



National Institute of Environmental Health Sciences

Environmental Health Sciences as an Integrative Context for Learning

Grantee Meeting
February 26-27, 2003

Hosted by the
Rosenstiel School of Marine
and Atmospheric Sciences,
University of Miami

Miami, Florida



INTRODUCTION: K-12 EDUCATION AT THE NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES

The National Institute of Environmental Health Sciences supports an array of environmental health science education activities through a variety of extramural and intramural programs. The purpose of these initiatives is to help individuals better understand the effects and risks to human health from physical and social factors. These initiatives stem from the NIEHS' recognition that the lay community requires greater knowledge about environmental health issues as they are increasingly challenged to make decisions on the risks and benefits of agents that permeate society. In addition, the NIEHS sees these programs as an investment in the future of our society and the environmental health sciences.

Extramurally, there are two programs with a major emphasis in K-12 environmental health science education. NIEHS began the first program, *K-12 Environmental Health Science Education*, in 1993. There have been three initiatives within the program. The first, Instructional Material Development, supported the creation of instructional materials at all grade levels. These projects provided instructional materials that can be infused into existing curricula and to develop interesting and challenging materials for students. Grantees used a variety of media, appropriate for the intended audience, to address such topics as cell biology, toxicology, risk assessment, scientific process and methodology, and indoor and outdoor air pollution.

The second initiative, Teacher Enhancement and Development, supported projects to develop and implement teacher enhancement and development activities. The goals of this program were to: 1) enhance dissemination, utilization, and effective implementation of materials and curricula pertaining to environmental health science; 2) provide teachers with the disciplinary and pedagogical skills necessary for teaching environmental health science; and 3) link researchers in environmental health science with teachers at the K-12 level. Grantees within this initiative have trained more than 7,500 teachers around the U.S. to incorporate environmental health science education into their classroom.

Finally, the third, and most innovative initiative, Environmental Health Sciences as an Integrative Context for Learning, encourages partnerships between environmental health scientists, educators, and state departments of education with the goal of integrating environmental health sciences within a variety of curricula (e.g. geography, history, math, art). The purpose is to improve overall academic performance as well as enhance students' comprehension of and interest in environmental health sciences.

The second major extramural program, *Community Outreach and Education Program (COEP)*, is a component of the NIEHS Core Center Program – a program that seeks to enhance environmental health science research by supporting research facilities at research intensive universities. The purpose of COEP is to translate basic research emanating from the Centers into knowledge that can be applied to public health. COEPs perform this work in a variety of manners, including K-12 environmental health science education. COEPs

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develop educational curriculum in a vast array of topics, including, basic toxicology, carcinogenesis, nutrition, and cell biology.

Intramurally, NIEHS has two principal programs in K-12 environmental health science education. The first, **BEST** (Bridging Education Science and Technology), is a partnership between NIEHS and local Durham, North Carolina Public schools. The program introduces high school students, predominantly underrepresented minority and economically disadvantaged, to standard molecular biological research technologies used in biological/biomedical science. This program has resulted in motivating students and enhancing their interest in science.

The second program, **Summers of Discovery**, recruits a diversity of secondary and post-secondary students, and teachers to work at NIEHS for a summer. This 10-12 week program exposes students and teachers to environmentally based biomedical research by placing them in a NIEHS research laboratory with one-on-one mentoring under an Institute scientist. In addition to receiving hands-on research experience in the laboratory, participants attend weekly seminars and discussion groups, and presentations by other students.

More information on these programs can be found on the NIEHS web site at:
<http://www.niehs.nih.gov/dert/programs/translat/k12/k12educa.htm>

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PURPOSE OF MEETING

There are two major themes at the third annual EHSIC grantee meeting, (1) dissemination and integration of curriculum and (2) risk communication.

Several exciting new environmental health science curricula are being or have been developed during the first three years of the EHSIC program. Developing a strategy for dissemination of these curricula is critical component of all of EHSIC projects. During the first day of the meeting, participants will:

- discuss utilization of extra/non-traditional classroom educational facilities for teaching environmental health science concepts using EHSIC curricula,
- describe protocols employed for recruiting school districts, schools, administrators and individual teachers to implement these curricula in classrooms, and
- identify successful strategies, unanticipated difficulties and how these difficulties were resolved.

Global warming, bioterrorism, and the threat of war are included in the milieu of circumstances our world and nation face that threaten to broaden the scope of environmental health issues that we encounter. Having accepted the challenge and charge of providing grade/age-appropriate environmental health science educational materials, we, as scientists and educators, have an obligation to K-12 students to provide them with information that we believe are relevant environmental health science issues and to be responsive to student concerns about the world we inhabit. During the second day, participants will:

- discuss curriculum development in global warming and bioterrorism as they relate to environmental and public health concerns,
- identify what is enough information to educate and inform K-12 students without creating undue alarm and stress, and
- highlight how EHSIC projects provide appropriate levels of information on current and emerging environmental health science issues and risks without painting overly pessimistic pictures and traumatizing students.

In addition to addressing these topics, grantees will:

- Share their accomplishments during a poster session,
- Visit a high school where the Miami project's curricula, AMBIENT, is being used,
- Exchange their experiences about curriculum implementation (challenges and successes), and
- Plan for a workshop, "*Introduction to NIEHS Interdisciplinary Environmental Health Projects*," at the March National Science Teacher Association conference.

Environmental Health Sciences as an Integrative Context for Learning Annual Grantee Meeting

February 26 - 27, 2003

Hosted by
NIEHS Marine and Freshwater Biomedical Sciences Center
Rosenstiel School of Marine and Atmospheric Science (RSMAS)
University of Miami

Wednesday, February 26, 2003

RSMAS, University of Miami
Seminar Room

7:15 am	Load bus at Sonesta Hotel
7:30 am	Bus Departs for RSMAS
7:45 am	Registration and Breakfast at RSMAS
8:30 am	Welcome Patrick Walsh Rosenstiel School of Marine and Atmospheric Science Opening Remarks Frederick L. Tyson National Institute of Environmental Health Sciences Session I : Dissemination
9:00 am	Innovative Dissemination Strategies: Panel Presentations Sharon Perlman, Envirothon Joe Cytacki, Museum of Discovery and Science Gus Loret de Mola, Miami-Dade County Public Schools Cyd Heyliger-Browne, Miami-Dade County Public Schools Alison Austin, National Audubon Society Valerie Taylor, Many Voices: One Community
10:00 am	Strategies for Implementation of EHSIC Curricula Panel Discussion Members of Bowling Green, Rochester, & Washington projects Session II: AMBIENT School Visit
11:30 am	Bus departs RSMAS for American High School
12:15-2:30 pm	Visit American High School
3:30 pm	Return to Sonesta Hotel

Session III: Poster Session & Reception (Sonesta Hotel)

3:30 pm	NSTA Workshop Planning <i>(For EHSIC grantees participating at NSTA workshop)</i>
4:30 pm	Break / Poster Set-up
5:00 pm	Poster Session/Reception at Sonesta Hotel
7:00 pm	Dinner at Sonesta Hotel
8:00 pm	Adjourn for the evening

Thursday, February 27, 2003

Sonesta Hotel
Grove Ballroom B

Session IV: K-12 Risk Communication

8:00 am	Curriculum Development in Global Climate Change and Effects on Human Health Roberta Johnson, Director of Education, National Center for Atmospheric Research
9:00 am	Curriculum Development in Bioterrorism Samantha Messier University of Colorado
10:00 am	Break
10:15 am	Alarm vs. Awareness: Building K-12 Understanding of Environmental Health Risk April Naturale, Statewide Director Project Liberty New York State Office of Mental Health
10:45 am	K-12 Risk Communication Panel Discussion Larry Johnson, Nancy Moreno, Lisa Pitman
11:30 am	Discussion with Ken Olden Director, National Institute of Environmental Health Sciences
12:30 pm ☼	Adjourn

DISSEMINATION STRATEGIES

SESSION ABSTRACT

Several exciting new environmental health science curricula are being or have been developed during the first three years of the EHSIC program. A critical component of all of EHSIC projects is the strategy for dissemination of these curricula. The purpose of this session is two-fold: the first is to discuss utilization of extra/non-traditional classroom educational facilities for teaching environmental health science concepts using EHSIC curricula. The second segment of the session will feature an interactive dialog, led by our panelists, that describes protocols employed for recruiting school districts, schools, administrators and individual teachers to implement these curricula in classrooms. Panelists will describe successful strategies, unanticipated difficulties and how these difficulties were resolved.

INNOVATIVE DISSEMINATION STRATEGIES: PANEL PRESENTATIONS

PANEL ABSTRACT

Panelists will describe their programs and highlight how their work facilitates the dissemination of environmental and public health curriculum.

ENVIROTHON

SHARON PERLMAN

The mission of the Canon **Envirothon** is to develop knowledgeable, skilled and dedicated citizens who are willing to work towards achieving and maintaining a natural balance between the quality of life and the quality of the environment. This is accomplished by developing in young people an understanding of the principles and practices of resource management and ecology and through practice dealing with complex resource management decisions. The Canon Envirothon program fosters a working partnership with resource professionals and the general public to promote goals of environmental education in grades 9-12 and recognizing students who achieve excellence in environmental and natural resource knowledge and skills.

Ms. Sharon Perlman will speak to meeting participants about the environmental health station in the Envirothon competition.

MUSEUM OF DISCOVERY AND SCIENCE

JOE CYTACKI

The mission of the Museum of Discover and Science is to promote and increase the understanding and appreciation of science in children and adults through entertaining interaction with educational exhibits, programs and films.

Mr. Cytacki will highlight how the Fort Lauderdale Museum of Discovery and Science has helped promote awareness of environmental health to students in the state of Florida. He will also discuss his collaborations with the University of Miami and will talk about past and future museum exhibits that are related to environmental health issues.

WLRN

GUS LORET DE MOLA
CYD HEYLIGER-BROWNE

Dr. Loret de Mola and Ms. Heyliger-Browne are District Science Supervisors with Miami-Dade County Public Schools. They will speak on some of the non-traditional educational opportunities offered to M-DCPS students. One such opportunity is WLRN, a public television station licensed to the Miami-Dade County Public School System. They will discuss past examples of producing free local programming and future opportunities in developing shows and scheduling guests for 12 half-hour programs.

Ms. Heyliger-Browne will also describe her collaboration with Ms. Alison Austin, of the National Audubon Society and Ms. Valerie Taylor of Many Voices:One Community. Their partnership brought a *Youth Forum on Environmental Issues* to students.

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YOUTH FORUM ON ENVIRONMENTAL ISSUES

**ALISON AUSTIN
VALERIE TAYLOR**

The purpose of the *Youth Forum on Environmental Issues* was to have high school students from urban schools become involved in a community discussion concerning environmental justice issues. The AMBIENT curriculum was used as a springboard in generating questions used in student discussions.

Ms. Austin, Ms. Taylor, and Ms. Heyliger-Browne will discuss how the partnerships were formed, how the AMBIENT curriculum was used and the positive outcomes resulting from its incorporation into the forum.

K-12 RISK COMMUNICATION

SESSION ABSTRACT

Environmental Health, in its broadest sense, comprises those aspects of human health, disease, and injury that are determined or influenced by factors in the environment. This includes not only the study of the direct pathological effects of various chemical, physical, and biological agents, but also the effects on health of the broad physical and social environment, which includes housing, urban development, land-use and transportation, industry, and agriculture. ([Healthy People 2010](#))

Global warming, bioterrorism, the threat of war are included in the milieu of circumstances our world and nation face that threaten to broaden the scope of environmental health issues that we face. Having accepted the challenge and charge of providing grade/age-appropriate environmental health science educational materials, there is an obligation to K-12 students to provide them with information that we, as scientists and educators, feel are relevant environmental health science issues and also be responsive to their concerns about the world we inhabit. Thus, our first two discussions will focus on curriculum development in two areas that address emerging environmental health issues and are responsive to concerns students have regarding the current state of the world. We will then focus on actual K-12 risk communication because the intent of environmental health science education is to educate and develop informed students who will ultimately become informed consumers and policy advocates/makers. The challenges discussed during this session will focus on what is enough information to educate and inform without creating undue alarm and stress. Panelists will lead an interactive discussion on how EHSIC projects provide appropriate levels of information on current and emerging environmental health science issues and risks without painting overly pessimistic pictures and traumatizing students.

CURRICULUM IN GLOBAL CHANGE AND EFFECTS ON HUMAN HEALTH

PRESENTER'S BIOSKETCH

Roberta Johnson wears two hats, as a research scientist and as director of UCAR's Office of Education and Outreach (OEO). She came to Boulder from the University of Michigan in July 2000.

Her training is in atmospheric science, earth science, and geophysics in general, as well as space science. She received degrees from the University of California, Los Angeles, in the Earth and Space Science Department. Her bachelor's, master's, and Ph.D. are all in geophysics and space physics. She focused on solar-terrestrial relations and did her dissertation on the interactions of the upper atmosphere with the magnetosphere and ionosphere. After leaving UCLA with her degree in 1987, she went to SRI in Menlo Park and worked there as a staff scientist for two years until she went to Michigan in 1989.

At Michigan she was a research scientist in the Space Physics Research Laboratory and her focus was on upper-atmospheric dynamics, specifically the impact of geomagnetic activity in high-latitude regions on the earth's upper atmosphere, ionosphere and magnetosphere.

On the education side, she was the director of the Michigan Space Grant Consortium and also ran a large Web development program called Windows to the Universe. The Michigan consortium is one of 52 around the country funded by NASA. Their purpose is to develop programs in education, outreach, and research initiation that serve NASA's mission -- anything from developing public events to creating education programs for teachers to funding junior researchers who are trying to get a new research program started. The consortium had a budget of about \$500,000 a year that it distributed through about 150 different program awards and fellowships across the state.

CURRICULUM DEVELOPMENT IN BIOTERRORISM

PRESENTER'S BIOSKETCH

Dr. Samantha Messier is the Associate Director of the Biological Sciences Initiative (BSI) at the University of Colorado at Boulder. She conducts professional development workshops for teachers that emphasize current advances in biological research while providing hands-on activities for the classroom. She helps to train and advise graduate students serving on the BSI Science Squad, a team that takes hands-on presentations to area classrooms. Additionally, she co-teaches a biology course for non-majors that is specifically designed for students pursuing elementary education certification.

Most recently, Dr. Messier is a recipient of a NIH-Science Education Partnership Award. As director of the CardioHEADS Program, she works with middle school teachers and students in three Denver Public Schools on developing cardiovascular health curricula.

ALARM VS. AWARENESS: BUILDING K-12 UNDERSTANDING OF ENVIRONMENTAL HEALTH RISK

PRESENTER'S BIOSKETCH

Currently, Ms. Naturale holds the position as the Statewide Director of Project Liberty, the New York State Office of Mental Health's response to those affected by the World Trade Center attacks of September 11, 2001. This program is funded by FEMA (Federal Emergency Management Agency) in consultation with the Center for Mental Health Services.

She is a Ph.D. candidate in Clinical Social Work at New York University and hold a Master's Degree in Social Work from Columbia University.

Ms. Naturale a Certified Social Worker in New York and a Licensed Clinical Social Worker in New Jersey. She also holds a nursing home administrator's license in New Jersey.

Ms. Naturale has spent the past eighteen years in the health/mental health field in clinical practice, program development and Administration. She has developed programs for patients and families with medical and mental illnesses and has operated a psychiatric hospital with outpatient clinics serving individuals and families with emotional distress, mental illness and concerns for the elderly. She is trained in crisis intervention, disaster response, critical incident stress debriefing, special investigations, hypnosis and psychodynamic psychotherapy. She maintains a private practice in Montclair, N.J.

