Hazardous Substances & Public Health
Protecting the Public Health

Volume 5, Number 3, Summer 1995

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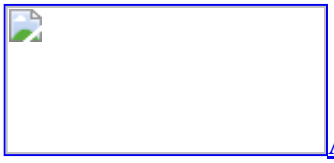
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FEATURES

Commentary

Notes From

The International Congress on Hazardous Waste: Impact on Human and Ecological Health

The International Congress on Hazardous Waste: Impact on Human and Ecological Health demonstrated that hazardous substances are a global concern and that needed environmental health research is being conducted as a multinational, multidisciplinary effort.

The congress, sponsored by the Agency for Toxic Substances and Disease Registry (ATSDR) and national and international organization cosponsors, was held June 5-8 in Atlanta, Georgia. Several key messages were evident at the congress. One was that more environmental health research and more creative ways of thinking about and conducting environmental health research are urgently needed. Another was that current scientific findings in public health programs must be used more effectively to prevent adverse health effects in human and ecologic populations.

Howard Frumkin, MD, DrPH, director, Division of Environmental and Occupational Health, Emory University School of Public Health, EXIT closed the congress by encouraging participants to continue their efforts. "We know that we face formidable challenges and we have a lot to do," he said. "In the face of these challenges, we

need to work together. When I say 'we,' I refer to citizens, individually and in organized groups; to dedicated government officials; to responsible industry; to researchers; to health care providers; to environmentalists . When we disagree, we need to remember that we share common goals."

Although all of the scientific answers have not yet been found, the information presented and discussed at the congress was evidence that a significant amount of research is being done. The submission of a greater number of abstracts and more diverse projects for this conference compared to the first congress in 1993 is a reflection of the progress being made, said John Andrews, MD, MPH, ATSDR's associate administrator for science and organizer of the congress.

Some citizens who attended the conference said that despite the progress, they feel that their concerns have not been addressed appropriately or completely. They feel that not only have they been exposed to hazardous wastes, but they are experiencing disease as a result.

Conference participants discussed research results that shed more light on exposure to hazardous substances, exposure-related health effects, and associated technology and policy issues. Perhaps the greatest accomplishment of the congress was the international and multidisciplinary participation in sharing environmental health research. Several speakers emphasized that a multidisciplinary, multinational effort is required to protect ecosystems and human health from the adverse effects of hazardous substances.

Several major themes seemed to underlie many of the talks given by presenters from countries other than the United States: (1) the need for legislation in developing countries to protect health and the environment from hazardous substances; (2) the need to garner or maintain public pressure for legislation that protects worker health and safety; (3) the need for worker education and training concerning environmental hazards in the workplace; (4) concern about export of hazardous waste from one country to another for disposal (often to less developed, smaller, or economically disadvantaged countries that may lack environmental or worker protection laws or modern disposal facilities); and (5) the problem of insufficient funds and lack of modern technology to safely produce or dispose of hazardous waste in many countries worldwide.

The congress demonstrated that creative thinking and research concerning environmental health are progressing. These efforts need to continue, with an emphasis on multidisciplinary and international approaches to the world's environmental health problems. Also, many congress participants stressed the need to study both ecological and human health effects of hazardous waste. In the United States, greater cooperation between federal, state, and local agencies in addressing environmental health issues was also urged by many of the congress participants. Publication of proceedings is planned. The proceedings of ATSDR's first international congress on hazardous waste, Hazardous Waste and Public Health: International Congress on the Health Effects of Hazardous Waste, are available for $85 through Princeton Scientific Publishing Company, Inc., PO Box 2155, Princeton, New Jersey 08543; telephone (609) 683-4750; fax (609) 683-0838.

Georgia Moore
Writer-Editor
ATSDR Division of Health Education

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A Sample of Congress Presentations

The following summaries of presentations to the 1995 International Congress on Hazardous Waste briefly illustrate the latest progress in environmental health research:

Exposure of Workers in Recycling of Hazardous Lead Battery Wastes in India

[JM Dave, PhD, and AM Khan, MSc, Jawaharlal Nehru University, New Delhi, India]

This study of workers who recycle imported lead battery wastes illustrates how cultural practices can affect exposure to hazardous substances such as lead. The researchers found that workers at the plant studied have very high blood lead levels, ranging from 48.5 micrograms per deciliter (µg/dL) to 77 µg/dL. (The Occupational Safety and Health Administration's recommended safe blood lead level in adults from occupational exposure is 40 µg/dL or below.) The greatest lead exposures resulted from workers having to break open the batteries manually and separate and move the parts to storage and transport vehicles by hand. The workers also eat with their fingers, a significant route of exposure, Dr. Dave said. Working conditions are so hot that the workers wear few pieces of clothing; therefore, most of their bodies can potentially be exposed. The researchers recommend mechanizing procedures, especially automated breakage of the battery cases, use of safety equipment, better safety control measures, and use of a method of lead recovery other than melting and refining in furnaces.

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Soil Gas Entry Into Below-Grade Basements as an Exposure Route of Trichloroethene

[Christopher G. Uchrin, PhD, PE, David Fischer, MS, and Clifford P. Weisel, PhD, Department of Environmental Sciences, Rutgers University, and Environmental and Occupational Health Sciences Institute]

This research shows that concentration ranges of trichloroethene (TCE), also known as trichloroethylene, found in basement air indicate that soil gas entry may be a significant route of TCE exposure for people living in homes overlying contaminated aquifers. Negative air pressure in basements can pull TCE-contaminated soil gas through some basement building materials or through cracks into the basement. Controlling variables include depth to water table, soil permeability and porosity, and basement integrity.

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Community Involvement in Public Health Investigations: Improved Response and Data Collection Using Neighborhood Volunteers in a South Texas City

[Betty G. Brown, MPH, and Kathryn A. Evans, MPH, Texas Department of Health]

The Texas Department of Health (TDH) found that using community volunteers to help gather information for an environmental health survey significantly increased the participation rate and the quality of data received. In Part I of a 2-part 1994 survey, 20 community volunteers collected demographic and special needs information from approximately 260 families living in the Oak Park subdivision, Corpus Christi, Texas, which is surrounded by industry and has been exposed for years to hazardous substances through fires, explosions, and spills. TDH staff members then collected health, safety, and environmental exposure histories of the same families for Part II of the 1994 survey. Through the community volunteers, TDH received a nearly 70% participation rate and learned much more about the community's needs and concerns, Brown said. In contrast, TDH received a 29% response rate to a 1993 mail-in survey.

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Redefinition of Abnormal Susceptibility to Environmental Chemicals

[William E. Morton, MD, DrPH, Oregon Health Sciences University]

Porphyria refers to a number of hereditary diseases characterized by excessive production of porphyrins, which are intermediate molecules in the manufacture of hemoglobin. Latent and often unidentified cases of porphyria may account for some cases of hyper-reactivity to a number of chemicals, a syndrome referred to as multiple chemical sensitivity (MCS). This conclusion is based on research conducted using several new blood-cell porphyrin enzyme tests developed by the Mayo Laboratory that allow recognition of a broader spectrum of

porphyria cases than before. Latent cases of porphyria can become active with symptoms similar to MCS on exposure to various chemical "porphyrogenic substances." Porphyrias can therefore lead to extreme reactivity to such substances as paints, metal dusts and fumes, vinyl chloride, arsenic, polychlorinated biphenyls, and dioxins.

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Environmental Contaminants as Endocrine Disrupters

[Louis Guillette, Jr., PhD, Professor, Department of Zoology, University of Florida]

Dr. Guillette's research indicates that some environmental pollutants can act as "endocrine disrupters" in developing fetuses, causing adverse effects that are revealed only later in life. Dr. Guillette found that male alligators in a heavily polluted Florida lake, now a Superfund site, are "estrogenized;" they have an abnormally high ratio of estradiol to testosterone, which affects their ability to reproduce. Exposure to an environmental estrogen can also cause sex reversal in alligator embryos. Older adult male alligators whose endocrine systems were normally developed are not affected in the same way by environmental estrogens. Other controversial research indicates that human male sperm counts and motility are declining compared to previous years and that cases of cryptorchidism (undescended testicles) are increasing. "This can all be explained by disruption of early endocrine development in males," Dr. Guillette said. The larger implications for health are that we need to ask more questions - and more creative questions - about the long-term organizational and functional outcomes of exposure to chemicals in the womb, he said.

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Ecogenetics: From Ecology to Health

[Daniel W. Nebert, MD, Director, Center for Environmental Genetics, Professor, Department of Environmental Health, University of Cincinnati]

People's bodies metabolize drugs and other chemicals in different ways, sometimes based on genetic differences in the alleles of a single gene, Dr. Nebert said. If there are two or more "ecogenetic" differences in the same pathway for metabolizing a chemical, these differences can have a synergistic or multiple effect with very negative consequences. For example, depending on genetic factors determining pathways of metabolism, some people given the therapeutically recommended dose of a drug for treating acute lymphocytic leukemia died from the therapeutic agent; some relapsed because their bodies detoxified the therapeutic agent, rendering it ineffective; and others were cured of their disease. Dr. Nebert concluded his presentation by saying that physicians can practice preventive toxicology if they know a person's genetic makeup, for example, by choosing therapeutic drugs and dose based on genetic makeup. Differences in ecogenetics may also partly explain why one person gets cancer as the result of a given level of exposure to an environmental substance and another does not; therefore, this research has implications for understanding and interpreting the results of health studies.

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A Model for Educating Widely Dispersed Physicians

[Alan P. Janssen, MSPH, Agency for Toxic Substances and Disease Registry; Richard R. Tardif, PhD, Oak Ridge Institute for Science and Education; and Ken J. Kallail, PhD, The University of Kansas School of Medicine at Wichita]

In this case study, ATSDR worked through partners trusted by rural Kansas physicians - The University of Kansas (Wichita) and peer physicians - to educate a group of widely dispersed physicians about carbon tetrachloride contamination at grain storage sites scattered across the state. Environmental medicine case studies, regional mini-conferences, and one-on-one contacts by peers were used to educate the physicians and stress the

importance of environmental medicine. The program's evaluation results indicate good success in reaching and educating widely dispersed physicians using this strategy.

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From the Tribes

Report Outlines Concerns About Nuclear Risks in Tribal Communities

Current approaches to environmental risk assessment are being debated, and some legislators are arguing for increased use of cost-benefit analysis in making decisions. In light of this debate, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) has prepared a report advocating a more holistic approach to environmental risk assessment.

The report, "Nuclear Risks in Tribal Communities," outlines tribal concerns that "the risks posed by massive historical releases of hazardous chemicals and radioactive materials to the air, water, and soil column will directly impact not only human health and the environment - a particular concern in subsistence-dependent tribal families - but also tribal cultural values, traditional lifestyles, and tribal cultures themselves for many generations to come - risks that often are not accounted for in existing methodologies."

CTUIR's Department of Natural Resources-Special Sciences and Resources Program staff prepared the report. CTUIR is especially concerned about hazardous waste because the Hanford Nuclear Reservation lies within a portion of the lands ceded to the US government by CTUIR, which still maintains treaty-reserved rights and interests in those lands. The Umatilla Indian Reservation, located near Pendleton, Oregon, and the Washington border, is occupied by approximately 2,000 descendants of the 3 Columbia River Plateau tribes that now compose the CTUIR: the Cayuse, the Walla Walla, and the Umatilla.

Bordered on two sides by the Columbia River, the Hanford Nuclear Reservation covers more than 560 square miles near Richland, Washington. According to the CTUIR report, nuclear materials were manufactured at the site from 1944 to 1989. During this time, 440 billion gallons of water containing 678,000 curies of radioactivity, some of which degraded naturally within a short time, was released into the environment, contaminating more than 200 square miles of groundwater and soil with radioactive and hazardous chemicals. About 61 million gallons of waste is still buried in 177 underground tanks, 68 of which the US Department of Energy (DOE) EXIT has confirmed are leaking, according to J.R. Wilkinson, manager of CTUIR's Special Sciences and Resources Program, Department of Natural Resources, Washington.

In the past, some of the hazardous waste migrated into the Columbia River. The CTUIR is concerned that some of the waste is still migrating toward the river, which some tribes depend on for food (particularly salmon) and water, Wilkinson said.

CTUIR's report describes unique tribal resource uses, pathways by which members could be exposed to hazardous substances, and the multigenerational impacts, as well as environmental justice concerns and special challenges, presented by the Hanford Nuclear Reservation site.

It also presents a model of integrated, holistic environmental management. This comprehensive approach "will ultimately result in more clearly defined mission plans, more focused strategic planning goals, and more timely, health-effective, and cost-effective remedial actions," the report says.

Copies of the report may be obtained from J.R. Wilkinson, Manager, Special Sciences and Resources Program, Department of Natural Resources, Confederated Tribes of the Umatilla Indian Reservation, PO Box 638,

Pendleton, Oregon 97801; telephone (503) 276-0105; fax (503) 276-0540; Internet James.Wilkinson%EM@em.doe.gov.

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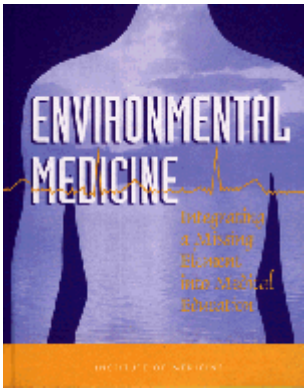

Integrating a Missing Element Into Medical Education

Most people obtain their medical care from physicians who are not specialists in either occupational or environmental medicine, according to the Institute of Medicine's 1988 report *Role of the Primary Care Physician in Occupational and Environmental Medicine*. Primarily for this reason, the report concludes that "at a minimum, all primary care physicians should be able to identify possible occupationally or environmentally induced conditions and make the appropriate referrals for follow-up."

Because the 1988 report also revealed that training of primary care physicians in occupational and environmental medicine is "lacking at all levels of medical education," the Institute of Medicine (IOM) EXIT is now offering its follow-up report, *Environmental Medicine: Integrating a Missing Element into Medical Education*, as a tool for faculty, students, and practitioners to incorporate into or enhance environmental medicine in medical education and practice.

This effort was supported by a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR), and additional support was provided by the US Environmental Protection Agency EXIT and the National Institute for Occupational Safety and Health of the Centers for Disease Control and Prevention. EXIT IOM was chartered by the National Academy of Sciences EXIT in 1970 to examine policy matters pertaining to the public's health and to identify issues of medical care, research, and education that need to be addressed.

As a result of this latest study, IOM's committee on environmental medicine curriculum development recommends integrating environmental education into existing courses and clinical rotations rather than creating new courses or training blocks in an already crowded curriculum. It is also "the most appropriate approach given the pervasive and fundamental nature of the effects of the environment on health," they said.

The report contains a discussion of competency-based learning objectives for all medical school students and the relevance of environmental medicine to specific courses and clinical rotations. The appendices contain detailed information on available educational resources and teaching aids, and include 55 case studies that can be used to facilitate integration of environmental medicine into both education and practice. The case studies are derived from peer-reviewed literature, including journal articles and educational materials developed by ATSDR.

The report's committee states that "by integrating environmental medicine into medical education today, more physicians will be better prepared and able to understand, diagnose, and care for people who are exposed to potentially harmful environmental agents."

Copies of the report have already been distributed to medical school deans, residency program directors, faculty, and libraries; and to various environmental and occupational health organizations and associations, among others.

The hardback report is available for $53 per copy including shipping and handling and can be ordered by calling the National Academy Press at (800) 624-6242 between 8:30 AM and 5 PM EST or (202) 334-3313 in the Washington, DC, area.

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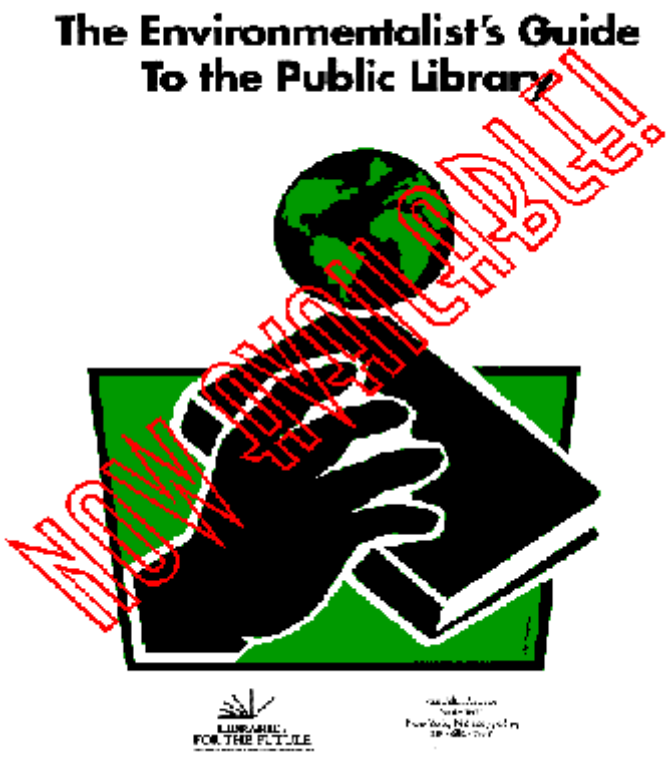
Announcements



The nonprofit organization Libraries for the Future (LFF) is working to help environmentalists, among others, take advantage of the opportunities and resources available to them in public libraries. As part of its Environmental Information Access Project, LFF is now offering free of charge *The Environmentalist's Guide to the Public Library*.

The guide contains practical advice for environmentalists about how to draw on public library resources, four profiles of model libraries and the environmental advocates who helped create them, and tips on how environmentalists can work with public libraries to increase access to environmental information.

The guide also lists some environmental resources found on the Internet and key legislation dealing with toxic emissions and hazardous waste. Using the library to reach the public through bulletin boards, displays, and presentations, and as a resource for meeting space and community action is also discussed.

LFF commissioned Andrew Koebrick, MS, who holds his master's degree in library science, to write the guide; Agency for Toxic Substances and Disease Registry (ATSDR)staff members were among those who helped review it.

For copies, contact Libraries for the Future at 521 5th Avenue, Suite 1612, New York, New York 10175; telephone (800) 542-1918; or Internet lff@phantom.com. LFF is also seeking more information about how environmental advocates are working or have worked with public libraries.

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NACCHO Handbook Addresses Community Health Concerns at Hazardous Waste Sites

Being faced with community concerns related to a hazardous waste or Superfund site can often be an overwhelming and frustrating experience for local health officials, challenging even the most experienced health departments. But now, under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR), the National Association of County and City Health Officials (NACCHO) has developed the handbook *Don't Hazard a Guess: Addressing Community Health Concerns at Hazardous Waste Sites*.

The purpose of this handbook is to help local health officials respond to community health concerns and questions related to hazardous waste sites and the chemicals found there.

The handbook's topics include the following:

- the Superfund process, the roles of the various agencies involved, and the sequence of events;
- roles for local health officials and options for local health department involvement;
- strategies to address community concerns and maximize community involvement; and
- principles of risk communication.

The handbook is based on a series of focus groups with local health officials who had dealt with Superfund sites in their jurisdictions. It contains their quotes, experiences, and suggestions, as well as three case studies of effective local health department involvement at Superfund sites. It also includes additional resources and references.

For more information on the handbook or the NACCHO Environmental Health Project, call Chris Rosheim, DDS, MPH, (ATSDR), at (404) 639-6205 or Heidi Klein, MS, (NACCHO), at (202) 783-5550.

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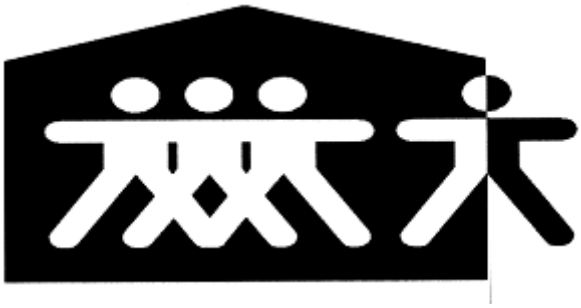

Protecting the Public: A Conference on Protective Actions During Chemical Emergencies

"Protecting the Public: A Conference on Protective Actions During Chemical Emergencies" will be held September 20-21, 1995, in Charleston, West Virginia. A postconference training session, "Protective Action Decision Making," will be offered on September 22.

The conference, which is sponsored by the National Institute for Chemical Studies (NICS) and the US Environmental Protection Agency's EXIT Chemical Emergency Preparedness and Prevention Office, will address three principal questions:

- How effective is Sheltering In-Place as a public protection technique?
- How can the most effective protective actions be selected?
- How can the public response to protective action instructions be improved?

The most current research regarding decision-making processes, a number of "real-world" protective action decisions, and recent regulatory or legal developments will also be discussed.

The postconference training session is a multimedia, hands-on training session for local emergency planning committee members, local responders, planners, and industry representatives. It will be taught by David Palmer, MS, of the Emergency Response Planning and Management consulting firm, and Paul L. Hill, PhD, NICS president.

For more information, contact the National Institute for Chemical Studies at 2300 MacCorkle Avenue, S.E., Charleston, West Virginia 25304; telephone (800) 282-2796.

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Health Studies Available to the Public

Environmental health scientists at the Agency for Toxic Substances and Disease Registry (ATSDR), conduct health studies at Superfund sites nationwide to evaluate the health effects of hazardous substances on exposed populations. The following health studies are available to the public through the National Technical Information Service (NTIS): EXIT

- Jasper County, Missouri, Superfund Site Lead and Cadmium Exposure Study, Missouri Department of Health, Division of Environmental Health and Epidemiology, Bureau of Environmental Epidemiology (February 1995), NTIS no. PB95-179404. Cost: $44.50 (paperback) plus $3 shipping and handling.

- Biologic Indicators of Exposure to Heavy Metals in Fish Consumers, Technical Assistance to the American Samoa Government, Department of Health Services, Pago Pago, American Samoa (March 1995), NTIS no. PB95-182994. Cost: $27 (paperback) plus $3 shipping and handling.

- Pancreatic Cancer Mortality and Residential Proximity to Railroad Refueling Facilities in Montana: A Records-Based Case-Control Pilot Study, Technical Assistance to the Montana Department of Health and Environmental Sciences, Helena, Montana (March 1995), NTIS no. PB95-191359. Cost: $17.50 (paperback) plus $3 shipping and handling.

To order these health studies and others prepared by ATSDR, contact NTIS, Sills Building, 5285 Port Royal Road, Springfield, Virginia 22151; telephone (703) 487-4650; fax (703) 321-8547. For more information on health studies activities, contact Sharon Campolucci, deputy director, Division of Health Studies, ATSDR, 1600 Clifton Road, NE, Mailstop E31, Atlanta, Georgia 30333; telephone (404) 639-6200.

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American Public Health Association (APHA)
123rd Annual Meeting and Exhibition

October 29 - November 2, 1995
San Diego Convention Center
San Diego, California

More than 900 scientific sessions will focus on every aspect of public health. Issues to be addressed include the following:

- Coping With Managed Care: Planned Change or Changed Plans for Health
- Changing Priorities/Politics: Consequences on Public Health
- Violence Prevention and Control: Consequences on Public Health

Poster sessions, workshops, continuing education institutes, and exhibits of products and services are also scheduled.

APHA members $200 advance; $225 on-site registration
Nonmembers $300 advance; $325 on-site registration

For more information, contact APHA Convention Services, 1015 15th St., NW, Washington, DC 20005; telephone (202) 789-5670.

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EPA Proposes Changes to PCB Regulations

The US Environmental Protection Agency (EPA) EXIT announced in November a proposed rule to make federal regulations for polychlorinated biphenyls (PCBs) less costly and burdensome, while still protecting public health and the environment. The changes to the PCB regulations are the first since 1978 and would reduce costs to industry by more than $6 billion a year.

PCBs are a mixture of chemicals that are clear to yellow oily liquids or solids. Although PCBs have not been manufactured in the United States since 1977, they are still present in the environment. The chemicals were used as insulating material in electrical transformers and capacitors, in hydraulic and heat transfer fluids, and in many other heat- and fire-sensitive applications. Animal experiments have shown that some PCB mixtures produce

adverse health effects that include liver damage, skin irritations, reproductive and developmental effects, and cancer.

EPA Administrator Carol M. Browner said, "These proposed changes the first in 16 years are a common-sense approach for dealing with PCB wastes. Our goal is to continue strong public health and environmental protection, while reducing duplication and paperwork at the federal and state levels and saving the regulated community billions of dollars."

The proposed rule would make PCB regulations more flexible in selecting disposal technologies for PCB wastes and would expand the allowable decontamination procedures. Obtaining EPA approval for a variety of activities would become less burdensome, and ambiguous parts of the regulations would be clarified. Other changes concern the use and maintenance distribution in commerce and disposal of PCB equipment, notification and labeling of PCB wastes, and changes in the operation of commercial storage facilities.

Since 1978, EPA has promulgated numerous rules addressing all aspects of the life cycle of PCBs. For additional information or to receive a fact sheet about the proposed rule to amend PCB regulations, call EPA's waste hotline at (800) 424-9346.

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Environmental Stewardship of Pesticides Use Is Focus of Partnership Formed by EPA, USDA, and FDA With Pesticide User Groups and Firms

The US Environmental Protection Agency (EPA), EXIT the US Department of Agriculture (USDA), EXIT and the US Food and Drug Administration (FDA) EXIT have formed a partnership with a number of groups and companies representing agricultural and nonagricultural pesticide users to promote environmental stewardship in pesticide use in the United States.

The partnership is the first under the commitment made by the three agencies before the US House of Representatives to work jointly with pesticide user groups to reach the Administration's goal of reducing the use and risks of pesticides in the United States.

"Voluntary pollution prevention has been a cornerstone of our efforts to protect human health and the environment, and this new pesticide partnership is an important step toward that goal," said Carol M. Browner, EPA administrator. "I congratulate the companies and grower groups that are joining with us for their forward-thinking approach to environmentally sound pesticide use practices and look forward to seeing others follow their lead."

The groups and companies that have joined the partnership include the National Potato Council; American Corn Growers Association; the International Apple Institute; the California Citrus Research Board; the California Pear Growers and California Pear Advisory Board; Appalachian Power; Atlantic Electric; Carolina Power and Light; Columbus Southern Power; Delmarva Power; Duke Power; New York State Electric and Gas; Ohio Power; Pennsylvania Electric; Pennsylvania Power and Light; Pennsylvania Rural Electric Association; Virginia, Maryland, Delaware Association of Electric Cooperatives; Wheeling Power; and Wisconsin Public Service Corporation.

The federal government agencies and other participants agreed that environmental stewardship is an integral part of pest management practices. Specifically, the partnership agreed to commit to a number of guiding principles that will shape pest management practices. The partners agreed to reduce risk to humans and the environment and to minimize pesticide use. The federal government will promote the adoption of alternative pest management technologies and practices. For additional information, call EPA's waste hotline at (800) 424-9346.

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A Guide to Environmental Resources on the Internet

In the vast space of the Internet, environmental resources are spread out like stars in the Milky Way; a guide can be very helpful in charting your course to them. One resource is "A Guide to Environmental Resources on the Internet," EXIT written by Carol Briggs-Erickson and Toni Murphy for researchers, environmentalists, teachers, and anyone interested in environmental topics.

The guide is arranged alphabetically by subject and then by the Internet tool (e.g., World Wide Web, telnet, gopher, FTP) used to locate those resources.

You can access the guide in several ways, depending on your Internet connection:

- Anonymous FTP: (host: una.hh.lib.umich.edu; path: /inetdirsstacks; file: environment:murphybriggs)
- Gopher: (Make the following menu selections: North America; USA; Michigan; Clearinghouse for Subject-Oriented...; Guides on the Sciences; Environment)
- World Wide Web Address (URL): http://www-personal.si.umich.edu/~cbriggs/environ_murphybriggs2.html EXIT

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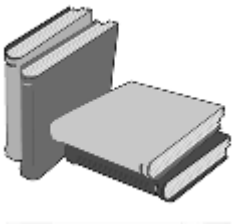

COURSES

Harvard School of Public Health Announces Continuing Education in Risk Assessment and Industrial Hygiene

The Harvard School of Public Health EXIT is offering the following courses:

Analyzing Risk: Science, Assessment, and Management, September 26-29, 1995. This course includes topics concerning risk assessment of chemicals and radiation in toxicology and epidemiology; methods of computing risk estimates; advances in the field, including new mechanistic and distributional approaches; and the role of these tools in communicating with the public and decision makers. Cost: $995.

Fundamentals of Industrial Hygiene, October 16-20, 1995. This course provides the fundamentals of industrial hygiene practice for managing programs related to occupational safety and health. Participants will learn to

identify potential hazards associated with industrial processes, methods for the assessment of exposures to hazards, and techniques for their prevention and control. Cost: $1,095.

For more information about these and other available courses, contact the Harvard School of Public Health, 677 Huntington Avenue, Boston, Massachusetts 02115; telephone (617) 432-1171; fax (617) 432-1969.

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North Carolina Occupational Safety and Health Educational Resource Center Offers Certified Hazardous Material Manager Review

The North Carolina Occupational Safety and Health Educational Resource Center in Chapel Hill is offering the following training opportunity:

Certified Hazardous Material Manager (CHMM) Review, October 9-11, 1995, exam dates October 12 and November 20. This course is designed to assist in preparing for the Institute of Hazardous Materials CHMM examination. Cost: $500. The CHMM exam will be administered at the center following the class on October 12 and again on November 20. Those who will be taking the exam must register with and pay a $185 fee to the Institute of Hazardous Materials; telephone (301) 984-8969.

For more information about this and other available courses, contact the North Carolina Occupational Safety and Health Educational Resource Center, 109 Conner Drive, Suite 1101, CB#8150, Chapel Hill, North Carolina 27514-7041; telephone (919) 962-2101; fax (919) 966-7579.

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University of Alabama at Birmingham Announces Training in Respiratory Protection and Air Sampling

The University of Alabama at Birmingham EXIT Deep South Center for Occupational Health and Safety is offering the following courses:

Respiratory Protection Programs, December 4-5, 1995. This 3-day program covers the basic information necessary to implement and manage a respiratory protection program suitable for participant needs and acceptable under OSHA and ANSI requirements. Cost: $510.

Introduction to Industrial Hygiene Air Sampling Techniques, December 11-12, 1995. This course is designed for safety professionals, occupational health nurses, chemists, laboratory supervisors, and other staff who may have the need to monitor worker exposure. Participants will be given extensive lecture and hands-on time with direct reading air sampling devices. Cost: $350.

For more information about these and other available courses, contact the Deep South Center for Occupational Health and Safety, University of Alabama, School of Public Health, Birmingham, Alabama 35294-2010; telephone (205) 934-7178; fax (205) 975-7179.

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The University of Utah Offers Courses in Hazardous Waste Management

The University of Utah EXIT Rocky Mountain Center of Occupational and Environmental Health, Salt Lake City, is offering the following courses:

Asbestos Abatement for Contractors and Supervisors, October 16-20, 1995. This is a 5-day course for persons involved in removing asbestos-containing materials or supervising abatement projects in accordance with EPA, state, and local regulations. Cost: $650.

Hazardous Substances Management and Response: Health and Safety Issues, November 15-17, 1995. This 3-day course meets the 24-hour requirements under OSHA standard 1910.120 for professionals who manage or oversee hazardous materials projects. Cost: $425.

For more information about these and other available courses, contact The Rocky Mountain Center for Occupational and Environmental Health, Building 512, University of Utah, Salt Lake City, Utah 84112; telephone (801) 581-5710.

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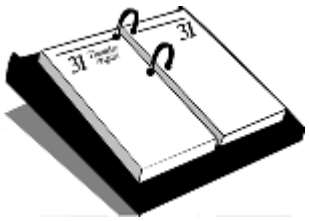

CALENDAR OF EVENTS

August/September

August 31-September 2, 1995: 1995 Pediatric Trends, Seattle, Washington. *Contact:* Melissa Singleton, American Academy of Pediatrics, 141 Northwest Point Boulevard, P.O. Box 927, Elk Grove, Illinois 60009-0927; telephone (708) 981-4321; fax (708) 228-5059.

September 9-13, 1995: National Association of Community Health Centers Inc. (NACHC) 26th Annual Community Health Conference, Chicago, Illinois. *Contact:* NACHC, 1330 New Hampshire Avenue, NW, Suite 122, Washington, DC 20036; (202) 659-8008; fax (202) 659-8519.

September 19-22, 1995: Safeguarding Workers' Health - 17th Annual Health Conference, Tucson, Arizona. *Contact:* Jeffrey T. Miller, Lead Industries Association Inc., 19th Floor, 295 Madison Avenue, New York, New York 10017; telephone (212) 578-4750.

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October/November

October 9-13, 1995: Sixth Annual Occupational Health Nursing Symposium, St. Paul, Minnesota. *Contact:* Chris Western, Midwest Center for Occupational Health and Safety, 640 Jackson Street, St. Paul, Minnesota 55101; telephone (612) 221-1228.

October 23-27, 1995: American College of Occupational and Environmental Medicine's 47th Annual State-of-the-Art Conference (Theme: Developing the Scientific Basis for Practice and Policy in Occupational and

Environmental Medicine), Seattle, Washington. *Contact:* ACOEM, 55 W. Seegers Rd., Arlington Heights, Illinois 60005; telephone (708) 228-6850; fax (708) 228-1856.

October 29-November 2, 1995: American Public Health Association Annual Conference, San Diego, California. *Contact:* APHA, 1015 15th Street, NW, Washington, DC 20005; telephone (202) 789-5600; fax (202) 789-5661.

October 30-31, 1995: 12th Annual Utah Conference on Safety and Industrial Hygiene, Salt Lake City, Utah. *Contact:* The Rocky Mountain Center for Occupational and Environmental Health, Building 512, University of Utah, Salt Lake City, Utah 84112; telephone (801) 581-5710; fax (801) 585-5275.

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Send comments or questions to atsdr-hsph@cdc.gov.

This page last updated on October 24, 2003

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