



DEPARTMENT OF ENVIRONMENTAL HEALTH

ENVIRONMENTAL HEALTH

NEWS

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

IN THE COMMUNITY



Artist: Emmanuel Ramos

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WORKING WITH COMMUNITY

groups is essential to many research and service projects conducted by the Department of Environmental Health. Whether they are true community-based efforts, or more traditional, researcher-initiated projects, they all require substantial interaction with the public.

In this issue you will read about several community-oriented projects in the Yakima valley. Some involve educating farmworkers and their families about pesticide exposure. Another project uses icons to help farmworkers remember past occupational exposures. The Field Research and Consultation Group has assisted fruit packing houses in reducing exposures to ergonomic problems, noise, and poor indoor air quality.

To learn more about community priorities for environmental health research, the department hosted a town meeting in September. Pesticides,

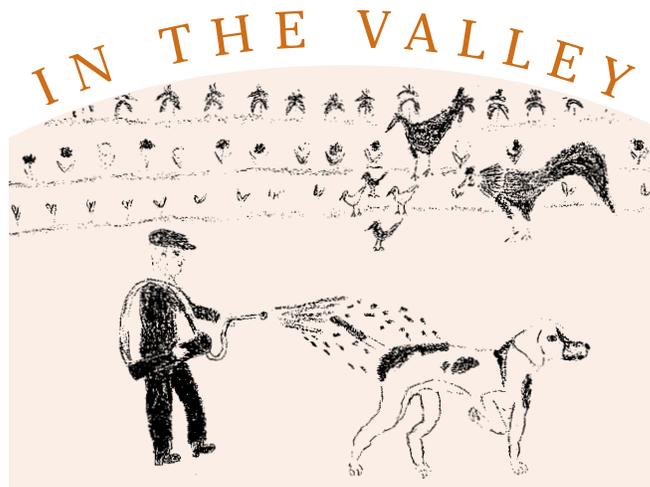
hazardous waste, and air pollution were among the topics of concern to the more than 200 people who attended.

Incorporating occupational and environmental health into the middle school classroom is another focus of the department. These projects range from the efforts of one graduate student to get middle-school pupils excited about science to a large, multiyear grant to show teachers how their students can identify and study environmental health issues in their local communities.

A new environmental health undergraduate program is being developed in conjunction with Northwest Indian College in Bellingham that will prepare students to transfer into a Bachelor of Science program in our department.

Through such efforts, the department is attempting to conduct sound research and develop educational programs that serve community needs.

Fifth graders in the Yakima valley in Washington state produced art for a calendar (cover, pages 2, 4)



Artist: Felipe Uriostegui

NEAR THE ORCHARDS

of the Yakima valley, a living room is filled with friends and neighbors eating party foods and having a lively discussion about—all things—laundry.

Laundry is a serious subject for the Center for Child Environmental Health Risks Research, which runs a community education program called “Reducing the Take-Home Pathway of Pesticide Exposure,” more commonly known as “For Healthy Kids.”

Farmworkers can bring home pesticides on their clothing and inadvertently expose their children if they don’t follow such precautions as showering before hugging their kids, keeping work clothes separate from family laundry, and washing their children’s toys. Children are more susceptible than adults to pesticide effects, according to Child Health Center research.

Nearly 2,000 people have attended about 383 home parties, said Ilda Islas, field project supervisor in Sunnyside. Trained volunteers lead a discussion in Spanish about pesticide safety in the orchards and ways to avoid bringing pesticides home. This friends-helping-friends program is based on traditional learning methods in the Latino community.

“People in the valley really care about their children,” said Dr. Beti Thompson, project director. “This is really a way to foster behavioral change.” Dr. Thompson, of the Fred Hutchinson Cancer Research Center, was contracted to do the project because of the networks she had developed through cancer-prevention work in the Yakima valley.

Thompson’s five-year pesticide prevention project also includes conducting questionnaires, collecting dust samples in homes and cars, giving bibs saying “keep me pesticide free” to new parents at baptisms, and doing school outreach, where student artwork might be incorporated into a calendar.

In addition to “For Healthy Kids,” the Department of Environmental Health is involved with the following research and outreach projects in the Yakima valley.

HISPANIC THEATER

The Pacific Northwest Agriculture Safety and Health Center’s partners at Eastern Washington University’s Center for Farm and

Safety have developed four one-act plays in Spanish based on safety and health issues. One is on pesticide safety.

Two months after seeing the plays, follow-up telephone interviews showed that people had discussed the

plays with friends and neighbors. One-third said they had changed their behavior after seeing a play, perhaps by washing work clothes separately from other family clothing or washing hands more frequently when working with crops.

FLUORESCENT IMAGING

Pesticides are most often absorbed through the skin. Although coveralls, respirators, or long gloves can reduce exposure, farmworkers are often unaware of how much they have been exposed.

Dr. Richard Fenske has developed a technique where a fluorescent tracer is added to the pesticide solution used in sprayers. After workers return from the fields, they are taken to a dark area and placed under long-wave ultraviolet illumination. Pesticide-exposed areas of their skin glow under fluorescent light. Because the tracer compounds are not visible under normal lighting conditions, the patterns of exposure that workers view on their skin can be surprising. Follow-up interviews have shown dramatic behavioral changes after workers see how much pesticide splashed or spilled on their skin during the work shift.

HEALTH HISTORIES

Migrant farmworkers pose a challenge for medical workers and researchers who want to take long-term pesticide exposure histories. Many migrant and seasonal farmworkers don’t speak English and many don’t read well in English or Spanish. They quickly tire of an interview that asks seemingly redundant questions about exposures and protection.

Dr. Matthew Kiefer and graduate student Larry Engel designed life history questionnaires using icons (small figures or pictographs) for place, time, activity, and crop. Icons representing such events as a wedding, a new baby, or arrival in the US serve as memory anchors. Other icons represent periods with and without pesticide exposure.

Farmworkers remain engaged as their lives unfold; they may

stay for hours, providing a more accurate and complete health history than by previous methods. “They see a colorful picture of their life being created before their eyes,” said Dr. Keifer. He and Engel have done nearly 200 interviews, using icon-based questionnaires, with farmworkers in Washington state and have exported the technique to Costa Rica.

FIELD GROUP

The department’s Field Research and Consultation Group has worked to better understand pesticide exposure among apple thinners and to improve eye protection among pruners. The Field Group has also been interested in working issues for women, especially those working in fruit packing houses.

The Field Group worked in 1998 with the Washington Growers League and three packing houses to evaluate ergonomic and musculoskeletal problems in that industry. The Field Group found that fruit packing houses have begun to recognize the cost of musculoskeletal injuries and to find ergonomic solutions.

CONTINUING EDUCATION

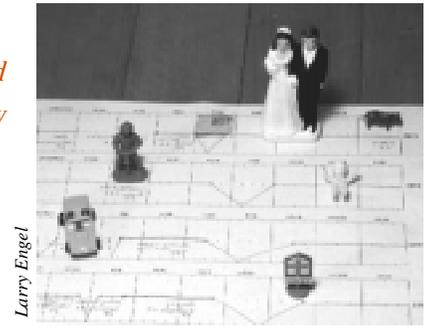
The department’s continuing education program and the agricultural center put on a course in Yakima on November 2 entitled “Safety for Children and Teens,” which focused on the prevention and treatment of health and safety illness and injuries among children in agricultural settings. The course encouraged community-based efforts dedicated to the prevention of children’s agricultural-related illnesses and injuries.



Kathy Hall

Ildé Islas, Beti Thompson, and Gloria Coronado of the “For Healthy Kids” program.

An icon-based health history

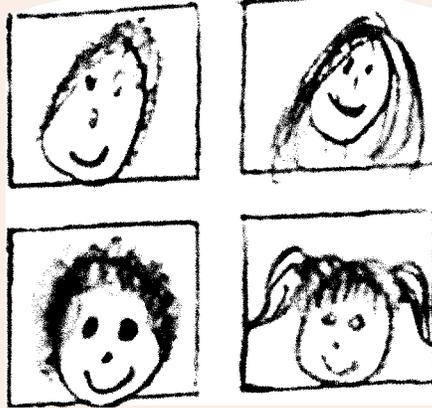


Larry Engel

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IN THE CLASSROOM



Artist: Jose Espinosa

PRIME TIME AT MEANY

Science is hard. Science is boring. Science is not cool. Girls aren't good at science.

Those are some misconceptions that graduate student Sarah Weppner is working to combat this year at Meany Middle School, where she spends ten hours a week under a National Science Foundation grant.

Weppner, a second-year student in Environmental Health Technology, is among the first to participate in the University of Washington's PRIME (Partnership for Research in Inquiry-based Math, Science and Engineering Education) program.



Sarah Weppner

The program was developed by a diverse campus-wide team including faculty from the colleges of Engineering and Education, four UW diversity programs, and five local school districts. It brings graduate students from various disciplines into the classroom to investigate how students learn, and what motivates them to learn.

Weppner works with a teacher partner to incorporate inquiry-based science lessons in the classroom. Inquiry-based lessons identify misconceptions or preconceptions about science or math and use hands-on investigative activities to develop students' understanding. Students are guided to make their own observations of specific phenomena and discuss their explanations.

For example, when Weppner asked one 11-year-old whether plants were alive, he answered, "no, I don't

think so." Alive to him meant animated or able to move. When she asked, "do plants grow?" he reconsidered his answer.

Some of her students know a little and some know a lot about their environment. When she asked the students where their drinking water comes from, responses varied from "the tap" to "it is siphoned through pipes from the ocean" and "we get it from the sewers" to a detailed description of the water cycle, including water treatment and distribution.

"The more informed and science-savvy future generations are, the more likely they will be to make intelligent choices regarding their health and the health of others," Weppner said.

She envisions herself as a "scientist-in-residence, mentor, role model, and friend." Meany Middle School is on Capitol Hill, but the majority of its students are from the Central District and Rainier Valley. She thinks environmental health specialists should be involved in their communities. "If we don't, then we are operating in a vacuum."

PRIME's goals are to enhance learning among middle school students, teachers, and fellows; enhance the diversity of math, science, and engineering professionals; and train scientists and engineers who can improve the quality of classroom education in the next century.

More information is at <http://www.engr.washington.edu/prime>.

TRAINING MIDDLE SCHOOL TEACHERS

The universities of Washington and New Mexico will work together to train hundreds of middle school teachers under a \$1.8 million grant from the National Institute of Environmental Health Sciences (NIEHS). The award is spread over seven years.

The goal is to increase sixth- to eighth-graders' understanding of the environmental health sciences and improve their thinking and problem-solving skills.

The program will train middle school teachers in environmental health and give them the expertise to help students identify and research environmental health issues in their communities. Project Greenskate, a Web-based curriculum developed by the Department of Environmental Health, will serve as the cornerstone of the training. Other materials will be developed to help teachers integrate environmental health into science, language arts, and social studies.

The Mukilteo and Ferndale school districts will be among the first to participate, along with three districts in New Mexico with predominantly Native American and Hispanic student enrollment. The materials will be tested and adapted for use in tribal and Hispanic cultures.

At the end of the seven-year project, results and materials will be disseminated nationally, and a train-the-trainer seminar will expand the model to other states.

The Integrated Environmental Health Middle School Project is a collaboration between the UW's Center for Ecogenetics and Environmental Health and the University of New Mexico's Environmental Health Sciences Developmental Research Center, both funded by NIEHS.

Project Greenskate is an interactive environmental learning adventure that can be found at <http://depts.washington.edu/hereuw/gs.html>.

BATTLING MISCONCEPTIONS: WOMEN IN MATH & SCIENCE HISTORY

Ancient Egypt

MERIT PTAH, the first woman known by name in the history of science. She was described as "the chief physician."

Ancient China

SHI DUN, empress and inventor who developed the first paper from the bark of mulberry trees.

SI LING-CHI, first empress of China. While sitting in her garden watching silkworms, she deduced the secret of silk. She developed spinning and weaving processes.

Ancient Greece

DIOTAMA, honored by Socrates as his teacher.

HYPATIA, taught at the school in Alexandria, Egypt; credited with the authorship of three major treatises on geometry and algebra, and one on astronomy.

THEANO, credited with writing the treatise on the Golden Mean described in basic algebra textbooks.

1st century

MARY HEBRAEA, alchemist who discovered the formula for hydrochloric acid. She lived in Alexandria, Egypt.

Middle ages

DORTHEA BUCCA, held the chair of medicine at the University of Bologna and had students from all over Europe.



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18th century

MME. NICHOLE-REINE LEPAUTE, astronomer who worked on predictions for the return of Halley's Comet in 1759.

19th century

MARIE CURIE, chemist famous for her work on radioactivity; won the Nobel prize twice.

LADY AUGUSTA ADA BYRON LOVELACE, considered the first computer programmer, wrote the code to run the first mechanical computer, which was invented by her patron, Sir Charles Babbage.

EMILY NOETHER, developed the basis for group theory, the mathematics behind modern physics. Einstein called her "the most significant creative mathematical genius thus far produced since the higher education of women began."

NETTIE STEVENS, biologist who determined that the X and Y chromosomes determine gender.

Source: *4000 Years of Women in Science*, The University of Alabama Department of Physics and Astronomy, <http://www.astr.ua.edu/4000WS/4000WS.html>

TOWN MEETING

“We need community-based research, not community-placed research. We’re being studied to death,” Yalonda Sinde of the Community Coalition for Environmental Justice (CCEJ) told researchers at a town meeting held September 29 and 30 at Mt. Zion Baptist Church in Seattle.

Environmental justice was a key theme of community testimony at the meeting, entitled “Voices for Healthy Environments, Healthy Communities.” Environmental justice is a movement of civil rights activists and environmentalists working to ensure the rights to clean and healthy environments for low-income communities and communities of color.

More than 200 people attended the two-day event, which included workshops, discussion circles, an open microphone session, and presentations by more than 20 community groups, youth groups, and tribal nations. Many DEH faculty, staff, and students also participated in the town meeting, which was sponsored by the Center for Ecogenetics and Environmental Health and the National Institute of Environmental Health Sciences (NIEHS).

ENVIRONMENTAL PROBLEMS

In her keynote address, state Sen. Rosa Franklin encouraged people to share their experiences with researchers. “There’s something wrong in our land and we know it,” she said, citing high rates of miscarriage among members of the Shoalwater Bay tribe of the Washington coast, a “cancer alley” in North Carolina, and pollution of an entire food chain in Louisiana. “A growing body of evidence continues to show that low-income people—a disproportionate percentage of whom are people of color—are more exposed to environmental pollutants than the general population,” said Franklin.

Pesticide exposures emerged as a major theme of meeting testimony. “Every time a worker moves a piece of fruit or a leaf they get exposed to pesticides,” said Guillermo “Bill” Nicacio of the Washington State Migrant Council. “During apple-thinning season we can tell who is thinning because of the redness of their eyes and the rashes on their hands.”

Farmworkers are often afraid to report exposures to

agricultural chemicals or other dangerous working conditions for fear of losing their jobs, said Lupe Gamboa, Washington state director of the United Farm Workers of America AFL-CIO. “Farmworkers are treated this way because they don’t have political power and they don’t have economic power,” he said during his keynote address. He also expressed concern about the lack of training for health care workers in detecting pesticide-induced injury and illness.

NIEHS Director Kenneth Olden discussed the complex ways that genes and environment can interact to cause disease. “You can inherit a genetic predisposition to asthma, but only suffer from asthmatic symptoms when exposed to certain triggers,” he said. “Genetics loads the gun, but environment pulls the trigger.”

WORKSHOPS

Workshops and discussion circles brought researchers, legislators, and community members together to discuss a variety of topics including health risks to agricultural workers and their families, contamination of seafood by marine toxins and chemical pollutants, hazardous waste sites, culturally appropriate research strategies, and links between air pollution and asthma.

During the workshops and open-microphone testimony, community members urged investigators to become advocates for disease prevention, not just providers of scientific data. “We want to see decisions based not on risk assessment but on prevention,” said Carol Dansereau, executive director of Washington Toxics Coalition. “We do need research,” said Sinde of the CCEJ, “but we also need action once we get the information. We need researchers to work with the communities to find solutions to the problems as well.”

Before the meeting, Olden and NIEHS staff members attended a videoconference at which students from across the state presented environmental health research projects and got feedback on their work. The Town Meeting capped two months of youth involvement coordinated with the YMCA Earth Service Corps’ EcoLeaders program and Seattle Public Utilities’ EcoTeam.

“We need community-based research, not community-placed research. We’re being studied to death.”

voices being heard . . .



Mary Levin

top row: Dr. Ngozi Oleru, Environmental Health Division, Public Health, Seattle and King County; Dr. Kenneth Olden, National Institute of Environmental Health Sciences; Yolanda Sinde, Community Coalition for Environmental Justice; Lupe Gamboa, United Farm Workers;
bottom row: Guillermo "Bill" Nicacio, Washington Farmworkers Union and Washington State Migrant Council; Eric Dinh, YMCA EcoLeaders; Robert Mosley, Seattle Public Utilities EcoTeam; State Sen. Rosa Franklin.

Olden also met with members of the Shoalwater Bay tribe, and visited a south Seattle neighborhood battling issues of environmental justice. The Environmental Coalition of South Seattle, with representatives from CCEJ and the Seattle Healthy Homes asthma project, led the tour of the South Park area, which has a high percentage of low-income and minority residents, and high loads of air, noise and chemical pollution from freeways, airports, and industry. US Rep. Jim McDermott and Washington State Rep. Velma Veloria also took the tour and participated in the town meeting.

"I acquire a sense of urgency by hearing people testify at these meetings," said Olden. "So-called intractable environmental problems can be solved through investment in fundamental science and new

technologies," he said. "Ultimately, the American people have to decide how many cases of cancer or Parkinson's disease are acceptable."

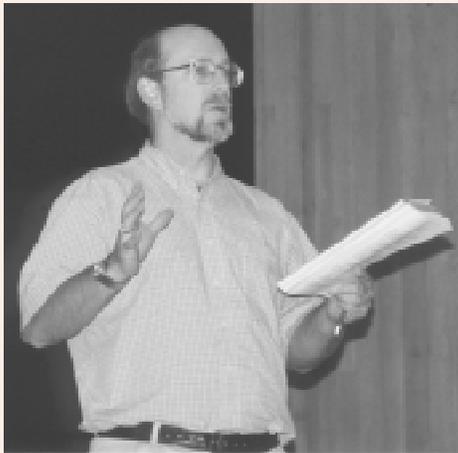
NIEHS has held similar town meetings across the country to gain a better understanding of community priorities for environmental health research. Town meetings in other cities have resulted in new collaborations among researchers and community groups, including a coalition in Cincinnati that received nearly \$900,000 in funding from the US Department of Housing and Urban Development for a project to reduce lead exposures.

Further information on the town meeting is available at the "Voices for Healthy Environments, Healthy Communities" Web site, <http://depts.washington.edu/townmeet>.

—Kris Freeman

COMMUNITY-BASED RESEARCH

Dave Eaton discusses community-based research at the departmental retreat.



Bill Griffith

If scientists want to do community-based research, they need to involve the community from the beginning, Dr. David Eaton, Professor of Environmental Health and Associate Dean for Research, told his fellow researchers at the department's annual retreat in September. This year's retreat topic was "Linking research with public health practice," and community-based research was a major focus.

Eaton said good community-based research requires substantive partnerships with the community under study. He explained that community partners should "have real influence on directions and activities" and be involved at every stage of research, from developing objectives to disseminating findings. Ideally, they will feel a shared ownership of the data.

Good community-based research will serve the community, perhaps by producing a long-term benefit, sustaining useful projects, or providing employment and training for community members. Researchers should commit to doing the follow-up necessary after the project.

Eaton urged researchers to be sensitive about how, when, and by whom research findings are released. In some cases, the spirit of confidentiality could be violated by making public the research findings. There is a balance, Eaton said, between making the research methods sufficiently rigorous, yet true to community-based principles that incorporate perspectives and beliefs of community residents.

Eaton said experts in this area emphasize how important—as well as time-consuming—it is to build relationships with the community that are based on mutual trust and respect. Several excellent articles and guidelines have been developed for scientists interested in community-based research. For example, Brown and Vega's protocol provides a series of questions to stimulate dialogue between researchers and community partners.

Eaton concluded his presentation by providing a series of arguments for and against involvement of DEH faculty in community-based research.

On the positive side, such research is consistent with the University's and the School of Public Health's strategic plans; serves important community needs; provides good training opportunities for practice-oriented students; and can have more immediate impacts and rewards than fundamental research.

Reasons for the department to exercise caution, Eaton said, include the limited resources available to support community-based research. In addition, it can be difficult and frustrating; not everyone can do it well; and doing it wrong can have lasting negative consequences.

FOR FURTHER READING

Brown and Vega, "A protocol for community-based research." *American Journal of Preventive Medicine* (Vol. 12, Suppl. 4: 4-6, 1996)

WORKING WITH TRIBES

The department is part of a partnership to train environmental health specialists among Native American tribes. Charles D. (Chuck) Treser of the undergraduate program is working with the Northwest Center for Public Health Practice and the Dean of the School of Public Health and Community Medicine to develop a joint Environmental Health undergraduate program with the Northwest Indian College in Bellingham.

Under the proposed memorandum of understanding, students from the Indian College would be able to complete their prerequisite courses in Bellingham before transferring to the UW to complete a Bachelor of Science in environmental health. Indian College students would participate in specially developed classes, seminars and internship to help support them during both phases of their education.

Environmental health students at the UW would also be able to participate in some of these classes and seminars through the use of distance learning technology.

For more information on Northwest Indian College, visit its Web site, <http://www.nwic.edu>.



The department mourns the loss of research scientist **Mike Wessels** of the Environmental Health Laboratory, who died in a hiking accident Aug. 21. Many of his family, friends, and colleagues shared their thoughts on a memorial Web page, <http://depts.washington.edu/envhlth/mikew.cgi>.



Tom Burbacher

Associate Professor **Thomas M. Burbacher** received a half-million-dollar grant to study Thimerosal, a preservative in children's vaccines. The two-year grant is from the National Institute for Allergy and Infectious Disease and the National Institute of Environmental Health Sciences.



Curt Omiecinski

Professor **Curt Omiecinski** is the new director of the Toxicology program, replacing **Lucio Costa**, who is focusing on his research after ten years as head of the program. As program director, Curt will be responsible for managing the operations of the Toxicology program.

Professor **Linda Rosenstock** is the new dean of the School of Public Health at the University of California, Los Angeles. She began her duties at UCLA Nov. 1. Dr. Rosenstock has been on leave from the Occupational and Environmental Medicine program since 1994, when she was named director of the National Institute for Occupational Safety and Health (NIOSH).

The following graduate students received their degrees summer quarter: **David Bonauto**, MPH, Occupational & Environmental Medicine; **Michael Box**, MS, Industrial Hygiene & Safety; **Cynthia Curl**, MS, Technology; **Barbara Faville**, MS, Industrial Hygiene & Safety; **Ed Doran**, PhD, Industrial Hygiene & Safety; **Jiho Huang**, MPH, Occupational & Environmental Medicine; **Matthew McQueen**, MS, Toxicology; **Gary Palcisko**, MS, Technology; and **Keone Pang**, MS, Industrial Hygiene & Safety. Anticipated fall graduates are: **Alma Cárdenas**, MS, Toxicology with Risk Emphasis; **Cecile Krejsa**, PhD, Toxicology; **Amy Scanlon**, MS, Toxicology; **Jeff Stewart**, MS, Industrial Hygiene & Safety; and **Hongbin Xiao**, MS, Technology.

Undergraduate student **Wendy Kirchoff** received a scholarship from the Association for Women in Science-

Seattle Chapter. She also received an undergraduate laboratory fellowship from the Department of Energy, which funded her summer internship with the Pacific Northwest National Laboratories in Richland.

The Pacific Northwest Section of the American Industrial Hygiene Association awarded scholarships to graduate students **George Astrakianakis**, **Katia Harb**, and **Kyung Ehi Zoh**.

Senior Lecturer Emeritus **Lee Monteith** participated in the People to People Ambassador Program for an Occupational Health Delegation to Beijing, Xian, and Shanghai, China in early October.

Senior lecturer **Sharon Morris** is part of the task force that is rewriting the state's safety and health rules in plain language. A draft of the new rules was unveiled in October; hearings are planned in January. More information is at <http://www.lni.wa.gov/wisha/innovations>.

Bruce Fowler has completed his two-year visiting professorship, during which he collaborated with Professor **James Woods**, developed procedures for electron spin resonance, and presented several seminars and lectures. The Colgate-Palmolive Company and the Society of Toxicology sponsored his visit.

Senior lecturer **Charles D. (Chuck) Treser** is president of the newly formed Association of Environmental Health Academic Programs and is principal investigator on a cooperative agreement between that association and the CDC National Center for Environmental Health.



Chuck Treser

The goal is to increase the number of accredited environmental health education programs and strengthen their curricula.

Undergraduates **Shireen Assaf** and **Charryse Birge** worked this summer for the state departments of Health and Parks and Recreation performing a health and safety survey of most of the bathing beaches in the Washington State Parks system.

This year's officers of the University of Washington chapter of the Student Environmental Health Association are: **Chester Baldwin III**, president; **Chris Miele** and **Kenton Wise**, vice presidents; and **Charryse Birge**, activities chair.

**Sixth World Environmental Health Congress**

June 6–10, Oslo, Norway

Charles D. (Chuck) Treser

Environmental health education and agency jobs: lessons learned

US EPA Region X, Northwest Air Toxic Summit

June 7, Seattle

L.-J. Sally Liu

Air toxics exposure assessment in the metropolitan Seattle area

Indoor Air Investigators' Association (IAIA)

July 12, Seattle

L.-J. Sally Liu

PM exposure assessment in high-risk population

**Washington State Department of Ecology,
Air Quality Program.**

July 26, Spokane

L.-J. Sally LiuSymposium: Selecting an Action Level for Particulate Matter_{2.5}; presentation: Particulate matter exposures in susceptible populations—implications to agricultural burning air quality**International Conference on Occupational Health**

August, Singapore

Lucio Costa

Genetic polymorphisms and pesticide toxicity

Governor's Safety and Health Conference

October 4–5, Spokane

Mary Ellen Flanagan

Health and safety for teens—organizing committee

Rick Gleason

Industrial hygiene in construction

Northwest Occupational Health Conference

October 18–20, Bellingham

An annual meeting of industrial hygienists and occupational medicine physicians and nurses from across the Pacific Northwest. This year, the British Columbia-Yukon Section of the American Industrial Hygiene Association cosponsored the conference. More than 300 people attended. **Janice Camp**, president of the Pacific Northwest Section of the American Hygiene Association, was active in organizing the conference.**Gerry Croteau and Mary Ellen Flanagan**

Controlling respirable dust and crystalline silica exposures during concrete cutting and grinding activities

Tim Takaro

Latent disease finding in USDOE production workers at Hanford

Bill Daniell

Work-related carpal tunnel syndrome: Clinical practices and outcomes for worker's compensation patients in Washington state

Dave Leonard, Walt Rostykus, Gavin Murray, Jeff Thompson, and David Bonauto, graduates of the department, were also on the program**Pacific Northwest Association of Toxicologists**

October 19–20, Richland

Curt Omiecinski

Genetic polymorphism in human epoxide hydrolase: Structure, function, and disease susceptibility

Clement Furlong

Effects of human paraoxanase (PONI) single nucleotide polymorphisms on susceptibility to specific organophosphorous insecticides

Jennifer Finley

Telomere length as a pathological biomarker of susceptibility to neoplastic progression

Francesca (Noel) Hudson

Characterization of the proximal promoter region of mouse glutamate-cystein ligase regulatory subunit gene

William Griffith

Analysis of microchip array data to identify gene responses from environmental exposures

Helen Smith

Polymorphic enzymes of estradiol metabolism: Function relationships and expression in human endometrium

10th Annual Conference of the International Society of Exposure Analysis (ISEA)

October 24–27, Monterey, California

Abstracts can be found at <http://depts.washington.edu/pmcenter/ISEAabslist.html>**Lianne Sheppard, L.-J. Sally Liu, Timothy Larson, Naomi Ishikawa**Application of the random component superposition model to PM_{2.5} exposure distributions**Michael G. Box, L.-J. Sally Liu**

Particulate matter exposure assessment for compromised elderly adults

Timothy Larson, Ryan Allen, L.-J. Sally Liu

Indoor and outdoor contributions to indoor light scattering coefficient

Thomas Lumley, L.-J. Sally Liu, Timothy Larson

Spatial distribution of PM in Seattle, Washington



CONTINUING EDUCATION

NEW PROGRAM

To confirm this schedule or find more information about these courses, call (206) 543-1069 or (206) 685-3089, or visit the Continuing Education Web home page at <http://depts.washington.edu/envhlth/conted.html>. Courses are in Seattle unless noted.

NORTHWEST CENTER FOR OCCUPATIONAL HEALTH & SAFETY

- Dec 4-5 Industrial Ventilation: Principles and Applications
- Jan 24-26 Annual Hazardous Waste Refreshers
- Feb 1 Current Issues in Construction Safety: Ergonomics, Noise, Lead, and Liability
- Feb 23 Zoonotic and Vector-Borne Disease: Current and Emerging Issues in Washington and the United States
- Mar 2 An Aging Workforce: Issues for this Century
- Mar 15-16 Laboratory Safety and Health
- Apr 6 Current Controversies in Occupational Medicine
- Apr 11 Concepts and Advances in Risk Assessment
- Apr 13 Benefit-Cost Analysis of Policies in Environmental, Public, and Occupational Health

OSHA TRAINING INSTITUTE EDUCATIONAL CENTER

- Dec 5-8 OSHA 521: OSHA Guide to Industrial Hygiene (*Anchorage*)
- Jan 8-11 OSHA 600: Collateral Duty Course for Other Federal Agencies
- Jan 22-25 OSHA 510: OSHA Standards for the Construction Industry (*Portland*)
- Feb 5-8 OSHA 501: Trainer Course in OSHA Standards for General Industry
- Feb 12-15 OSHA 500: Trainer Course in OSHA Standards for the Construction Industry
- Feb 21-23 OSHA 222A: Respiratory Protection
- Mar 9, 10, 16 OSHA 225: Principles of Ergonomics (*various locations; call for information*)
- Mar 12-14 OSHA 503: Update for General Industry Outreach Trainers
- Mar 17, 23, 24 OSHA 226: Permit-Required Confined Space Entry (*various locations; call for information*)
- Mar 19-22 OSHA 204A: Machinery and Machine Guarding Standards (*Portland*)
- Mar 26-28 OSHA 502: Update for Construction Industry Outreach Trainers
- Mar 30, 31, & Apr 6, 7 OSHA 201A: Hazardous Materials (*various locations; call for information*)
- Apr 13, 14, 20, 21 OSHA 510: OSHA Standards for the Construction Industry (*various locations; call for information*)

OCCUPATIONAL HEALTH SERVICES

The University of Washington has launched one of the nation's first programs to train graduate students and postdoctoral fellows in occupational health services research. It is a joint effort of the departments of Health Services and Environmental Health, both parts of the School of Public Health and Community Medicine.

The new program is funded by the National Institute for Occupational Safety and Health (NIOSH) and is located with the department's Occupational Epidemiology and Health Outcomes Program at Lake Union Place.

Two types of students are being sought: MD or PhD applicants trained in occupational health who want a Masters of Public Health degree with a research emphasis, and doctoral students or postdoctoral fellows who do not have formal prior training in occupational health but wish to pursue careers in occupational health services research.

The program will prepare students for research leadership roles in academic, public health, public policy, or private industry settings, said Dr. Thomas Wickizer of the Department of Health Services and the program director.

Research field sites are being developed in cooperation with partners such as The Boeing Co., Weyerhaeuser, and the Washington State Department of Labor and Industries.

For information, visit the Web site, <http://depts.washington.edu/occtrain>.

ERGONOMICS STUDY

The department's Policy Analysis and Program Evaluation Initiative will help study new rules requiring Washington businesses to protect workers from ergonomic-related injuries.

Departmental researchers are part of a \$540,000 grant, awarded to the state Department of Labor and Industries by the national Centers for Disease Control and Prevention. Researchers will conduct surveys, visit work sites and analyze workers' compensation data during the three-year study.

"This study will be a great opportunity to learn from employers and workers what works best in helping them reduce musculoskeletal hazards and injuries," said DEH researcher Janice Camp.

L&I adopted the ergonomics regulation in May to reduce workplace hazards, such as awkward lifting and repetitive motion, that cripple and injure more than 50,000 Washington workers a year. These injuries, such as back strain, tendinitis, and carpal tunnel syndrome, cost \$411 million a year in medical treatment and lost wages, L&I workers' compensation data show.

The regulation will be phased in over a two- to five-year period. For information, visit L&I's Web site www.lni.wa.gov/wisha/ergo.

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Environmental Health News is published three times a year by the Department of Environmental Health at the University of Washington. Inquiries should be addressed to *Environmental Health News*, Box 354695, 4225 Roosevelt Way NE, Suite 100, Seattle, WA 98105-6099; Phone: (206) 543-1564; E-mail: kjhall@u.washington.edu.

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Department of Environmental Health,
University of Washington.



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Services on recycled paper
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ENVIRONMENTAL HEALTH
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