Checkoway**, Drew Levy, *et al.*)
- associations between asthma symptoms and PM in children in Seattle (**Lianne Sheppard**, Onchee Yu, *et al.*)
- associations between compromised lung function and PM in Spokane (**Therese Mar**, **Jane Koenig**, **Tim Larson**, *et al.*)
- correlations between pollen counts and PM in Spokane (**Therese Mar**, Robert Stier, *et al.*)
- windblown dust and PM in Spokane (Candis Claiborn, **Tim Larson** *et al.*)
- chemical characterization of PM in Spokane (Candis Claiborn, **Tim Larson**, *et al.*)
- incorporating spatial predictors of ambient PM (**Lianne Sheppard**, Doris Damian *et al.*)
- design bias in case-crossover analyses (Tom Lumley, **Lianne Sheppard**, and Drew Levy)
- personal exposure assessment in high-risk subpopulations (**Sally Liu**, **Joel Kaufman** *et al.*)
- personal exposure to fine particulate polycyclic aromatic hydrocarbons (**Joellen Lewtas**

- human exposures to priority air pollutants in Slovakia (Alison Cullen, *et al.*)

**Janice Camp** has been elected president of the Pacific Northwest Section of the American Public Hygiene Association.

**Gerald van Belle** served on a panel discussing personal ethical issues that arise during the conduct of research, sponsored by the Robert Wood Johnson Clinical Scholars Program. Dr. van Belle also attended the Research Committee of the Health Effects Institute, Cambridge, Massachusetts, which reviews and monitors sponsored research on health effects of automobile emissions. He also is involved in a long-term collaboration with Dr. **Mike Muhm**, associate medical director of The Boeing Company, about oxygen demand at high altitudes.

**Rolf Hahne**, supervisor of the Environmental Health Laboratory, participated in a Howard Hughes Medical Institute meeting on *Managing Hazardous Wastes in Academic Research Institutions* in Chevy Chase, Maryland, Feb. 29–March 2. He coauthored an article in the February 2000 issue of the *American Industrial Hygiene Association (AIHA) Journal* entitled Evaluation of the Cost-Effectiveness of Various Passive Monitors and Active Monitors for Industrial Hygiene Sampling. Lead author is **Greg Nothstein**, a former graduate student in Industrial Hygiene and Safety, currently on assignment to the state Department of Labor and Industries.

Dr. **Matthew Keifer** participated in a National Research Council subcommittee meeting on methyl bromide Jan. 10. In February, he traveled to Nicaragua for a conference on epidemiological methods at the National University of Nicaragua and a meeting with that country's Ministry of Health.

## NEWSLETTER RECOGNIZED

*Environmental Health News* won the Distinguished Award, judged as the top newsletter in the yearly competition of the Society for Technical Communication, Puget Sound Chapter. The awards ceremony was in January, and winners from chapter contests are being entered in international competition.

Judges said of *Environmental Health News*, "The thematic approach works well. This publication can appeal to a broad audience. We wanted to read each issue front to back, even though we're not toxicologists."

The judges particularly like the historical sidebars in each issue and said, "the graphics used with the sidebars are imaginative."

The newsletter is available on the World Wide Web at <http://depts.washington.edu/envhlth/info/publications.html>.

The Society's web site is <http://www.stc-psc.org/>.

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