From the Laboratory to the Community: A Commitment to Outreach

The NIEHS currently sponsors 19 Environmental Health Sciences (EHS) Centers, five Marine and Fresh Water Biomedical Sciences (MFBS)Centers, and three developmental centers through a grants program designed to promote a multidisciplinary approach to studying environmental health sciences. Each center in the program is required to support community outreach and education programs (COEP) (see table) in order to translate research results in the environmental health sciences into knowledge that can be applied directly to human health.

Speaking at the 52nd Center Directors' Meeting in December 1996, NIEHS Director Kenneth Olden stressed the importance of the COEPs: "We have made a compelling case for what we do as important for human health. That information [obtained from basic research] is only useful if we can improve the quality of the lives of the American people. That is what outreach is all about."

The COEPs provide a mechanism of bidirectional communication between community residents and scientists, all of whom have a vested interest in improving environmental health. As NIEHS COEP Coordinator Sharon Beard explains, "One of the most important aspects of the COEPs is to build true relationships with [community] organizations and with other centers." For example, one research collaboration, between the developmental center at Columbia University and the community-based West Harlem Environmental Action (WHEAct), has yielded remarkable results, according to Cecil Corbin-Mark, program director of WHEAct. This collaboration allows the community "to feel that they can have an impact in the research being conducted," Corbin-Mark says. The partnership has obtained grants from the NIEHS and the EPA for further community-based environmental health research.

Although only a small sample of the broad range of programs offered through the COEPs, outreach programs like the ones highlighted below allow community members to become more familiar with basic concepts and issues in environmental health sciences. Says Lorrette Picciano-Hanson, director of the Rural Coalition, an organization of approximately 90 community-based groups representing low-income rural communities and people of color, COEP programs at the EHS centers provide community organizations access to the best experts in the environmental health arena, as well as a mechanism by which the results of environmental health research can have a direct effect on communities.

Continuing Professional Education

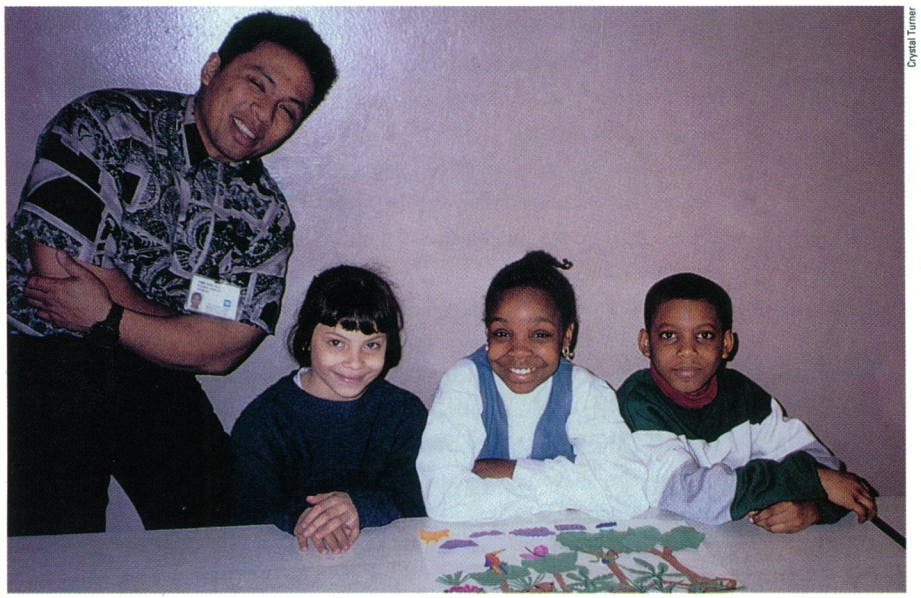
Most medical school curricula devote only a small amount of time to environmental and occupational health sciences; thus, there is a need for continuing education in these disciplines. To address this issue, the developmental center at the University of Louisville in Kentucky is working with the UL School of Medicine to provide research experience in environmental health and to develop a curriculum in this area for medical students and residents. A similar effort is the two-year occupational medicine residency program that has been offered by the Mount Sinai EHS center for the past 17 years. Residents of this program play a substantive role in occupational health research projects during their two-year tenure. They frequently serve as codirectors of pilot research projects or clinical field surveys in which they are responsible for all aspects of a study project including design, collection, analysis, and reporting. Center investigators supervise the residents closely to assure high quality of research and to simultaneously enhance the residents' knowledge and skills.

Disease Prevention Programs

Part of the mission of the NIEHS is to enhance treatment and prevention of human diseases caused by environmental factors. In fulfillment of this goal, the MFBS center at the University of Miami in Florida has established a network of clinicians, public health personnel, and scientists specializing in marine toxins to provide clinical referrals, case reporting, and access to information for the general public. The center also collaborates with the South Florida Poison Control Center to maintain a multilingual hotline for information about marine toxins and diseases. These activities foment the close relationship between center investigators and the community and facilitate the delivery of state-of-the-art testing and treatment protocols to the health care facilities where they are needed.

Education

The NIEHS strongly encourages programs that provide environmental health education at the primary, secondary, and college levels, and the development and dissemination of environmental health curriculum materials. For this purpose, the COEP at the University of Medicine and Dentistry of New Jersey (UMDNJ)–Robert Wood Johnson Medical School and Rutgers has developed a new environmental health science curriculum called ToxRAP (Toxicology, Risk Assessment, and Air Pollution) for grades kindergarten through eight. The curriculum uses stories, games, and case studies to guide students through the risk assessment and risk management process. Through the collaborative exchange made possible by the network of NIEHS-supported centers, the UMDNJ center is collaborating with the Southwest EHS center in Tucson, Arizona. It is expected that approximately 1,000 teachers and 50,000



Crystal Turner

Students and teachers. Ramon Rosal (far left), a postdoctoral fellow under an environmental pathology training grant at Mt. Sinai Medical Center, judges a science fair at a local public school.

Luz Claudio

First-hand knowledge. Community residents, environmental health science students, and faculty visit the West Harlem Water Treatment Plant for a close-up view of water health and safety.

students will be reached through this program over the next few years.

The Massachusetts Institute of Technology EHS center, in collaboration with the Massachusetts Corporation for Educational Telecommunications, is using satellite teaching to reach high school students. The program is designed to provide students and teachers with packets of information about a fictitious town where an environmental pollutant is causing illness. Students work to determine the source of the pollutant and the cause of the inhabitants' illnesses. This approach enhances the teaching of concepts in environmental and public health and motivates students to become interested in science by learning about its practical applications.

In addition to these innovative educational tools, centers foster training programs in environmental health sciences research. In these programs, often held in the summer, participants ranging from high school students to visiting professors converge at the various EHS centers to learn about a variety of topics. Many of these programs use a multitiered mentoring system to address the individual research capabilities of a diverse student population. This approach entails having students of various abilities perform tasks appropriate to their level of training within a research team, and valuing each member of the team, whether they are a community resident with limited formal training in environmental health sciences or a postdoctoral fellow. This approach motivates advanced students to serve as mentors and promotes a collaborative atmosphere among participants. Another advantage is that community residents are able to participate in the research process alongside students and faculty members.

Public Awareness Forums and Community Workshops

The Science and Math Investigative Learning Experiences (SMILE) program, in conjunction with the Oregon State University MFBS center, improves the public's understanding of environmental health issues by combining the expertise of the center's scientists with SMILE's existing network of teachers, students, and community residents. SMILE, which began in 1988, reaches over 500 elementary, middle, and high school students in 24 schools encompassing 8 school districts. During programs such as Family Science Nights, center faculty host activities that make attendees aware of environmental topics such as the hazards of household cleaning chemicals. Collaborations between center faculty and established community organizations facilitate the communication of environmentally relevant information by using existing networks to reach community members.

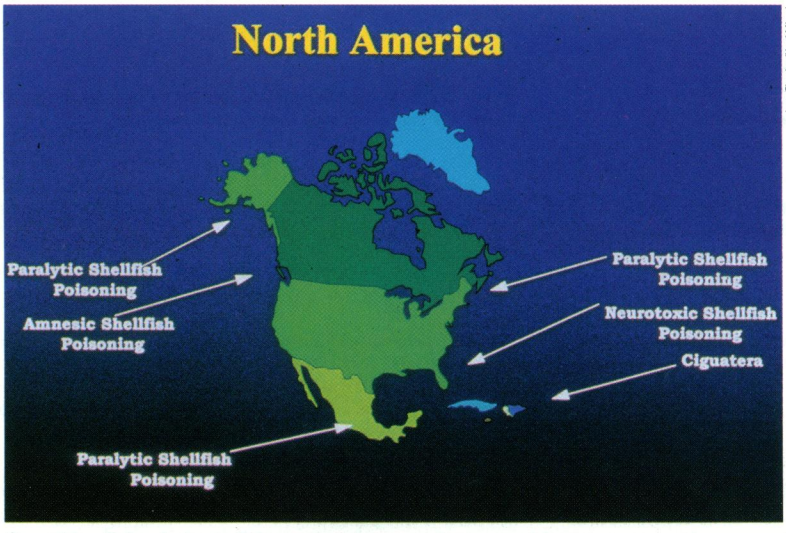
Informational Programs

The EHS centers are moving quickly to use electronic media as a vehicle for community outreach and education. The NIEHS sponsors a World Wide Web site at:http://www.niehs.nih.gov/centers/home.html offering information on COEPs as well as other aspects of the centers program and links to the centers' own home pages.The EHS center at the University of Rochester Medical Center has developed a list server through which subscribers can communicate with each other. The EHS center at the Massachusetts Institute of Technology has developed a similar list server focused on COEP issues. The New York University EHS center Website includes an index of over 110 environmental topics ranging from acid pollution to X-rays. The index items are also linked to other sources of relevant information and to e-mail addresses of faculty members who have expertise in each area. America Online named this site one of the "Best Human Interest Sites on the World Wide Web" in 1996.

As a continuation of the COEP session at last year's center directors meeting, the NIEHS is sponsoring a meeting on 16–17 June 1997 in Research Triangle Park, North Carolina to provide an opportunity for the sharing of information among center programs and the NIEHS on community outreach and education. The meeting will focus on refining and strengthening the NIEHS Center COEPs through presentations from various professional perspectives and a poster session on outreach programs.

Additional information on COEPs and the NIEHS center program can be obtained from COEP Coordinator Sharon Beard or Program Administrator Allen Dearry at 919-541-4500.

Luz Claudio



Lora Fleming/U. of Miami

Something fishy. A rise in fish consumption promotes a need for programs such as one at the University of Miami where environmental health scientists work with health care providers in areas where there are likely to be marine toxin diseases.

NIEHS Community Outreach and Education

CENTERS and COEP DIRECTORS	PROJECTS
Harvard University **Kresge Center for Environmental Health** —Richard Monson	*The Asthma Warriors*–comic book on asthma self-management Minority Undergraduate Internship Visiting Scholar Program
Massachusetts Institute of Technology **Center for Environmental Health Sciences** —Beth Ann Turnquist	Website and brochure–information resources High school teaching in environmental health sciences and satellite teaching Collaboration with Massachusetts Corporation for Educational Telecommunications
Mount Sinai University Medical Center **Environmental Health Sciences Center** —Luz Claudio	New York Partnership for Environmental Justice–community education Short-term Training for Minority Students–undergraduate internships Superfund Environmental Education Program–training for high school students Environmental/Occupational Medicine Academic Award–residency program
New York University Medical Center **Institute of Environmental Medicine** —George Thurston	Environmental Reference Page–http://charlotte.med.nyu.edu/outreach/ Summer Intern Program–training and education Seminars for science writers
Oregon State University **Environmental Health Sciences Center** —Nancy I. Kerkvliet	National Pesticide Telecommunications Network–information on pesticides Extension Toxicology Network (EXTOXNET)–electronic database on toxicants Apprenticeships in Science and Engineering–students at the secondary level Science Education Partnerships–scientists interact with K–12 teachers Science and Math Investigative Learning Experiences (SMILE)–education for ages 4–12
University of Arizona **Southwest Environmental Health Sciences Center** —Charlene McQueen	Minority Undergraduate Research Program Toxicology, Risk Assessment, and Air Pollution (ToxRAP)–network for development of model training Integrating High School Science Through Toxicology–lectures on research Environmental Health Education Project–lecture series for general audience
University of California at Berkeley **Environmental Health Sciences Center** —Harold J. Helbock	Salmonella Test Resource–high school students and teacher training Carcinogenic Potency Database–information on toxic chemicals *Wellness Letter*–newsletter published by the School of Public Health
University of California at Davis **Center for Environmental Health Sciences** —Mohammed A. Al-Bayati	UC-Davis/Department of Defense Environmental Education Program
University of Cincinnati **Center for Environmental Genetics** —M. Kathryn Brown and Eula Bingham	*Interface: Genes and the Environment*–newsletter Lower Price Hill Environmental Leadership Coalition–partnership with the Urban Appalachian Council to promote environmental justice Teaching Environmental Health: Science/Risks/Choices (1996–2000)–teacher training Collaboration with the Rural Coalition's National Advisory Board on Community-Responsive Partners for Environmental Health Pilot Project Program on community education
University of Iowa **Environmental Health Sciences Center** —Chris Peterson Brus	Fogarty International Center–training program for scientists from Central Europe Health Tips–worker education on pesticide exposures
University of Medicine and Dentistry of New Jersey **Center for Environmental Health Sciences** —Audrey Gotsch	Community-Responsive Partners for Environmental Health–community education BENZENE 95–international symposium Collaboration with the Rural Coalition Curriculum Development Program—K–8 education on environmental health
University of Rochester School of Medicine and Dentistry **Environmental Health Sciences Center** —Alice Armstrong Rahill	Summer Undergraduate Research Fellowship–training for high school students Summer Research Fellowships–training for minority medical students Perinatal Environmental and Drug Consultation Service–telephone consultation Collaboration with the Center for Environmental Information–ECOllaborative, a service for resolving environmental disputes
University of Southern California **Southern California Environmental Health Sciences Center** —Cindy Woo	Collaboration with The Walt Disney Company–educational programming Communities for a Better Environment–a community health foundation Teacher Summer Science Academy Program–middle school teacher training Collaboration with the Institute for Health Promotion and Disease Prevention Research–community-based interventions for disease prevention

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CENTERS and COEP DIRECTORS	PROJECTS
The University of Texas Galveston Medical Branch —Marvin S. Legator	Community Symptom Survey–standardized survey tool
University of Texas, Smithville Center for Research on Environmental Disease —Robert M. Chamberlain	Tours for Educators–laboratory tours for science teachers Student internships–training for high school and college students Environmental Health Community Speakers Bureau
University of Washington Environmental Health Sciences Center —Richard A. Fenske	Environmental Risk Information Service–development of community partnerships Master Home Environmentalist Program–assessment of home environments Risky Business: Living in a Chemical World–high school curriculum
Vanderbilt University Center in Molecular Toxicology —Timothy J. Meredith	National Poison Prevention Week for Environmental Awareness–community presentations School-based environmental health and safety education program for K–12 schools
Wayne State University Center for Molecular and Cellular Toxicology with Human Applications —Mary Oriold Dereski	Chemicals in My World—K–12 curriculum on environmental health sciences Get the Lead Out–program for teachers Lab Coats and Microscopes–science summer camp for young community residents
Duke University Marine and Freshwater Biomedical Sciences Center —Jerry Tulis	*ENVIRONS*–quarterly newsletter K–12 Teacher Enhancement Program
Oregon State University Marine and Freshwater Biomedical Sciences Center —George S. Bailey (center director)	Biology Colloquium on Diet and Cancer Prevention–professional education
University of Miami Marine and Freshwater Biomedical Sciences Center —Lora E. Fleming	Marine Seafood Toxin Poison Control Hotline–(1-888-232-8635) Marine Seafood Toxin Information Hotline–(1-305-361-4738) High School Teachers Training Program
University of Wisconsin–Milwaukee Marine/Freshwater Biomedical Center —David H. Petering	Teacher Enhancement in Environmental Health Science Education–middle school science teacher training Short-term Training for Minority College Students in Toxicology Molecular Techniques in Aquatic Biomedical Research–training in molecular biology for scientists
The Mount Desert Island Biological Laboratory Center for Membrane Toxicity Studies —Barbara Kent	National Science Foundation Young Scholars Program–high school student training Future Science: Scientists of Tomorrow at Work Today–presentations by high school and college students Bioactive Compounds From the Sea and Their Impact on Human Health Symposia
Columbia School of Public Health Center for Environmental Health in Harlem —Mary Northridge	Asthma Awareness Month in Manhattan–symposia for community residents Collaboration with community-based organizations on environmental justice
Tulane University Center for Bioenvironmental Research —Beverly Wright and Katherine Davey	Xavier University Deep South Center for Environmental Justice Mississippi River Avatar Program–community leadership program Student Exchange Program–interuniversity program Environmental Concepts Made Easy (ECME)– internet site–http://www.mcl.tulane.edu/ECME/default.html
University of Louisville Center for Environmental Health Sciences —P.A. Quiggins	Rubbertown Community Advisory Council–industry advisory committee Residential Surveillance Project–assess environmental exposures of Louisville residents
Johns Hopkins University Environmental Health Sciences Center —James Zabora	Maryland Public Television–develop educational materials for children on environmental health issues