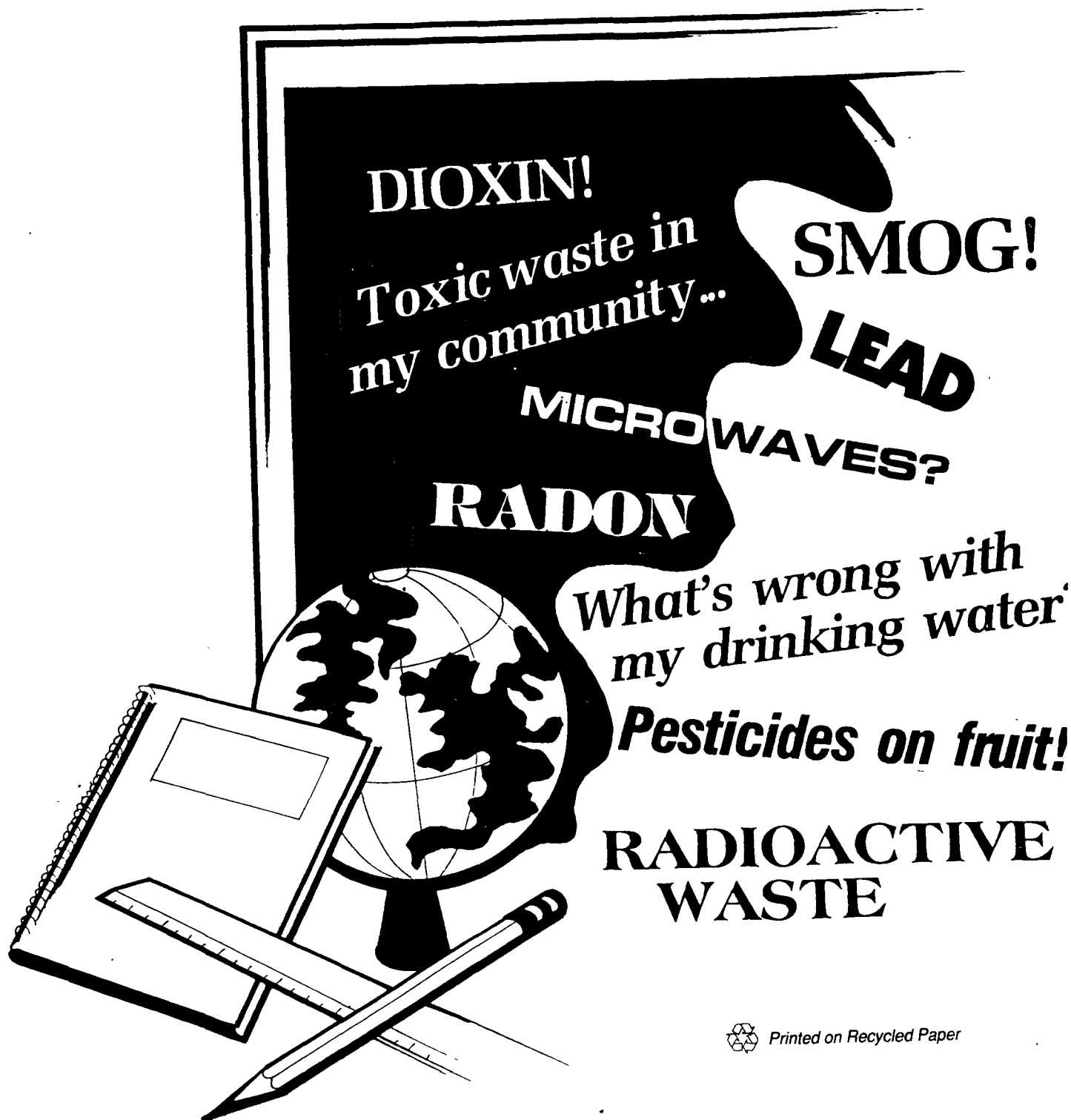


Environmental Health Risk Education For Youth

A Resource Manual



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Environmental Health Risk Education For Youth: A Resource Manual

**Background Document Commissioned for the
National Conference on
Environmental Health Risk Education for Youth
Washington, D.C.,
September, 1990**

**Sponsored by Interagency Task Force on
Environmental Cancer and Heart and Lung Disease**

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1. INTRODUCTION

This manual is intended for school administrators, teachers, curriculum developers, students, parents, government officials, corporate officials, civic leaders, and others interested in environmental health risk education. It describes programs, curricula, classroom materials, dissemination networks, and other resources that provide students with the knowledge and critical thinking skills necessary to evaluate environmental health risk information.

Background to the Manual

In recent years, citizens in the United States have been inundated with information about environmental hazards and their potential health risks. Lead in drinking water, ALAR on apples, asbestos and radon in schools, and emissions from automobiles are but a few examples. It is often hard to make sense out of all of this information and the decisions that are based on it.

For young people, the information may be especially confusing. What does it all mean? Why do we often receive conflicting information from different groups? How accurate and reliable is the information?

Many schools now include some form of environmental education in their curricula. Yet few of these programs provide students with the knowledge and skills to understand and critically evaluate information on risks to their health posed by environmental factors. Such "environmental health risk literacy" is essential to help students make sound personal and social choices. Environmental health risk education can also help make scientific information concepts personally relevant to students and increase their interest in science, engineering, and mathematics.

"Environmental Health Risk Education for Youth" was held in Washington, D.C. to explore these issues in greater depth. The conference was attended by over 100 school administrators, teachers, students academics, government officials, corporate officials, and civic leaders.

This manual was commissioned as a background document for the conference. The Eastern Research Group provided assistance in preparing the manual. The full conference proceedings will be published in 1991. Information about how to obtain copies of the conference proceedings can be obtained by writing to:

Maria Pavlova, M.D., Ph.D.
Region II
U.S. Environmental Protection Agency
26 Federal Plaza, Room 737
New York, New York 10278

All the resources listed in this manual provide support to teachers and administrators in integrating environmental health risk education issues and concepts into current curricula. These materials can be included in health, biology, chemistry, mathematics, social science, and language arts classes. The focus is on materials that are appropriate for secondary school students (grades 7 through 12), although particularly relevant materials targeted to elementary grades are also included.

There is, of course, a great deal of additional information that may be useful to environmental health educators beside the resources listed in this manual. If you are aware of materials that you think should be included in the next edition, please let us know about them. You can write to Dr. Pavlova at the address mentioned previously.

How This Manual Is Organized

Few existing resource materials are wholly and specifically relevant to environmental health risk education. While every attempt has been made to identify those that are and include them in this Manual, some resources may have been overlooked. In addition to highly relevant materials, the manual describes resources (e.g., those concerning hazardous waste) that were judged to be related to environmental health risk and of potential value as resources for a program in this area.

The manual is organized into three major sections. The first section describes programs, curricula, classroom materials, audiovisual Materials, public information materials, and services that focus in teaching environmental health concepts and the processes used to establish and quantify risk.

The second section briefly describes networks that may be valuable for disseminating resource materials.

The third section is an annotated bibliography of programs that have a broader focus on environmental or health education. Subject matter and format vary, but all are potentially useful resources in teaching students to critically evaluate the potential health risk of harmful substances found in our air, water, and soil.

2. RESOURCES

Academy of Applied Science

98 Washington Street
Concord, NH 03301

Doris A. Ellis, Director
Junior Science & Humanities Symposia

Nonprofit

(603) 228-4520
FAX (603) 228-4730

Organization Description

The Academy of Applied Science (AAS) is a private, nonprofit organization with educational and scientific purposes and a major commitment to innovation; the organization was incorporated in 1983. The goals of the AAS are to stimulate invention, innovation, and other creative endeavors; promote the interest of youth in the applied sciences; recognize and reward significant innovative achievements; disseminate results of research and studies; and provide a forum for exploration, discussion, and debate of issues affecting the scientific, legal, and educational communities.

Services Provided

In association with the U.S. Army Research Office, the AAS administers regional and national programs providing opportunities for and recognizing the achievement of high school students who participate in sponsored youth science programs. AAS programs cover a broad range of subject matter in science, engineering, and mathematics; students interested in environmental health topics can participate in any of these programs.

■ The Junior Science and Humanities Symposia (JSHS) annually reaches over 10,000 high school students and their teachers to encourage and reward achievement in the sciences, engineering, and mathematics. The symposia are held in cooperation with universities and science museums and offer participants opportunities to meet with noted scientists and engineers, to observe research in progress, and to exchange scientific and technical knowledge. Students compete in JSHS by presenting the results of their original research. Winners of regional competitions progress to national competitions and national winners attend the London Youth International Science Fortnight; at both regional and national levels, winners may become eligible for AAS and university scholarships.

■ The Research and Engineering Apprenticeship Program (REAP) was founded in 1980 to encourage socially and economically disadvantaged students to pursue careers in science and technology. Approximately 110 high school students are identified to participate in ongoing research projects at 65 universities throughout the country. A university mentor is assigned to the student apprentice to direct his/her research progress. Ongoing studies of REAP students indicate that 95 percent enter college, with 80 percent pursuing science and math curricula.

■ The Center for Education and Development (CED) of the AAS serves as a regional educational resource center, offering enrichment programs for students and professional development courses for teachers and administrators in grades K-12. Most programs and activities are planned in collaboration with representatives from New Hampshire school districts, the university community, State Departments of Education, and the community.

Information. For more information about programs administered by AAS, contact Doris Ellis at the above address.

Agency for Toxic Substances and Disease Registry

Federal agency

Mailstop E33
1600 Clifton Road, N.E.
Atlanta, Georgia 30333

Max Lum, Ed.D., Director, Div. Health Education, ATSDR
Patricia Price, D.O., Medical Officer
Susanne Simon, M.D.,
Health Education Specialist

(404) 639-0730

Organization Description

The Agency for Toxic Substances and Disease Registry (ATSDR) is part of the Public Health Service within the U.S. Department of Health and Human Services. Established by Congress to serve as health advisors at hazardous waste sites, ATSDR's mission is to prevent or mitigate adverse human health effects and diminished quality of life resulting from exposure to hazardous substances in the environment. ATSDR usually works with health care providers; state, county, and city health agencies; and other federal agencies.

Materials Available

■ **Toxicological Profiles.** Profiles have been developed for hazardous substances found at the National Priorities List (NPL) sites that pose a significant potential threat to human health. Each profile contains toxicological and health effects information for the substance. A Public Health Statement, found at the beginning of each profile, provides nontechnical information about a

hazardous substance for teachers, students, health professionals, and the public. The profiles are available through EPA regional and state libraries, and the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161, (800) 336-4700 or (703) 487-4650.

■ **Restrictions Imposed on Contaminated Sites: A Status of State Actions.** ATSDR/National Governors' Association report is a survey of sites closed or restricted to the public because of toxic contamination. It describes the affected environmental media (i.e., soil, ground water, and surface water), types of contaminants, and nature of restrictions at 1705 sites nationwide. Copies can be obtained by contacting the Policy Analyst, National Governors' Association, 444 North Capitol St., Washington, D.C. 20001.

■ **Case Studies in Environmental Medicine** (for health professionals). This series of educational monographs for physicians, available through the Division of Health Education, is designed to guide physicians through the diagnosis, treatment, and surveillance of persons exposed to hazardous substances. Continuing medical education credits are offered.

■ **The Nature and Extent of Lead Poisoning in Children in the United States: A Report to Congress.** This report, completed in 1988, contains findings that clearly indicate a continuing health concern that too many children are exposed to too much lead. A summary of the report may be obtained through the Division of Health Education, ATSDR. The full report may be purchased through NTIS (address and phone number above).

American Chemical Society

1155 16th Street, N.W.
Washington, DC 20036

Professional society

Michael Shea, Education Division, Room 814

Nancy Todd, Government Relations and Science Policy, Room 330

(202) 872-6383

(202) 872-4476

Organization Description

The American Chemical Society (ACS) is an international membership organization of more than 140,000 chemical scientists and engineers. ACS is a key provider of chemical information to industry, government, and academia. One of ACS's major commitments is to foster chemistry education from elementary to graduate and professional levels. ACS has developed texts, newsletters, and magazines and conducts workshops and symposia to improve chemical education. ACS also publishes books and professional journals, including *Chemical Research in Toxicology*, directed at expert audiences. In addition, ACS develops public outreach materials and media shows on current chemistry issues, and provides technical advice to the government.

Materials Provided

The American Chemical Society produces a number of educational materials, including a high school chemistry text entitled *Chemistry in the Community* (ChemCom) that focuses on the relationship between chemistry and society; *Chem Matters* a newsletter for high school chemistry students, and *WonderScience*, a magazine aimed at 4th through 6th graders. One unit of the ChemCom text focuses specifically on the health aspects of chemistry, including environmental issues. ACS also produces informational pamphlets on current environmental chemistry issues.

■ **Chemistry and Health.** Grades 9-12. Published in 1988. This unit is part of the ChemCom text. It covers toxins, personal and public health risks, pain-relieving chemicals, cleanliness, and hygiene. Students learn about the importance of identifying sources of information and weighing risks against benefits. Learning strategies include class simulations, role playing, experiential exercises, and team experimentation.

■ **Chemical Risk Primer.** General public, appropriate for grades 10-12. Pamphlet. Published in 1984. This pamphlet outlines the considerations involved in assessing risk posed by chemicals found in foods and the environment. The pamphlet covers many issues important to the process of characterizing risk, including chemical properties and their relation to biological processes, estimating toxicity and exposure, the importance of probability and severity, public perception of risk, and determining what constitutes an acceptable risk to individuals and society.

■ **Chemical Risk - Personal Decisions.** General public, appropriate for grades 10-12. Pamphlet. Published in 1989. This pamphlet provides a background for making decisions about information on the potential health effects of chemicals found in food, households, and the environment. It covers basic safeguards, regulation of chemicals, sources of exposure, types of health effects, and where to find additional information. Three case studies -- radon, lead in drinking water, and pesticides -- outline decision-making scenarios.

■ **Information Pamphlets.** General public, appropriate for grades 10-12. Additional information pamphlets provide an overview of current environmental issues, including their health aspects. Pamphlet topics include:

- pesticides
- hazardous waste management
- ground water
- global climate change
- acid rain
- biotechnology

■ **Chemical Risk Communication - Preparing for Community Interest in Chemical Release Data.** Local public health officials and other local leaders to whom citizens and news media turn with questions and concerns, as well as anyone involved in explaining environmental pollution, exposures, and risks. Pamphlet. Published in 1988. This pamphlet presents a basic understanding of risk assessment concepts and risk communication techniques that can be used as a framework when responding to questions from the public about releases of chemicals to the environment. The pamphlet provides a framework for making data relevant (including sections on understanding chemical risk, predicting chemical toxicity and exposure, use of government information to determine and explain chemical risk) and guidelines for communicating about risk.

Ordering Information. To obtain copies of any of the information pamphlets, contact Nancy Todd. For additional information on ACS educational products, including ChemCom, contact Michael Shea at the above address and phone number.

American Lung Association

1740 Broadway
New York, NY 10019-4374

Nonprofit

Roger W. Schmidt
Manager, School Health Education

(212) 315-8728
FAX (212) 265-5642

Organization Description

The American Lung Association (ALA) is the oldest voluntary health agency in the United States. Founded in 1904 to combat tuberculosis, the ALA's 131 affiliates throughout the country are dedicated to the conquest of lung disease and the promotion of lung health. ALA's public health education and research programs are supported by donations to Christmas Seals, by other voluntary contributions, and government and corporate contributions.

Materials and Services Provided

The ALA concerns itself with five major areas of health education programming:

- Lung disease care and education, including pediatric and adult lung disease issues
- Occupational lung disease
- Air pollution and lung health
- Smoking and health
- School and community health education

The ALA was one of the voluntary health organizations involved in developing the *Growing Healthy K-7* curriculum produced with government funds and is now under the sponsorship of the National Center for Health Education. ALA publications form a part of this curriculum (see separate NCHE

entry). In addition, the ALA offers print and audiovisual materials that can be used as background information for environmental health classes, including:

■ **Air Pollution -- The Facts (#6223).** 16 mm film, 27 min.; produced in 1976. This film is an examination of the health effects of air pollution, as presented by 12 medical experts, scientists, and engineers, covering the entire nation. It is a hard-hitting, fact-stating report.

■ **Charlie Brown Clears the Air (#6232).** 16 mm film, 6.5 min.; produced in 1979. This animated film for children and adults features the Charlie Brown cast of characters and dramatizes environmental problems and solutions. Use of this film is restricted to noncommercial and non-TV presentation.

■ **ROX, SOX, NOX - The Anatomy of Air Pollution (#6212).** 16 mm color film, 12-1/4 min., produced in 1977, \$76.30. Test-tube demonstrations show dramatically the complex cause/effect relationships in air pollution. Script available.

■ **Brochures and pamphlets, including:**

- Facts About Air Pollution and Your Health (#0172C)
- Air Pollution Episodes -- A Guide for Health Departments & Physicians (#0002C)
- Health Costs of Air Pollution (#0900)

- Health Effects and Sources of Indoor Air Pollution (#0857C)

- Facts About Radon: The Health Risk Indoors (#0174C)

- Toxic Chemicals in the Air: Indoors and Outdoors (#1004C)

- Your Health and Air Pollution (#3520C)

- Health Hazards in the Arts and Crafts (#1168C)

- Facts Sheets on indoor air pollutants (including asbestos, biological agents, formaldehyde, household products, radon, and second-hand smoke) are also available.

- Air Pollution in Your Home

- Home Indoor Air Quality Checklist

Information. For additional information or a full list of ALA publications, contact your local American Lung Association or Roger Schmidt at the above address and phone number.

**The American Society
of Mechanical Engineers**
Center for Research and Technology Development
1825 K Street, NW, Suite 218
Washington, DC 20006-1202
Howard E. Clark, Director of Research
for Operations

Professional association

(202) 785-3756

FAX (202) 429-9417

**Organization
Information**

The American Society of Mechanical Engineers (ASME) is a professional organization that has conducted research since 1909. The Center for Research and Technology Development provides support services and funding for research projects involving mechanical engineering and related technologies. Several task forces of the Center work to advance the development of emerging technologies, provide leadership for interdisciplinary research, organize and run workshops and symposia, and disseminate technical information.

**Materials and
Services Provided**

Many of the ASME task forces have prepared reports, books, and other publications on issues related to the goals of the ASME. Most of these are technical documents that are not suitable for high school curricula. However, the Task Force on Industrial and Municipal Wastes developed a resource document entitled *Hazardous Waste Incineration* that is appropriate for interested lay people. Representatives from the Air Pollution Control

Association, the American Institute of Chemical Engineers, and the U.S. Environmental Protection Agency collaborated with the ASME to prepare this book. This book may be particularly useful for teachers or students wishing to undertake a special project on this issue.

■ **Hazardous Waste Incineration: A Resource Document (#I00266).** 192 pages (\$40 list price, \$20 members); published in 1990.

This book discusses technical and risk issues associated with hazardous waste incineration; a question-and-answer format makes this book particularly accessible to lay people. In addition to health risks associated with hazardous waste incineration, topics include incineration technology, performance of hazardous waste incineration systems, and regulatory programs.

Ordering Information. To order *Hazardous Waste Incineration* by mail, send payment referencing Order No. I00266 to the address noted above. To order by phone, call the ASME at 1-800-843-2763.

Biological Sciences Curriculum Study

830 North Tejon Street, Suite 405
Colorado Springs, CO 80903

Joseph D. McInerney, Director
Rodger Bybee, Associate Director

Nonprofit

(719) 578-1136
FAX (719) 578-9126

Organization Description

The Biological Sciences Curriculum Study (BSCS) is a nonprofit educational research and development institution affiliated with The Colorado College. Since being founded in 1958, the BSCS has prided itself on a high standard of excellence in curriculum development for all levels of schooling -- kindergarten through college -- in science, health, computer literacy, and interdisciplinary areas. At the BSCS, curriculum development is an iterative process. Each new program undergoes several stages of development. The program is planned, written, field-tested, evaluated, and revised, after which it is produced in a commercially available edition.

Materials Provided

The BSCS has developed a number of curricula designed to develop critical thinking skills and awareness of contemporary technological, scientific, and social issues. In addition to curricula, the BSCS offers a wide variety of texts and modular units in many biological disciplines. Curricula and modular programs related to environmental health risk assessment include:

■ **Science for Life and Living: Integrating Science, Technology, and Health.** Curriculum for grades K-6; to be published commercially in 1991. This curriculum is based on the following major concepts and skills:

- observation and description (kindergarten)
- order and organization (grade 1)

- change and measurement (grade 2)
- patterns and prediction (grade 3)
- systems and analysis (grade 4)
- transformation and investigation (grade 5)
- balance and decisions (grade 6)

The activities in this program are designed to incorporate reading, writing, and mathematics skills development while teaching children about scientific phenomena, technological innovations, and health practices that relate to the world around them. Children develop skills in graphics, measuring, and mathematics, as well as the social skills necessary to work cooperatively in investigating and thinking about their experiences. The curriculum also encourages children to write down their own thoughts as they complete tasks. Program materials include student and teacher guides as well as ancillary materials required for implementation.

■ **Science and Technology - Investigating Human Dimensions.** Four-unit curriculum appropriate for grades 5-9; currently available to field-test studies. In 1989, the BSCS received funding from the National Science Foundation (NSF) to develop a four-unit science and technology curriculum for middle school students entitled *Science and Technology: Investigating Human Dimensions*. Each of the four units in the curriculum will last about 6 to 9 weeks. Teachers will substitute these units for the science curriculum they currently use. This program will cover three grade levels (appropriate for grades 5 to 9) and include the following materials:

- *Student book* consisting of four units incorporating concepts and skills related to science, technology, and personal/social issues (including health)

- *Teacher's guides* including teaching strategies, background reading, recommendations for educational software, supplementary activities, and assessment tools

- *Implementation materials* describing the philosophy and rationale of the program, as well as practical issues related to managing materials.

- *Supplementary materials* providing information about safety, the care and maintenance of animals, cultures, equipment, etc.

The BSCS schedules staff development workshops with each field-test school. In most cases, field-test teachers attend a training session before the field test begins, as well as approximately three to six training sessions throughout the year. The BSCS is looking for additional field-test sites for this project. If you are interested in this opportunity or would like to receive additional information on the project as it becomes available, write to BSCS (Attn: MSP) at the above address.

■ **Science, Technology, and Society (Introductory Module).** 56 pages, \$5.90; Teacher's Guide, \$12.90; published in 1984. Activities identify relationships between science and technology, society and technology, and science and society. The module discusses technology assessment as a societal attempt to investigate rationally the actual and potential impacts of technological innovation; the module also introduces a model for decision-making at the personal and public levels.

■ **Investigating the Human Environment: Land Use.** 106 pages, \$6.90; Teacher's Guide, \$12.90; published in 1984. This module was designed as a 7-week instructional module for high school and community college students; it uses case studies and independent investigations by students to emphasize the transdisciplinary nature of land use questions. It also includes sections on public opinion, sources of bias, and decision-making.

■ **Biological Science: An Ecological Approach, Sixth Edition.** 1024 pages, \$27.90; Teacher's Edition \$34.90.

This ecologically oriented biology text aims to teach students the implications of the ecological connections of all things. It encourages a scientific viewpoint and helps students understand that the study of biology can no longer be restricted to biological knowledge, but also must be interpreted in a social context. It is designed for the middle 60% (in interest and ability) of 10th grade students, but includes options and resources for the teacher with students who want more to do, students who struggle with science, or students who fall between these extremes.

Also available to go with the text are:

- **Student Study Guide.** 153 pages, \$5.90; Teachers Edition \$14.90. A resource book of learning-skills activities keyed to chapters in the text and designed to strengthen students' abilities in communication, science, and general cognitive skills.

- **Teacher's Resource Book.** 384 pages, \$34.90, with four general sections: additional laboratory investigation; blackline masters for classroom use; additional background material related to certain investigations in the student book; and a 2,000-question test bank.

- **The Natural Selection,** the BSCS newsletter, provides educators with up-to-date information on current issues in science education as well as status reports on activities underway at BSCS. It is free and is published twice a year—in the spring and the fall.

■ **Biological Science: Patterns and Processes, Third Edition.** 296 pages, \$13.90; Teacher's Edition \$29.90.

This high school science text is designed for unsuccessful learners—students with below average reading abilities, students who are unable to organize facts into conceptual wholes, and students who lack interest in school tasks. The text encourages a high degree of teacher-student interaction. The reading level has been kept as low as is consistent with presenting accurate information. The readings and activities are short and require active student involvement. The text includes a variety of activities to keep students attentive.

A resource book of test items based on the activities in the Teacher's Guide is available without charge by request of adopters.

Ordering Information. Most BSCS programs are available by contacting the commercial publisher directly: Kendall/Hunt Publishing Company, 2460 Kerper Boulevard, P.O. Box 539, Dubuque, IA 52001; (800) 258-5622. Contact the BSCS for information on implementing materials or to become a curriculum field-test site.

Brookhaven National Laboratory

Office of Educational Programs
Building 490
Upton, NY 11973

Government laboratory

Dr. Donald J. Metz, Head,
Office of Educational Programs

(516) 282-3054

Organization Description

Brookhaven National Laboratory (BNL) is a multidisciplinary national laboratory carrying out basic and applied research in physics, biomedical and environmental sciences, and energy technology. BNL is part of a consortium of national laboratories and is managed by the Associated Universities Inc. under contract with the U.S. Department of Energy. In addition to its research objectives, BNL conducts educational outreach programs for students and teachers.

Services Provided

Brookhaven National Laboratory hosts several science competitions and internships and conducts numerous courses for students from kindergarten through graduate level, and for teachers. Their common objective is to encourage an interest in science and recognize capable students' and teachers' abilities and achievements. BNL's focus is broader than environmental health sciences; however, students interested in environmental health will find a wealth of information and encouragement. The following is a partial list of courses and competitions:

■ **Health Physics Trainee Program.** Master's Degree students in Health Physics. A 10-week summer program provides actual experience in a broad variety of health physics applications not normally encountered in the general campus-based course of study.

■ **Nuclear Chemistry Summer School.** Undergraduate junior or senior chemistry majors. An intensive 6-week course of study includes lectures and laboratory

exercises. The course deals with properties of radioactive substances, nuclear structure, stability and reactions, and applications including medicine and environmental control.

■ **DOE Teacher Research Associate.** Secondary science and mathematics teachers. A limited number of summer research appointments are awarded to highly talented teachers to provide professional scientific and engineering experience and promote the transfer of this knowledge to the classroom. Science teachers, including teachers of medical science, biology, and chemistry, may participate. Historically, a large fraction of these appointments have been in environmental or health science.

■ **Inservice Course in Environmental Science for High School Teachers.** A one-semester course in Environmental Science is offered for high school teachers, at a level commensurate with a 3-hour graduate course. BNL's earlier inservice courses ("Energy: Its Forms and Uses" and "Radiation and Humans") have touched on topics such as risk assessment and waste management. "Environmental Science" describes scientific fundamentals of this multidisciplinary field and discusses their practical consequences. Participating teachers identify possible applications of what they have learned. Relevant followup materials are then distributed through an "alumni association."

■ **Community Summer Science Program.** Grades 11-12. Morning lectures and afternoon internships prepare students to pursue science careers. Topics covered include physics, chemistry and medicine, and biology and cancer therapy, among others. Afternoon internships provide students

an opportunity to work with BNL scientists on various research topics, including environmental and health science.

■ **DOE High School Honors Research Program.** Grades 9-12. Outstanding students are nominated by their Governor to attend honors programs at one of six national laboratories. At BNL, students learn about the National Synchrotron Light Source (NSLS) facility. NSLS has health and environmental applications including developing innovative cancer therapies, evaluating exposure to lead, and converting air pollutants to nontoxic materials. Students attend lectures, perform experiments as part of a team, and present their research results to their peers.

■ **Summer Apprenticeship Research Program for Minorities.** Grades 9 and 10 minority students. Teachers nominate minority students from Suffolk County, NY, who demonstrate ability in the sciences. Students study physics, biology and medicine, chemistry and computers, and energy and engineering, combining classroom instruction with visits to laboratory facilities. This program includes an Inner City Outreach Program. An additional unit in environmental science has been added in conjunction with the EEOM program (see below).

■ **Minority High School Research Apprenticeship Program.** Grades 11-12. Highly qualified students who have previously participated in the *Summer Apprenticeship Research Program* work one on one with BNL scientists involved in health research. The program encourages participants to pursue careers in the health field.

■ **Environmental Education Outreach to Minorities (EEOM).** NYC high school students and teachers, in cooperation with NYS Liberty Partnerships Program at Bronx Community College. This activity offers summer teacher training both in environmental science and in science enrichment programs for minority students. Participating teachers then apply this training to develop and teach a weekly enrichment course in environmental science, as part of a special program for NYC high school students at Bronx Community College.

■ **High School Co-op Program & Youth on Campus Program.** Grades 10-12. Part-time employment opportunities at BNL prepare students for the work world. Work sites are carefully selected and students are counseled and closely monitored. The Co-op Program runs throughout the school year and the Youth on Campus Program runs throughout the summer.

■ **Elementary School Science Fair.** Grades K-6. BNL hosts an annual science fair for Suffolk County, NY, to encourage children's interest in science. Students may submit environmental health projects in the competition.

Information. For information on any of the above programs, contact Dr. Metz at BNL.

**The Center for Coastal and
Environmental Studies**
Institute for Science, Technology,
and Social Science Education
Rutgers, The State University of New Jersey
New Brunswick, New Jersey

Dr. Lou Iozzi
Program Developer

Academic organization

(201) 932-9465
FAX (908) 932-8880

**Organization
Information**

The Center for Coastal and Environmental Studies is a cooperative effort of the three campuses of Rutgers University and many of its academic departments. It was founded to take advantage of the research, education, and public service opportunities afforded by the 325 miles of New Jersey shoreline. The Center conducts research on coastal resources, estuarine dynamics, fish and shellfish, the New Jersey Pine Barrens, and surface and ground water problems. The Center is dedicated to disseminating knowledge gained through this research via education and training curricula in classroom and public settings. The Center is also a founding member of the Association of Ecosystem Research Centers (AERC); AERC encourages cooperation in research and training among ecosystems centers and works to strengthen ecosystems research and its application.

Materials Provided

The Center identified areas of educational concern based on their own research and critical priorities established by the nation's leading scientists and futurists. The result was *Preparing for Tomorrow's World* (PFTW), a curriculum that was approved by the U.S. Department of Education's Joint Dissemination Review Panel for inclusion in the National Diffusion Network. The curriculum is now serving some 6,000 students in 100 school districts in 12 states. PFTW creates exciting problem-solving situations centered around critical

contemporary and future issues. The curriculum employs simulations, role plays, and discussions to develop logical reasoning ability, critical analysis skills, and decision-making/problem-solving skills, and a broader knowledge base. Modules that may be of particular relevance to environmental health risk studies include:

■ **People and Environmental Changes.** Module for grades 7-12; published in 1982. This module uses critical reading and analysis, simulations and role plays, and small and large group discussions to examine how people have modified the environment, both intentionally and inadvertently. Topics discussed include weather modification, dam construction, desert creation, erosion, and air pollution. The module includes teacher and student guides, as well as worksheets.

■ **Environmental Dilemmas: Critical Decisions for Society.** Module for grades 10-12; published in 1982. This module uses case studies involving specific dilemmas to highlight environmental concerns, their present and potential implications, and alternative choices. The 12 topic areas include natural resources management, allocation of scarce resources, radiation hazards, toxic chemicals, energy resources, and others. The module includes teacher and student guides, as well as worksheets.

■ **DECISIONS – For Today and Tomorrow.** Second edition, published in 1990. This is a "sampler" of activities drawn from other PFTW modules and provides the teacher with a cross-discipline introduction to Science-Technology-Society studies. Topics included in the *Decisions* module include the nature of technology, decision-making in a high-tech world, energy, environment, and others. Activities include the application of decision-making models, scenario writing, debates, futures forecasting, simulations, and role playing. The module includes teacher and student guides, as well as worksheets.

Information. For ordering information or information about teacher training programs, contact the publisher: Sopris West Inc., 1140 Boston Avenue, Longmont, CO 80501, (303) 651-2829. For technical advice during program implementation, contact Dr. Lou Iozzi, the program developer, at the above address and phone number.

Chemical Education for Public Understanding Program

University of California
Lawrence Hall of Science
Berkeley, CA 94720

Herbert Thier, Ph.D., Director
Ronald C. Laugen, Ph.D., Assistant Director

Private, nonprofit

(415) 642-8718

Organization Description

Chemical Education for Public Understanding Program (CEPUP) works to develop greater public awareness, knowledge, and understanding about chemicals and how they influence our lives. To accomplish this, CEPUP develops activity-based instructional materials and programs highlighting chemical concepts and processes associated with current societal issues. CEPUP helps students appreciate how chemicals benefit society and encourages responsibility in their use. All CEPUP modules help students learn:

- To ask pertinent questions, obtain evidence, and use this evidence as the basis for making decisions
 - To understand the limitations associated with scientifically obtained evidence
 - To understand the nature of scientific inquiry so that they can participate in formulating effective chemical-related policies and make wise lifestyle choices
- CEPUP does not provide ready-made answers, but encourages students to engage in a process of obtaining evidence, evaluating that evidence, and reaching a reasonable conclusion. CEPUP materials undergo academic review to maintain scientific accuracy and ensure lack of bias. A national network of field test centers pretest CEPUP materials to ensure that they are workable in a classroom setting and effectively convey information.

Materials Provided

Most CEPUP materials are geared towards students in grades 5 to 12. However, CEPUP also has developed programs for use with community and workplace groups. Currently, CEPUP has the following programs available:

■ **CEPUP in the Schools** - middle/junior high grades. This program consists of commercially available module kits that each focus on a specific chemical concept. Modules are designed to be conducted in sequence. Kits include teacher and activity guides, background materials, laboratory supplies, safety information, and evaluation tools. The following kits are currently available:

— **Chemical Survey & Solutions and Pollution.** Students respond to a questionnaire on their perceptions about chemicals, then apply principles of acid-base chemistry to solve water pollution problems. Complete module \$150.00; printed material only \$19.95.

— **Determining Threshold Limits.** Through experiments students are introduced to the concepts of qualitative and quantitative analysis and learn how chemists analyze samples to determine how much of a chemical is present. A simulated animal toxicity experiment introduces students to the need for animal studies and the limitations of extrapolating animal data to humans. Complete module \$130.00; printed material only \$19.95.

— **Risk Comparison.** This unit introduces students to the concepts of probability, risk, risk comparison, and the importance of these risk concepts in decision-making. Complete module \$20.50

— **Investigating Groundwater: The Fruitvale Story.** In this hands-on simulation, students take the roles of community members in trying to decide what to do about a contaminated aquifer feeding the wells in the rural community of Fruitvale. Students learn how to determine the extent and source of contamination and the difficulties of developing solutions. Complete module \$130.00; printed material only \$19.95.

— **Toxic Waste: A Teaching Simulation.** In this unit students define toxic waste and investigate how hazardous and toxic materials can be stabilized and rendered harmless. Students explore how precipitation, oxidation-reduction, and single replacement reactions can be used in waste reduction and treatment processes. Complete module \$179.95; 16 CEPUP trays \$37.25; printed material only \$19.95.

Other modules are under development and should be available during the 1990-91 school year:

- **Plastics in Our Lives.** Students investigate and compare common types of plastics, model properties and behavior of plastics, and synthesize two plastic polymers (slime and bouncy putty). Both useful and problematic aspects of plastics are discussed. Students also consider issues associated with disposal and recycling of plastics.

- **Investigating Chemical Processes: Your Island Factory.** Is there such a thing as a clean industry? Students simulate the production of gypsum from limestone and explore the concepts of raw materials, products, and waste.

- **Experiencing Scientific Research: An Air Pollution Study.** Students collect samples of carbon soot in the air, analyze the samples and conduct experiments to investigate how air is polluted and how pollution is studied.

CEPUP materials do not require extensive teacher training; however, training is available to interested teachers and leaders through *CEPUP National Fellowships*. Please contact CEPUP for additional information.

■ **Chemicals, Health, Environment, and Me (CHEM)** - grades 5 and 6. This series of 10 units is designed to enrich existing science instruction and can be taught by teachers who are not science specialists. Each unit has two or more activities focused on a single concept. CHEM helps students understand:

- the nature of chemicals, how they interact with people and the environment;

- how to collect, process, and analyze information; and

- the relevance of science and mathematics to their lives.

CHEM materials provide additional ideas on how to incorporate the science concepts in mathematics, social science, and language arts classes. Teachers interested in receiving training by attending funded CHEM workshops should contact Linda McFall or Londie Peterson at CEPUP.

■ **Living With Chemicals.** Community groups. This workshop series introduces community groups to chemical concepts and their relation to society through activities adapted from other CEPUP educational materials.

■ **Chemicals in Society.** Community and workplace groups. This activity-based program is geared toward community and workplace groups. Adapted from educational materials, these materials emphasize chemical concepts associated with societal issues.

Ordering Information. CEPUP modules can be ordered from several commercial sources:

Addison-Wesley Publishing Company
2725 Sand Hill Road
Menlo Park, CA 94025
(800) 447-226

Fisher Scientific Company
Educational Materials Division
4901 West LeMoyne Avenue
Chicago, IL. 60651
(800) 621-4769

Lab-Aids, Inc.
249 Trade Zone Drive
Ronkonkoma, NY 11779
(516) 737-1133

Sargent-Welch Scientific Company
7300 North Linder Avenue
Skokie, IL 60077
(800) 727-4368

For additional information regarding CEPUP products, contact CEPUP directly.

Chemical Industry Council of Illinois

9801 W. Higgins Road, Suite 480
Rosemont, IL 60018

Nonprofit trade association

Dave Satterfield, Executive Director

(708) 823-4020

Organization Description

The Chemical Industry Council of Illinois (CICI) is a nonprofit trade association of chemical manufacturers, distributors, and sales organizations operating in the state of Illinois. The primary goal of the CICI is to promote a better public understanding of the chemical industry through a variety of activities.

Materials and Services Provided

The CICI has a very active education program, which includes a number of chemistry educational activities:

■ **Career Conference** - An annual career day for some 3,000 high school chemistry students held at the Museum of Science and Industry. The conference includes a career demo, industry exhibits, college displays, and a Chemagic show.

■ **Teachers Workshop** - An annual 1/2 day program for some 100 dedicated high school chemistry teachers held each fall. The workshop focuses on industrial applications of chemistry, safety, waste handling, and new ideas in chemistry education.

■ **Summer Employment Program** - This program places high school chemistry teachers in summer positions with member companies that will allow them to have some first-hand industrial experience in chemistry that they can take back to the classroom and share with their students.

■ **Minority Chemistry Program** - This is a joint effort between CICI and the Principal Scholars Program to reach out to minority students and encourage them to study chemistry through a regular monthly program of industrial and career presentations as well as plant tours.

■ **Scholarships/Awards** - Some six scholarships and awards are provided each year to outstanding high school and undergraduate chemistry students. Savings bond awards also are made each year to the top chemistry entries at the Illinois State Science Fair at both junior high and high school levels. The CICI Davidson Award is presented annually for excellence in chemistry education at the high school level.

■ **Career Panels** - Upon request, employees from member companies go out and visit the classroom to talk about and demonstrate the importance of the chemical industry and the many career opportunities available in the industry.

■ **Teachers Resource Guide** - A book has been prepared listing the various resources available to teachers through the chemical industry of Illinois as a supplement to their regular curriculum. The guide includes a variety of tours, speakers, videos, and publications.

■ **Chemagic Tour** - This is a new endeavor set to kick off in early 1991. It is a joint effort between CICI and Illinois State University to provide a chemical magic show in four to five cities in Illinois each year. The plan is to have three shows in each location: a morning program for junior high, an afternoon session for high school students, and an evening program for the community at large.

Additional Information. For more information on these programs please contact Bridget Weir, Chairman of the CICI Education Committee at Stepan Company, 22 Frontage Road, Northfield, IL 60093, (708) 501-2234.

Chemical Manufacturers Association
2501 M Street, N.W.
Washington, DC 20037

Nonprofit trade association

**John Slavick, Director of Issue
and Member Communications**

(202) 887-1210
FAX (202) 887-1237

**Organization
Description**

The Chemical Manufacturers Association (CMA) is a nonprofit trade association of United States and Canadian member companies. Through various publications and activities CMA works to increase awareness and understanding of the role chemicals play in society.

Materials Provided

CMA produces some materials that cover environmental health issues that can be adapted for use in high school classes. These include:

■ **Chemecology.** This newsletter for high school teachers covers many chemistry related issues, including health and safety, and the role of chemicals in society.

■ **Risk Communication, Risk Statistics, and Risk Comparisons.** A manual directed at plant managers on risk communication issues. The manual provides a good overview of important considerations in communicating sensitive risk information to employees or the public. This is fairly technical, but could be used with advanced high school students who have some background in environmental health risk.

■ **Catalyst Awards.** CMA recognizes exceptional chemistry and chemical engineering educators from the United States and Canada each year. High school, and two and four year teachers who exhibit dedication to science instruction and the ability to motivate students to careers in science are honored.

Additional Information. For information on the publications or awards, please contact John Slavick at the above address and phone number.

Chevron Chemical Company

6001 Bollinger Canyon Road
San Ramon, CA 94583

Chemical manufacturer

Lynn Maddox

(415) 842-5764

Organization Description

Chevron Chemical Company is a diversified, worldwide manufacturer and supplier of chemical products.

Materials and Services Provided

Chevron Chemical Company is involved in a variety of educational outreach programs, both at their headquarters and at their field locations. Some of the main programs include:

■ Major funding and Advisory Board involvement for the Chemical Education for Public Understanding Program (CEPUP). CEPUP develops experience-based modules for use with middle/junior high and high school science and social studies students throughout the nation. A CEPUP module provides 10 to 20 class periods of teaching materials designed to help teachers accomplish current local and statewide goals for their science programs, while introducing societal issues involved in the use of chemicals. (See separate entry in this resource manual for more information on CEPUP.) We are looking into the possibility of having Chevron Chemical employees trained to present these modules in local schools.

■ Support and major funding for CHEM - Chemicals, Health, Environment and Me - is designed to demystify sixth-grade science through classroom experiments dealing with current societal problems. In the long run, the project aims to establish a better informed public and increase the number of students who pursue a science-related career.

■ Major funding for "Family Science", a national outreach program designed to teach science skills by having children and parents learn and enjoy science together. The program seeks to increase the study of science by students in kindergarten through 8th grade, particularly among female and minority students, although it is by no means limited. The program consists of a series of four to six classes for parents and their children to be held at convenient locations during after-school hours. Family involvement is the key to Family Science. Employees have served as role models and will be training Chevron Chemical parents to hold sessions in their schools. Other Chevron operating company employees in southern California have already trained some of their employees to run their own sessions.

■ IISME - Industry Initiatives for Science and Math Education is a link between industry and teachers, focused on improving the quality of high school science and mathematics instruction and motivating students in science and math study. IISME brings bay area high school teachers into industry and research lab environments during the summer to increase their knowledge of emerging technologies. Sponsors identify industry mentors to guide teacher fellows in their technical assignments and assist them in developing classroom applications of the industry experience. Fellows can then make their classroom instruction more relevant to the needs of industry, its future employees, and the country's technology needs. Chevron Corporation sponsored three teachers in 1990; two were placed in Chevron locations.

Cornell University
Media Distribution Center
7-8 Business and Technology Park
Ithaca, NY 14850

Waste Management Institute
470 Hollister Hall
Ithaca, NY 14853

University

(607) 255-2091
FAX (607) 255-9446

(607) 255-5940

Organization Information

Cornell University produces audiovisual and print resources to help communities solve waste disposal, land use, and water contamination problems. These resources are available through Cornell's Audio Visual Resource Center (Media Distribution Center) or its Waste Management Institute.

Materials and Services Provided

The Media Distribution Center provides audiovisual programs, computer programs, publications, and fact sheets. An Environment and Ecology Catalog of these resources is available through the Media Distribution Center. The computer programs described below may be especially useful in teaching environmental health risk assessment. Note that the computer programs run on IBM PC/XT or true compatibles, and are available on 5-1/4 or 3-1/2 inch disks.

■ **Toxicology and Public Health: Understanding Chemical Exposure.** Single copies, which may be copied for classroom use, include one User's Guide and cost \$120 to nonprofit organizations. Licenses to use the program on any number of machines at one institution include 10 User's Guide and cost \$250 to nonprofit organizations. A 5-1/4 inch demonstration disk is available at no charge. This software is for professionals (including teachers). It is not designed for high school students, but would be appropriate for advanced students in high school. The self-paced instructional program explains the basics of toxicology and the sources of

uncertainty about the risks posed by chemicals in the context of current issues. Topics include common terms, routes of entry, dose response, properties that affect toxicity, carcinogens, regulation of toxic chemicals, and risk assessment and management.

■ **Gerbil 2.0.** \$110. This software program is appropriate for high school teachers and students. It is designed to help the user understand the behavior of water and toxic chemicals with regard to ground-water protection.

■ **EXTOXNET.** Available in printed form (\$25 to \$30 per copy, depending on quantity), on IBM disks (\$60 per set), or on Macintosh disks (\$60 per set). EXTOXNET is intended to convey pesticide-related information in easily understood terms. Information is provided in two types of documents: Pesticide Information Profiles, which describe the health and environmental effects of specific pesticides; and Toxicology Information Briefs, which describe health issues associated with pesticides. Topics include carcinogenicity, ecological effects, and epidemiology.

■ **Disposal of Household Hazardous Waste.** \$20 (rental) or \$49 (sale). This program consists of 79 slides, a script, and a fact sheet, and is designed for high school and college students. It explains why certain household chemicals are hazardous, shows how improper disposal leads to water contamination, and discusses disposal options. The fact sheet provides information on common household chemicals; a bibliography and reference list point to nontoxic alternatives.

■ **Potential for Contamination of Groundwater by Abandoned Landfills: The Use of Air Photos as an Assessment Tool.** \$20 (rental) or \$60 (sale). This 18-minute video, intended for high school and adult audiences, shows how to obtain information from aerial photographs in order to assess potential ground-water contamination by abandoned landfills. (Also available on slides.)

The Waste Management Institute has compiled a list of solid and hazardous waste curricula appropriate for students K-12. Copies of the Youth Solid Waste Educational Materials List are available through the Waste Management Institute at the address and phone number listed above. The list provides ordering information for these curricula. Programs of interest include:

■ **A-way with Waste: A Waste Management Curriculum for Schools,** second edition (workbook for teachers, grades K-12).

■ **Waste: Choices for Communities** (booklet).

■ **New Jersey Environmental Education Week materials** (workbook for teachers, grades 1-12).

■ **Long Island Water Resources: A Curriculum Activities Guide** (workbook for teachers, grades 7-12).

Ordering Information. Media Distribution Center orders for less than \$10 must be prepaid; VISA or MasterCard will be accepted.

The Dow Chemical Company

2020 Willard H. Dow Center
Midland, Michigan 48674

Chemical manufacturer

Jennifer Drake, Health and
Environmental Sciences Communications
Catherine Maxey, Research and Development Communications

(517) 636-4975
(517) 636-2474

Organization Description

The Dow Chemical Company is a diversified, worldwide manufacturer and supplier of more than 2,000 products, including chemicals and performance products, plastics, hydrocarbons and energy, and consumer specialties - which include agricultural products, consumer products, and pharmaceuticals.

Materials and Services Provided

The Dow Chemical Company and its divisions produce printed materials and audiovisual aids that cover environmental health risk, waste management, and recycling issues that may be adapted for classroom use. These include:

■ **Two Paths With One Destination - Protecting the Environment.** Grades 7-12, 8 pages. This booklet describes the functions of Dow's Environmental Toxicology and Chemistry Research Laboratories. The environmental toxicology groups examine the potential for Dow products to affect the environment and the environmental chemistry research groups determine how these products change when exposed to the environment. (Form No. GC 233-00045 8/90).

■ **How Much is Too Much?** Grades 10-12. 16 minute videotape or 16mm film and film guide. This video addresses the science of toxicology and determining acceptable risk. It introduces such terms as toxicity threshold and safe levels of exposure.

(Form No. 233-00046 [film guide], 233-00047 [16mm film], 233-00048 [VHS]).

■ **Who's Responsible For This Mess?** Grades 7-12, 16 pages. This booklet describes the responsibility everyone must take to safely handle municipal solid waste. It describes what is currently being done to dispose of waste and how we may effectively use source reduction, recycling, incineration, and landfills to dispose of waste. (Form No. 304-206-690X)

■ **Life Is In The Balance.** Grades 9-12, 21 pages. This booklet helps teach how to analyze risks and benefits. It describes how to assess risks and benefits and shows how to gain the most benefit while reducing the amount of risk. The booklet goes into more depth on life issues, such as environmental factors, cancer, and the impact of rapidly growing technology. (Form No. 233-00034-1189TBG)

■ **Plastic: A Renewable Resource.** Grades K-12, 8 pages. Plastic is the material of choice for many industries because it is versatile, durable, cost saving, and easy to produce. Plastic is a wise choice environmentally, because it is reusable, recyclable, and energy efficient. This booklet describes the current use of plastics in products such as plastic bottles, football helmets, car parts, foam trays and hamburger holders, kidneys, veins, heart valves, artificial limbs, and toys and sports equipment. (Form No. 304-00248-490)

■ **Recycle: It's as Easy as a Walk in the Park.** Grades K-6. This brochure describes how everyone can help keep their parks clean by placing garbage in garbage cans and recyclable products,

such as aluminum, plastic, and glass, into the recycled plastic garbage cans. It describes what the recycled plastic is used for and why everyone needs to recycle. It also includes a word search, maze, and coloring pages that encourage recycling. (Form No. 304-00262-590)

■ **Earth Day: You Can Make a WORLD of Difference.** Grades K-12. This brochure points out ways we as individuals can be more environmentally conscious. It gives helpful hints how to reduce the amount of energy we use, how to reuse products before pitching them, and shows why throwing garbage away in a landfill should be the last resort. (Form No. 236-00059-490)

■ **Traces of Today.** Grades 5-12. 12 minute videotape. This videotape studies landfills since 1100 A.D. Archaeologists have found out a great deal about past cultures from their garbage. The focus then shifts to show what future generations will learn about our society from our garbage. We must conserve and limit our use of landfills. The videotape then describes Dow's efforts in conservation and how communities can protect their environment. (Form No. 304-00-223)

■ **RECYCLE THIS!** Grades 5-12. This is a packet of information and a cassette that is in rap format showing how recycling helps protect the environment, save energy, reduce waste, and conserve resources. Call 1-800-441-4369 and request the RECYCLE THIS! Action Plan.

Additional Information. For more information on Dow's education programs contact Jennifer Drake or Catherine Maxey at the phone numbers listed above.

Education Development Center, Inc.
55 Chapel Street
Newton, MA 02160

Charles Roth
Millie LeBlanc, Manager, Publications Center

International, nonprofit

(800) 225-4276
(617) 969-7100 ext. 215

Organization Description

Education Development Center, Inc. (EDC) is an international, nonprofit research and development center specializing in curriculum reform, technical assistance, and institutional development. EDC stresses active problem solving in all its materials. EDC's three divisions work to build productive, healthy societies through education and cooperative development. The *School and Society Program* is a national program that focuses on health promotion, family and children's issues, developing work skills and careers, and improving schools and colleges. *International Programs* encourage cross-cultural understanding and work to improve education, health, and nutrition in other countries, particularly in the developing world. The *Center for Learning Technology* designs instructional software and video products and conducts research and policy analyses on learning strategies.

Materials Provided

EDC has developed a series of *Teenage Health Teaching Modules* that teach basic health knowledge and skills, and motivate students to improve health conditions in their families and

communities. Developed for health educators, they can also be used in science, social studies, home economics, and English classes. Each module is in the form of a teachers' guide and can be used repeatedly. Several modules focus on environmental health:

■ **Acting to Create a Healthy Environment.** Grades 9-12. #5025
This module demonstrates that pollution of our natural environment has severe consequences for human health. It provides knowledge and skills to enable and encourage students to take an active role in preventing environmental degradation and protecting their health. Students join in the debate over current issues such as acid rain, sewage, toxic wastes, and garbage. Hands-on and simulated exercises engage students and teach them that each person *can* make a difference.

■ **Using New Health Research.** Grades 9-12. #5035
Students glimpse scientists and health researchers at work and learn to link research findings to the decisions people and societies make about health. Considering the probabilities of risk, asking critical questions when evaluating health information, and searching for supporting material at libraries and at local and national health organizations is encouraged.

■ **Improving Health and Safety in the Workplace.** Grades 7-12. #5023
This module introduces students to the potentially dangerous materials and procedures used in factories, offices, and other work places. For adolescents preparing to join the work force, knowledge of how occupational diseases and injuries can occur and how they can be prevented is particularly compelling information.

■ **Health for All.** Grades 9-12. #5050
This module examines the links between poverty, disease, ecology, and economic development throughout the world. Students learn to consider the common aspirations of all people to fulfill basic needs, such as adequate diet, primary health care, and a healthy living environment. In one activity students engage in direct action to promote world health.

Ordering Information. These modules can be obtained by writing to EDC at the above address. Cost per module is \$15.00 plus shipping and handling. Please order by module number.

Environmental Communication Research Program

Cook College
Rutgers, The State University of
New Jersey
Post Office Box 231
New Brunswick, NJ 08903-0231

Peter M. Sandman

Academic organization

(201) 932-8795
FAX (201) 932-7815

Organization Information

The Environmental Communication Research Program is a program of the Agricultural Experiment Station based at Rutgers University. The Program conducts research, provides consulting services, and holds training workshops concerning how to communicate effectively with the public about environmental health issues.

Materials and Services Provided

Most of the materials developed by the Environmental Communication Research Program are targeted to environmental professionals in industry and government who wish to communicate environmental risk information more effectively to nontechnical audiences. Some of these publications might be useful to educators or curriculum developers interested in addressing issues of risk communication.

■ **Explaining Environmental Risk** (Publication #9). 27 pages, \$2.00; 1986. Published by the EPA's Toxic Substances Control Act Assistance Program, this brochure focuses on media coverage and public understanding of environmental risk.

■ **Explaining Risk to Nonexperts** (Publication #30). 5 pages, \$2.00; 1987. This article, reprinted from *Emergency Preparedness Digest*, offers tips for simplifying and personalizing risk information and choosing risk comparisons.

■ **What Does the Public Need to Know About Environmental Risk and How Should the Public Be Told?** (Publication #41). \$9.00; 1989. This publication presents results of a 1989 New Jersey-wide survey comparing the risk education agendas of environmental advocacy groups, educational organizations, government agencies, and companies that have risk education programs targeted at the general public.

■ **Directory of New Jersey Environmental Risk Education Efforts** (Publication #45) \$10.00; 1988. The Directory contains individual descriptions of programs to educate the New Jersey public about environmental risk; it includes efforts by industry, government, academia, professional associations, and the environmental movement.

■ **Nonprint Media.** In addition to producing these and other print materials, researchers associated with the Environmental Communication Research Program often speak publicly about their work. Depending on the circumstances of the particular presentation and the use intended, speech notes, transcripts, or videotapes may be available. When inquiring, please identify as precisely as possible the presentation that interests you and the use you plan to make of it.

Additional Information. For a full publications list or more information about the materials described above, contact Peter Sandman at the above address and phone number.

NOTE: Prices quoted are from the Program's 1990 Publications List. The Program notes that its members are committed to sharing what they are learning about environmental communication, and suggests that individuals and nonprofit organizations wishing to order publications but unable to pay the price quoted should enclose a letter requesting a reduced charge or no charge.

Environmental Hazards Management Institute

10 Newmarket Road

P.O. Box 932

Durham, NH 03824

Private, nonprofit

Chris Duffy, Business Manager
Peter Ohler, Educational Products Division

(603) 868-1496
FAX (603) 868-1547

Organization Description

The Environmental Hazards Management Institute (EHMI) specializes in environmental and regulatory compliance education and assistance. The company provides consulting, training, conference organizing, and evaluation services, and develops educational materials on hazardous waste management issues. The organization chairs a series of national *HazMat* Conferences and edits several hazardous waste management newsletters that provide regulatory interpretation and compliance information to industry and government managers.

Materials Provided

EHMI's Educational Products Division has developed several educational products, two of which focus on issues important to an understanding of environmental health. The educational materials are in a "wheel" format, presenting information in a clear, concise manner at a level suitable for students and the general public.

■ **Water Sense Wheel.** General public, appropriate for grades 7 to 12. This wheel presents clear information on potential drinking water contaminants to help alleviate confusion and misinformation. The information enables students to evaluate the meaning of risk and the role of scientific evidence in evaluating potential risk. Issues covered include sensory clues to the presence of contaminants, causes of water quality problems, federal standards for safe levels of contaminants, potential health effects of chemicals, and treatment options.

■ **Household Hazardous Waste Wheel.** Grades 7 to 9. This educational tool increases awareness of hazardous substances commonly found in homes. It presents information on paints,

household pesticides, auto products, household cleaners, and pool chemicals, including their hazardous ingredients and properties, health effects, how to use, store, and dispose of waste, and suggested alternative products.

Ordering Information. For information on ordering copies of the *Household Hazardous Waste Wheel*, *Water Sense Wheel*, or for further information on the *Recycling Wheel* and *Recycling Book Cover*, contact Peter Ohler at the above number or address.

Environmental and Occupational Health Sciences Institute

675 Hoes Lane
Piscataway, NJ 08854-5635

Audrey R. Gotsch, Dr.P.H., Director
Jan Gottlieb, M.P.H., Resource Center Manager
Lee Lautsen, B.A., Deputy Director, Centers for Education and Training

State agency

(201) 463-5353

(201) 463-5062

Organization Description

EOHSI sponsors research, training, education, and service programs to improve the understanding of the environment and its impact on individual and societal health. EOHSI consists of six divisions, five of which focus on research and graduate training in toxicology, occupational health, exposure measurement and assessment, environmental health, and environmental policy. The sixth division, Public Education and Risk Communication, addresses the need in our society for:

■ Accurate, unbiased information about environmental and occupational health risks

■ Education to help people make health-promoting decisions about the environment and learn strategies for working collectively for policy change at the workplace, school, and in the community

■ Training in occupational safety and health job skills

Materials and Services Provided

EOHSI's Public Education and Risk Communication Division operates a resource center, a toll-free hotline, develops educational materials, conducts short training courses for elementary and secondary school teachers, produces monthly informational brochures, and has compiled a *Directory of Organizational Resources on Occupational Health*. The

Resource Center makes up-to-date information on many environmental health topics available to schools, workers, and the general public. Materials include curricula, resource guides, educational and training videos, brochures, information bulletins, newsletters, fact sheets, training, and consultation.

Educational materials include several curricula, accompanying videos, and informational bulletins as well as one-day workshops and consultation for teachers who use the curricular material.

■ **The Environment and the Community: An Environmental Health Curriculum.** Grades 10 to 12. (In press.) This curriculum is designed to be integrated into existing science, social studies, and health classes. Topics covered include:

- environmental health risks
- how to prevent exposure to harmful substances
- hazardous waste disposal in the home and industry
- problem-solving and consensus-building skills

Students have a chance to put their knowledge, critical thinking, and problem-solving skills to work through solving a simulated environmental problem.

The curriculum includes a teacher's guide with lesson plans, background readings, student readings, and a video "Take Charge! Jobs or Health: A Town's Dilemma" (24 minutes). The curriculum is under development and is being field-tested in New Jersey schools.

■ **An Occupational Health Awareness Project for Secondary Schools with Vocational Education Programs.** Published 1990. \$220. This dynamic curriculum helps students identify potential occupational hazards, learn how to protect themselves, and learn how to work together to promote policies for a safer workplace. Materials include seven units with lesson plans, handouts, and hands-on exercises; hazard recognition slides; and a video "Playing it Safe" (13 minutes). Training is available for teachers.

■ **Healthy Environment - Healthy Me.** Curriculum for grades K to 5. Published in 1990. This interdisciplinary curriculum focuses on the interrelationship between a healthy environment and healthy people. Students study how people affect environmental conditions, how a degraded environment affects human health, and learn the importance of making responsible decisions to protect the health of the environment. Age-appropriate units introduce students to basic environmental health concepts, the problems of solid waste disposal and potential solutions such as recycling, safety and health issues surrounding household hazardous products, the concept of risk, and the importance of clean water and air to human health. The curriculum consists of teachers' guides, lesson plans, activities, handouts, vocabulary lists, supplementary fact sheets, and lists of additional resources.

Videos - A series of videos to accompany each grade level is available:

- K - Alexandria's Clean-Up Fix-Up Parade (15 minutes)

- 1 - Alu-Man the Can (15 minutes)
- 2 - Safety Sense (14 minutes)
- 3 - Sam's Safety Star Award (15 minutes)
- 4 - Down the Drain (22 minutes)
- 5 - Keeping the Lid on Air Pollution (20 minutes)
- 6 - The Inside Story on Air Pollution (19 minutes)
- 7 - What to Do With All Our Garbage? (20 minutes)

Information Materials. In addition to these classroom curricula, EOHHSI provides informational materials on environmental and health risks that can be adapted for use in the classroom in conjunction with these curricula or with other programs. These materials include a series of

INFOsheets and INFOletters on common environmental and occupational health topics, and fact sheets, brochures, books, and videos. Topics include home use of pesticides, radon, asbestos, ozone, drinking water quality, recycling, hazardous waste, a glossary of environmental health terms, and a glossary of occupational health terms. Cost varies.

INFOsource. The Institute also operates an informational hotline for New Jersey residents. Trained staff respond to residents' questions about toxic substances; media reports about environmental and job-related health

issues; Right-to-Know information; and sources of information on environmental and job-related health risks. The hotline number is 1-800-843-0054. (The service does not handle medical emergencies or provide medical or legal advice.)

Ordering Information - For more information or to order any of the above materials or attend teacher workshops, contact the Resource Center at (201) 463-5354.

Environmental Resource Project

Institute for Environmental Studies

315 Pittsboro Street, CB #7410

University of North Carolina

Chapel Hill, NC 27599-7410

Community, nonprofit

Melva Okun, Education Specialist

(919) 966-3332
FAX (919) 966-7141

Organization Description

The Environmental Resource Project (ERP) protects the environment and public health by educating citizens to make informed decisions about environmental issues affecting their communities. ERP offers training and technical assistance to citizens, local governments, and students in North Carolina. Although the organization's mission encompasses all environmental topics, there is an emphasis on public health aspects of environmental issues and many ERP staff have backgrounds in public and environmental health.

Services Provided

ERP's education, assistance, and training programs reach students and teachers from the elementary grades to graduate level, and citizens in many communities. Technical assistance is offered in two forms. Communities with specific environmental problems, including threats to community health are matched with experts listed in the *Scientist Register*, a list of over 100 scientific and legal experts throughout North Carolina. Through the *Community Assistance Program*, ERP staff work directly with community groups to help them understand environmental issues affecting community health. ERP staff also report on environmental topics for North Carolina's National Public Radio Station. ERP's educational programs include the following:

- **Student Community Involvement Program.** ERP links undergraduate and graduate level students and student research projects with the environmental research needs of community groups and local governments. Many of these projects investigate issues important to protecting community and environmental health. Examples include a study of water quality in wells at migrant farm worker camps, the health ramifications of access to indoor plumbing in rural areas, and the effectiveness of environmental risk reporting in coastal communities.

- **Education and Training Program.** ERP organizes and facilitates training programs on a diversity of environmental topics including environmental health issues. Past workshops have covered risk assessment, risk communication, radon, radioactivity, and drinking water quality. ERP staff work with content specialists to develop workshop content and format and can develop training workshops on virtually any environmental health topic. Audiences for the workshops may include teachers, school administrators, research personnel, and the media.

- **ERP in the Schools** encourages the teaching of environmental issues in primary and secondary schools. ERP conducts training courses for teachers and is developing an environmental education course for education majors at the University of North Carolina at Chapel Hill. Additionally, ERP recently organized the *North Carolina Environmental Educators*, a statewide organization to promote environmental education and improve the dialog between environmental and health educators.

Additional Information. For information on any of ERP's services, contact Melva Okun at the above address and phone number.

ERIC/SMEAC

Ohio State University
1200 Chambers Road
Third Floor
Columbus, OH 43212-1792

Government clearinghouse

1-800-USE-ERIC
(614) 292-6717
FAX (614) 292-0263

Organization Description

The Educational Resources Information Center (ERIC) is a federally funded nationwide system of 16 clearinghouses designed to provide users with ready access to education literature. It is managed by the Office of Educational Research and Improvement (OERI) of the U.S. Department of Education. Each ERIC clearinghouse is responsible for acquiring, processing, and reporting the significant educational literature in its subject field.

The ERIC Clearinghouse for Science, Mathematics, and Environmental Education (ERIC/SMEAC) is located at the Ohio State University. ERIC/SMEAC serves as a clearinghouse for curricula and instructional materials, teacher education, learning theory and outcomes, research and evaluative studies, media applications, and computer applications within these three broad subject areas.

Materials and Services Provided

ERIC clearinghouses solicit documents on educational research and practice, which they index, abstract, and send to a processing facility. Papers, conference proceedings, literature review, curriculum materials, and articles from nearly 800 education-related journals are entered into the ERIC data base. Documents selected for the data base (about 2,600 monthly) are cataloged, indexed, abstracted, and announced in a monthly publication, *Resources in Education*. ERIC announces journal

literature in a separate monthly publication, *Current Index to Journals in Education*. A guide to local institutions offering access to the ERIC data base, the *Directory of ERIC Information Service Providers*, is updated annually. Services provided at a charge include scanned computer searches of the ERIC data base (with or without assistance in identifying publications of relevance to a particular grade level or topics), workshops on the use of ERIC, and project consulting services. Fees for searches and printouts are determined by individual service providers.

Over 200 publications related to science, mathematics, or environmental education are available from the SMEAC Information Reference Center. Teaching guides, instructional materials directories, research reviews, collected papers, bibliographies, and other items are available. Most items are under \$10.00. Publication lists for each scope area are available upon request from the Information Reference Center. ERIC/SMEAC publications include:

■ **Promising and Exemplary Programs and Materials for K-12 Science Education.** Publication #SE 051 384; \$10.00. This publication provides descriptive information on elementary and secondary school science programs. These programs were all nominated by three or more curriculum or instruction specialists and selected for inclusion by ERIC/SMEAC staff.

■ **Environmental Activities for Teaching Critical Thinking.** Publication #SE 051 336; \$12.50. This publication presents a discussion of teaching critical thinking and provides a collection of activities that develop and/or require critical thinking skills.

■ **Environmental Education Digests.** Published three or four times a year; \$1.00 each (phone for annual subscription rate). 1989 Environmental Education Digests include:

- Teaching Desirable Environmental Ethics and Action by Preventing and Solving Environmental Problems in Schools (#1)
- Teaching Critical Thinking through Environmental Education (#2)
- Exemplary Programs in Environmental Education, K-12 (#3)
- Environmental Studies for General Education at the College Level (#4)

Additional Information. For general information about the ERIC data base, contact ACCESS ERIC at the toll-free number listed above. For information about ERIC/SMEAC publications or services, contact the SMEAC Information Reference Center at the address and telephone number listed above.

Exxon Chemical Americas

13501 Katy Freeway
Houston, TX 77079

Chemical Manufacturer

Marti S. Fellabaum, Community Relations

(713) 870-6836

Organization Description

Exxon Chemical is the third largest U.S.-based producer of chemicals with employees in 51 countries around the world. Product lines include basic or commodity chemicals, polymers, and performance or specialty products.

Materials and Services Provided

Exxon Chemical has an active educational outreach program in geographical areas where manufacturing, sales, or research sites reside. These include:

■ **Products from the World of Chemicals.** This 45-minute presentation was developed for use in middle - and high-school classrooms. The presentation is designed to expand students' knowledge of the chemical industry and chemical products, and to

heighten their interest in chemical-field careers. Developed by a team of middle-school educators and Exxon employees, the program includes a 13-minute video explaining chemical processes and product end uses.

■ **Partners in Education.** Most Exxon Chemical sites have strong ties with an "adopted" school and offer tutoring and attendance incentives, as well as teacher training and recognition programs.

■ **Tours.** Manufacturing sites offer facility tours for teachers and students. Reservations are required and certain restrictions apply.

■ **Speakers Bureau.** Exxon Chemical employee volunteers actively participate in career days, science fairs, and school discussions in a variety of topics.

Additional Information. For information on Exxon Chemical education involvement, please contact Marti Fellabaum at the above address and phone number.

Friends of the Earth
218 D Street, NE
Washington, D.C. 20003

International advocacy organization

Fred Millar, Director,
Toxic Chemicals Safety and Health Project

(202) 544-2600
FAX (202) 543-4710

Organization Information

Friends of the Earth (FOE) is an activist organization committed to protecting the Earth and its resources. With affiliate groups in 38 countries around the world, FOE is one of the most diverse international advocacy groups and is part of a growing international network of environmental advocacy organizations. FOE is working on such issues as ozone depletion, tropical forest destruction, oceans and coasts, global warming, solid and hazardous waste, nuclear weapons production, and corporate accountability. In addition to fighting to protect the public from inordinate environmental health risks, FOE seeks to preserve biological, cultural, and ethnic diversity.

Since its merger with the Environmental Policy Institute and the Oceanic Society, FOE has expanded its emphasis on issues of public health, energy, conservation of natural resources, and global threats.

Materials and Services Provided

FOE is actively participating in projects related to oil spills, ground-water protection, agriculture and biotechnology, coal strip-mining, toxic chemical safety, and nuclear weapons contamination. FOE's ongoing

environmental protection projects have resulted in a number of materials and services available to the general public. These materials are intended to inform and promote activism; they are not specifically designed for instructional use.

■ **Bottled Water: Sparkling Hype at Premium Price.** 74 pages; \$20 (\$10 members). Published in 1989. This publication debunks the myth that bottled water is necessarily a healthier alternative to tap water. It offers an analysis of contaminants and impurities found in many brands of bottled water, plus consumer tips and recommendations for regulations.

• **Community Plume.** Published periodically. This newsletter is published by FOE primarily for members of local emergency planning committees. Issues include a wealth of information about a wide range of environmental issues, including health risk studies, as well as updates on the progress of advocacy projects and legislation. It also lists and reviews publications on environmental health and safety.

■ **SARA Title III Packet.** Produced by the Working Group on Community Right-to-Know, this packet critically analyzes the status of the government's efforts to implement SARA, which is the "Right-to-Know" law. It analyzes various types of hazards, provides the text of the law and the related emergency planning procedures, and includes several related articles about chemical hazards and related health risks. This packet is intended to promote dissemination of information and activism.

■ **10 Things You Can Do To Fight Global Warming.** Full-color poster; \$10 (\$7.50 members). This colorful poster explains how individuals can help in the fight against global warming.

Additional Information. For information about the Toxic Chemicals Safety and Health Project, call Fred Millar. To order publications, receive a complete listing of products and publications available, or request information about FOE projects, call or write FOE at the phone number and address listed above.

**Great Lakes and Mid-Atlantic
Hazardous Substance Research Center
Training and Technology Transfer
C231 Holden Hall
East Lansing, MI 48824**

Academic organization

Karen Vigmostad, Program Manager

(517) 353-9718

**Organization
Description**

In 1986, the University of Michigan and Michigan State University joined forces to pursue cooperative efforts in fundamental, large-scale hazardous substance research. Howard University joined them, and in 1989 the Center was founded as one of five such hazardous research centers established under EPA funding and guidelines for the various federal regions. While pursuing the Center's research mission, Dr. James H. Johnson, of Howard University, has also done work with high school teachers on hazardous waste and other environmental issues.

Materials Provided

Working for the Center at Howard University, Dr. James H. Johnson, Chair of the Department of Civil Engineering at Howard and Assistant Director of the Center, presented workshops on environmental education for teachers of grades 9 through 12. These are being edited into videotaped presentations. The workshops

helped teach environmental issues and the principles behind them. They covered such topics as global warming, acid rain, and toxic substances and introduced teachers to science and technology programs in each area. Careers in the environmental sciences and engineering are stressed.

■ **Videos** - Three videos for teachers of grades 9 - 12. Under 45 minutes each. Available in mid-1991 for the cost of reproduction (estimated at less than \$30.00).

1- Curricular and Environmental Projects

2- A Primer in Environmental Science/Engineering for Teachers.

3- More Advanced Topics in Environmental Science/Engineering for Teachers

Ordering Information - Call Karen Vigmostad at the Center for information about availability and price and order through her when the videos are available.

Household Hazardous Waste Project

Box 108
901 South National Avenue
Springfield, MO 65804

Sarah Dewey

State program

(417) 836-5777

Organization Description

The Household Hazardous Waste Project (HHWP) is a community education program that helps consumers make informed decisions about the safe use, storage, and disposal of hazardous products found around the home. HHWP is a program of the Environmental Improvement and Energy Resources Authority, an agency of the Missouri Department of Natural Resources. It is administered by Southwest Missouri State University's Office of Continuing Education.

Materials and Services Provided

Within Missouri, HHWP helps communities manage household hazardous materials with the cooperation of local businesses, and answers citizens' questions about household hazardous wastes. They have also created educational materials that include:

■ **Guide to Hazardous Products Around the Home.** A 178-page manual for "protecting your health and environment," the guide is divided into six sections that cover:

- **General Information** - what makes a product hazardous and the effects of household hazardous products

- **Disposal** - safe disposal and recycling

- **Safety** - how to read labels, how to find ingredient that aren't on labels, and how to use products safely

- **Alternatives** - recipes for nontoxic or less-toxic solutions

- **A-Z** - a dictionary of hazardous household ingredients and products

- **Resources** - suggested reading and emergency contacts

\$9.95 includes shipping and handling. For orders of five or more, contact HHWP.

■ **Educational Activities.** HHWP developed and publishes:

- **Home Hazardous Product Survey.** A six-page worksheet for estimating a community's accumulation of hazardous products. \$2.00.

- **What Your Home Haz.** A game on a six-page sheet. It uses the format of the TV show "Jeopardy" to teach about household hazardous products. \$2.00.

■ **Fact Sheets.** Sheets of answers to commonly asked questions. (For orders of 100 or more, HHWP will provide a camera-ready master for printing or photocopying.)

- Consumer Tips \$0.50 (master \$50.00)

- Pesticides \$0.50 (master \$50.00)

- Safety Equipment \$0.75 (master \$67.50)

Masters of all three cost \$145.00

■ **Video.** "Hazardous Waste in Our Homes?" is a 7-minute, 1/2" VHS-format video that outlines the problems and solutions for household hazardous waste. \$28.00 includes shipping and handling.

Ordering Information. All materials are available from HHWP. In addition, the "Guide to Hazardous Products Around the Home" is distributed in the Midwest by Book Source, Inc., St. Louis, MO, (800) 444-0435 or (315) 652-1000, and on the west coast by Pacific Pipeline, Kent, WA, (206) 872-5523.

Institute for Environmental Toxicology

C-231 Holden Hall
Michigan State University
East Lansing, MI 48824

Dr. Michael Kamrin, Coordinator of Education
and Extension Programs

Academic organization

(517) 353-6469
FAX (517) 355-4603

Organization Description

The Institute for Environmental Toxicology (IET) provides scientifically accurate and environmentally sound advice and information on environmental health concerns to Michigan residents. The Institute also works closely with state and local governments, providing expertise essential to protecting human health and the environment. Established in 1978 by the Michigan legislature, IET is based at Michigan State University, drawing on the combined expertise of 100 faculty. IET coordinates outreach programs to educate the public about toxic substances in the environment and provides technical assistance to community officials and residents. IET also fosters research and graduate education programs and sponsors conferences that increase our understanding of current environmental toxicology issues.

Materials Provided

IET provides a range of classes, services, and publications to respond to concerns the public has about the potential health effects of toxic chemicals found in the environment. Materials and services include a series of workshops on risk assessment, water quality, and pesticides; a Community Assistance Program in Environmental Toxicology (CAPET) to assist small communities in solving contamination problems; Lifelong Education classes on the fundamentals of toxicology and environmental chemistry; an inquiry response system to handle questions from the public and press on environmental issues; and publications about toxicology and

toxics in the environment. Although these publications have been developed for the general public, most are appropriate to use with high school students.

■ **Toxicology for the Citizen.** Grades 10-12. Pamphlet. Published in 1987. This pamphlet provides an overview of toxicology principles as they relate to understanding the potential harmful effects of environmental contaminants. Routes of exposure, what happens to chemicals in the body, factors that influence toxic effects (e.g., dose, individual susceptibility), measuring toxicity, and determining acceptable risk are covered.

■ **How Much Is a Part Per Million?** Grades 8-12. Pamphlet. Published in 1989. Environmental contaminants are often measured in very small concentrations such as parts per million. Grasping the smallness of this concentration is difficult but important to understanding environmental health information. This pamphlet presents the concept in easy-to-understand terms.

■ **How Does Misuse of Toxic Chemicals Threaten Your Health?** Grades 9-12. Pamphlet. Published in 1983. Discusses movement of chemicals into the environment, routes of exposure, potential health effects, and practices people can use to avoid exposure. Written in general terms for a nontechnical audience.

■ **Nitrate: A Drinking Water Concern.** Grades 9-12. Pamphlet. Published in 1988. This pamphlet summarizes how nitrates can enter drinking water supplies, sources of exposure, potential health effects for infants, children, and susceptible adults, and ways to avoid exposure.

■ **Eating Great Lakes Fish.** Grades 9-12. Pamphlet. Published in 1987. This bulletin describes how the most common contaminants (heavy metals and halogenated hydrocarbons such as DDT, PCBs, chlordane) get into fish and the potential risk of eating these contaminated fish. The bulletin also explains ways to minimize exposure to contaminants in fish.

■ **Biorisks: The Toxicology Simulation.** Computer simulation software. Grade 12. This program simulates the process involved in determining lethal doses (LD_{50} s) for five chemicals. Users select doses, submit results to an imaginary agency, and must complete the investigation using a fixed budget. The program was designed for use in classrooms by students with some familiarity with environmental health concepts and computers. Order from Instructional Media Institute, Marketing Division, P.O. Box 710, Michigan State University, East Lansing, MI 48826 (517) 353-9229. Cost: \$30.

■ **Household Hazardous Waste and Pesticide Pamphlets.** Several brochures describe the safe use and disposal of household hazardous waste, how these substances can enter the environment, and how to read labels. The brochures do not discuss the health effects of these substances in any detail, but could be useful in developing units on household hazardous waste. The brochures include:

- Household Hazardous Wastes: Disposal Recommendations (grades 8-12)
- Reading a Pesticide Product Label (grades 10-12)
- Wastey Needs You (grades 4-6)

Ordering Information. To obtain additional information on the classes and services, or to order publications offered by IET, contact Dr. Michael Kamrin.

International Joint Commission,

Great Lakes Regional Office

P.O. Box 32869

Detroit, MI 48232-2869

or

100 Ouellette Avenue

Eighth Floor

Windsor, Ontario N9A6T3

Bev Croft, Information Officer

Binational commission

U.S. (312) 226-2170
Canada (519) 256-7821
FAX (519) 256-779

Organization Information

The International Joint Commission (IJC) is a binational organization established by the Boundary Waters Treaty of 1909. This treaty provides mechanisms to help resolve (and prevent) disputes concerning water quantity and water quality along the Canadian/U.S. border. The IJC also monitors the process of restoring and maintaining the chemical, physical, and biological integrity of the Great Lakes Basin Ecosystem, as called for by the Great Lakes Water Quality Agreements of 1972 and 1978. The IJC's offices in Canada and the U.S. are staffed by appointed members, as well as advisors and other staff who assist the IJC in fulfilling its treaty responsibilities.

Materials and Services Provided

The IJC publishes biennial reports on Great Lakes water quality, reports to the Great Lakes Science Advisory Board, the text of the Great Lakes Water Quality Agreement of 1978, and many other reports and monographs. These may be useful to teachers and students interested in how public policy and regulations are created and implemented and the effect of such activities on water quality and health risks.

The IJC also produces and distributes a wide range of informational and educational materials for the general public and students. These include numerous pamphlets and posters about Great Lake environmental issues, household hazardous wastes, toxic substances, citizen's guides to environmental problems and solutions, and many other documents. In 1984, the IJC began the Great Lakes Education project; the result of this project is a comprehensive *Directory of Great Lakes Education Material* that is periodically updated.

In addition, the IJC runs educational workshops and conferences. In 1989, for example, the IJC sponsored a day-long educational conference called "The IJC, the Great Lakes, and You" for high school students. At this conference, students developed projects and goals to promote environmentally sensitive behavior in their schools and communities. On November 17, 1990, teachers will have the opportunity to participate in a satellite television conference on Great Lakes and Environmental Education called "Teachers Making A Difference." The IJC's bimonthly newsletter, *FOCUS*, reports on IJC accomplishments and describes upcoming activities.

Resources of particular interest include:

■ **Directory of Great Lakes Education Material.** Published in 1987; revised in 1989. This comprehensive listing focuses on environmental issues associated with the Great Lakes. Educational materials are categorized by medium: audio-visual, books, booklets, instructional materials, newsletters, pamphlets, periodicals, special reports, and other sources of information. Since most of the programs included were developed by other organizations, the Directory lists the publisher/producer of each program. Examples of programs listed are:

- "The Great Lakes Education Speakers Bureau Directory" (directory of experts available to visit classrooms)
- "The Great Lakes: No Free Lunch" (video)
- "Perspectives in Science" (includes video on toxic waste)
- "The Trouble with Toxics" (video)
- "Water Watch" (computer simulation game)
- "Acid Rain Curriculum" (classroom activities and teacher's guide)
- "Great Lakes Toxic Hotspots" (poster)
- "To the Last Drop" (book)
- "Are Great Lakes Fish Safe to Eat?" (International Wildlife Magazine article)

- **"Great Lakes Information Kit"**
(includes pamphlets on toxic substances, land use activities, remedial action plans, Great Lakes quality plan agreement, and others)

- **"Hazardous Wastes from Homes"**
(This highly illustrated booklet provides a historical perspective on hazardous wastes. It describes the types of wastes produced during the 20th century, explains why certain wastes are called "hazardous" or "toxic," discusses the hazardous wastes typically found in the home, and provides suggestions for handling household hazardous wastes.)

■ **Bibliography of Reports Issued Under the Great Lakes Water Quality Agreements of 1972 and 1978, and the Protocol Amending the 1978 Agreement.** Published in July, 1990. This bibliography may be of interest to students interested in researching the evolution and impact of public policy/regulations.

Additional Information. For further information about the IJC, or to order any of the materials mentioned above, call or write to Bev Croft at the address and phone number listed above.

W.W. Kellogg Foundation

400 North Avenue
Battle Creek, MI 49017-3398

Private Foundation

Nancy Sims, Executive Assistant for Programming

(616) 968-1611

Organization Information

The Kellogg Foundation funds educational and service projects with potential national or international importance, projects which emphasize the application of new knowledge in addressing significant human problems and which can serve as models for replication. Attention is centered on agriculture, education, health, leadership, and youth. The Foundation is particularly interested in projects which represent the collaboration of various community organizations in solving recognized problems. They fund grass-roots organizations and model organizations to help people help themselves.

Application Process

The Foundation does not use grant application forms. Instead, potential grantees are asked to submit a one- or two-page preproposal letter that describes the basic problem and a plan for its solution. The letter should briefly explain project objectives, operational procedures, time schedules, and personnel and financial resources available and needed. During this preliminary stage the Foundation discourages visits. If the project seems a possible candidate for funding, the Foundation will call and make further arrangements.

■ **Filing Deadline** - There is no filing deadline because the Kellogg Foundation continually reviews projects.

■ **Funding Limit** - The Foundation places no maximum or minimum limit on grants.

■ **Competition** - The Foundation funds about 12 percent of the grant applications it receives (funding about 700 out of approximately 5,762 written requests annually).

■ **Project Length** - There are no limits to how long a project may run. The average length of a funded project is about 3 years but some have exceeded 10 years.

■ **Reporting** - During the life of a project, the Foundation requests financial statements and narrative reports at least annually, sometimes more frequently.

League of Women Voters
1730 M Street, NW
Washington, DC 20036

Grassroots political organization
(202) 429-1965

Organization Information

The League of Women Voters (LWV), founded in 1920, is a nonpartisan political organization that encourages the informed and active participation of citizens in government; it attempts to influence public policy through education and advocacy. The League of Women Voters Education Fund (LWVEF) was founded in 1957 to provide local and state Leagues, as well as the general public, with information and educational services on current issues. The LWVEF's research and "how to" citizen aids are disseminated through workshops, conferences, and publications.

Materials and Services Provided

The LWV has developed a number of publications designed to encourage thoughtful analysis of environmental, natural resource, and health-related issues. These publications are intended to inform citizens about the issues and to provide suggestions about how to

become more actively involved in public policy-making. Although these publications are not specifically curriculum materials, teachers may find them useful as background information and as a means to provoke discussion among their students about the role of the individual and the community in shaping public environment/health policy. Among the LWV's many publications are:

■ **Safety on Tap: A Citizen's Drinking Water Guide (#840).** \$7.95 (\$5.95 members); published in 1987. This publication examines health and safety issues associated with the quality of drinking water. It includes contributions from those who manage, treat, and protect tap water.

■ **Crosscurrents: The Water We Drink (#880).** \$4.95 (\$3.95 members); published in 1989. This is a report on a survey of drinking water utilities and state officials; the goal of the report is to provide citizens with an understanding of the opinions and activities of water utility officials and state administrators as they plan to implement the 1986 Safe Drinking Water Act.

■ **Groundwater: A Citizen's Guide (#803).** \$1.75 (\$1.25 members); published in 1986. The guide provides basic information on groundwater resources, including problems, protective measures, and the role of community participation.

■ **America's Growing Dilemma: Pesticides in Food and Water (#887).** \$4.95 (\$3.95 members); published in 1989. In addition to a discussion of the regulation of pesticide use in agriculture and policy issues related to alternative agriculture, this publication includes a guide for community education on pesticide residues and alternative agriculture.

■ **The Nuclear Waste Primer (#448).** \$5.95 (\$3.00 members); published in 1985. The primer contains basic information on sources and types of radioactive waste. In addition to outlining past and present government waste management programs, it describes future policy options and opportunities for citizen participation in the decision-making process.

Ordering Information. To order these publications, or to receive a complete catalog, call or write the LWV at the above phone number and address.

Nalco Chemical Company
One Nalco Center
Naperville, IL 60563-1198

Specialty chemicals manufacturer

Margaret Zavala, Public Relations Specialist

(708) 305-1000

**Organization
Description**

Nalco Chemical Company sells chemicals and services for water and waste treatment, pollution control, oil production and refining, papermaking, mining and mineral processing, metalworking, petrochemicals, and other industrial processes.

■ **Summer Teacher Programs**

- Corridor Partnership for Excellence in Education - Contact: Joy Talsma (708) 801-6100

- Chemical Industry Council of Illinois - Contact: Bridget Weir, Stephan Company (708) 801-6052

■ **Student Hiring Programs**

- Illinois Mathematics and Science Academy - Contact: Babs Clearly (708) 801-6052

- Tomorrow's Scientists, Technicians, and Managers - Contact: Theoda Gillespie (708) 897-5335

**Materials and
Services Provided**

Nalco Chemical Company hires teachers and students to work in its laboratories. These programs help teachers understand the application and benefits of chemicals in the world outside the classroom. Students, through their work in the laboratories, experience the role of the scientist. These experiences enable them to evaluate pursuing a career in the sciences. Nalco hires these teachers and students through the following programs that are set up and run by other organizations.

National Association of Biology Teachers

11250 Roger Bacon Drive, #19
Reston, VA 22090

Professional association

Mary Louise Bellamy, Ph.D., Education Director
Alison M. Rasmussen, MAT, M.S., Education Project Director,
Public Affairs Specialist

(703) 471-1134
FAX (703) 435-5582

Organization Information

The National Association of Biology Teachers (NABT), founded in 1938, is dedicated exclusively to the concerns of biology teachers at all grade levels. The NABT provides its 7,000 members with free publications and opportunities to participate in various award programs, conferences, workshops, and other professional development activities. The NABT is also committed to working with other national organizations (the Biological Science Curriculum Study, Alliance for Environmental Education, National Science Teachers Association, and many other) to improve biology education and science literacy.

Materials and Services Provided

The NABT seeks to promote scientific literacy through its publications, award programs, and professional development services. Annual dues for North American members is \$38. In addition to the publications and services described below, the NABT distributes numerous pamphlets, posters, booklets, teaching aids, as well as other materials designed to improve classroom teaching and encourage students to pursue careers in biology.

■ The American Biology Teacher.

Published eight times each year (free to members; \$48 subscription for nonmembers).

This journal provides readers with the results of current research, new teaching methods in biology, research on teaching alternatives in biology, discussions of ethical issues in biology, review articles, and numerous teaching/field activities on all subjects, including environmental science and health. For example, the October 1989 issue included an activity called "Disease Detective: A Game Simulation of a Food Poisoning Investigation"; this activity is a fun way for students to learn about public health concepts and epidemiological methods.

■ NABT Monograph Series. \$8-\$20

each (call for current pricing). Each of the monographs in this series present in-depth information about a certain topic, as well as easy-to-follow lessons and activities. Other monographs and source books of interest include:

- Oceanography for Landlocked Classrooms
- Source book of Biotechnology Activities
- Biotechnology, Genetic Engineering and Society
- The Responsible Use of Animals in Biology Classrooms, including Alternatives to Dissection

■ Electronic Bulletin Board. \$10

members, \$45 nonmembers (initial fee). This electronic bulletin board system allows teachers to communicate with each other and share information. The bulletin board works with Apple, Commodore, IBM, or Tandy PCs if you have a modem.

Additional Information. For more information about membership and general programs and services, call or write to the NABT at the above phone number and address. For more information about the publications described above or other educational programs, contact Mary Louise Bellamy or Alison Rasmussen.

National Association for Science, Technology & Society

122B Willard Building
University Park, PA 16802

Gene Bazan, Membership Services
Robert Meredith, Conference Manager

Private organization

(814) 865-9951

Organization Information

The National Association for Science, Technology & Society (NASTS) seeks to engage persons from a wide range of backgrounds in dialogue about the implications of science and technology for modern life and to increase critical thought concerning the present and future course of scientific endeavors and technological development. NASTS came into fruition because of the sustained interest of faculty involved in STS (science, technology & society) programs in universities, religious professionals, public interest groups, and K-12 teachers and supervisors. The Carnegie Foundation and the National Science Foundation, through grants to the STS Program at the Pennsylvania State University, funded creation of the infrastructure leading to the successful launching of the Association in 1988.

Materials and Services Provided

NASTS serves as the most comprehensive organization in America devoted to exploration of the science, technology and society (STS) interface. The Association, from its inception, has sought to involve organizations with mutual interests in joint efforts to promote technological literacy. The highlight of this effort each year is the annual Technological Literacy Conference, always convened on the

first weekend in February in the Washington, DC, area. Co-sponsors of this conference have included the AAS, National Council for the Social Studies, National Science Teachers Association, International Technology Education Association, National Education Association, American Federation of Teachers, Association for Women in Science, American Society for Engineering Education, Triangle Coalition, National Council of Teachers of English, and the North American Association for Environmental Education. NASTS is increasingly active in sponsoring symposia and panel sessions devoted to STS education at national meetings of the above organizations.

NASTS provides a number of additional services for its members and other interested individuals. All materials listed below are available through the ERIC system (see ERIC/SMEAC entry in this manual for further information) with the exception of the most recent issues of the *Bulletin of Science, Technology & Society*.

■ **Catalog of STS Instructional Materials**, 102 pages, published in March 1988. The catalog consists of two sections: a set of reviews of STS teaching materials and an index to the entire group of materials organized by topic.

■ **Bulletin of Science, Technology & Society**, published bimonthly. Free with membership, the *BSTS* includes news and editorials, articles concerning STS issues, and extensive citations to books, periodicals, and educational materials focusing on with STS issues.

■ **The NASTS Newsletter**, published bimonthly. Free with membership, the newsletter includes brief articles, items concerning the activities of the Association, and a calendar of upcoming conferences nationally and internationally on STS-related issues.

■ **Proceedings of the First through the Fifth National Technological Literacy Conferences**, distributed annually through the ERIC system, several hundred pages each year. Each year selected papers from the annual conference of the Association are edited into volumes grouped around conference themes. Early conferences also appeared as special issues of the *BSTS*. Recent conferences are only available through the ERIC system. When accessing these items through ERIC, search under the following two names: "Dennis W. Cheek" and "Leonard S. Waks." Complete copies of printed documents, as well as microfiche sets, are available through ERIC's documentation service.

■ **Resources for STS Education**, compiled by Dennis W. Cheek for the National STS Network, University Park, PA, 1989, 68 pages. This guide, now available through ERIC, is an annotated list of curricula, trade books, textbooks, audio-visual material, and computer software for STS education at K-12 levels.

National Audubon Society

950 Third Avenue
New York, NY 10022

Education Division

National nonprofit

(212) 832-3200
FAX (212) 593-6254

Organization Description

The National Audubon Society is one of the country's largest conservation organizations. It operates a network of nine regional offices and 511 chapters serving 878,000 members nationwide. The society declares that, "We are fighting to save threatened ecosystems and to protect the air, water, land, and habitat that are critical to our health and the health of the planet." Audubon promotes citizen participation in a host of environmental projects, including community solid waste management and acid rain monitoring.

Materials and Services Provided

Audubon has extensive experience in design and implementation of conservation education programs for youth. It provides a wide range of educational services from publications to curricula and teacher training.

■ Publications

- **Conservation Notebooks** - These are free fact sheets on such environmental topics as: global climate change, acid rain, water pollution, etc. They are available from Information Services, National Audubon Society at the address above.

■ Curriculum Material

- **Recycling our Resources** - A special issue of *Audubon Adventures*, Audubon's classroom newspaper. This

issue introduces students to recycling in general, the garbage crisis, and source reduction. It is available in classroom units of 32 children's newspapers and one *Leader's Guide* (a teacher's handbook), from Northeast Audubon Center, Route 4, Box 171, Sharon, CT 06069. Phone: (203) 364-0520. Cost is \$10/classroom unit.

- **Living Lightly on the Planet** - A two-volume curriculum designed to inform and motivate junior and senior high students about environmental problems. It presents methods for teaching about ecological processes and the impact of environmental problems on human health and well-being. It includes maps, student role cards, case studies, activities, and background information for teachers. Volume I is for grades 7-9. Volume II, grades 10-12. Available from Schlitz Audubon Center, 1111 East Brown Deer Rd., Milwaukee, WI 53217. Phone: (414) 352-2880. Cost is \$17.00 plus \$2.00 shipping for each volume.

- **Project Mayfly** - A 30-page manual that enables high school students to monitor the health of streams, rivers and lakes in their area. It provides methods for chemical, biological and physical investigations of the water. It is written for teachers, youth group leaders and other interested adults. Background information for the teacher makes it a simple matter to insert the individual activities into the standard science curriculum. Order from National Audubon Society, Mid-Atlantic Regional Office, 1104 Fernwood Ave., Suite #300, Camp Hill, PA 17011. Phone: (717) 763-4985. Cost is \$5.00/copy.

■ Teacher Training

- **Audubon Adventures Urban Training Program** - Audubon has formed partnerships with science curriculum coordinators in major metropolitan school districts in the cities of Albuquerque, Atlanta, Bridgeport, Cleveland, Houston, Los Angeles, New York, Newark, and Washington, DC. In these school systems Audubon conducts teacher training programs for educators, curriculum coordinators and principals. Participants receive Audubon teacher resource manuals that detail local and state sources of environmental materials and nearby centers for environmental education. For information contact Audubon's New York City office (above).

- **Audubon Science Institute** - This pilot teacher-training program applies the use of new technologies in teaching environmental issues and science in the classroom. It is an inner-city, minority outreach program. The program examines timely and critical issues of concern in environmental science and policy. It provides teaching strategies to help make the study of science and the environment both relevant and more exciting to students. The Audubon Science Institute is a cooperative project of National Audubon Society and the Washington, D.C. Public School System. For information contact National Environmental Education Center, 613 Riversville Road, Greenwich CT 06831. Phone: (203) 869-5262.

National Center for Health Education
30 East 29th Street
New York, NY 10016
Linda Campbell, Director of Student Health Program

National nonprofit

(800) 225-4276
(212) 689-1886
FAX (212) 689-1728

**Organization
Description**

The National Center for Health Education (NCHE) was created on the recommendation of the President's Committee on Health Education to improve school health education. Its goal is to ensure that all American school children have access to comprehensive health education by the year 2000.

Materials Provided

As one of its major efforts, NCHE sponsors, disseminates, and updates an interdisciplinary health curriculum *Growing Healthy*. This curriculum was codeveloped by a number of voluntary health organizations, such as the American Lung Association, and uses proven teaching methods to provide healthy attitudes and behavior.

■ **Growing Healthy.** Grades K-7. Revised in 1986. *Growing Healthy* focuses on all aspects of health, not only providing information, but enhancing decision-making skills and self-esteem. Teaching techniques include role playing, open discussions, active exercises, computer software, and films, and involve parents and community

members. The curriculum draws on skills from math, science, art, social studies, and language, thereby developing stronger skills in these academic subjects and providing a means for integrating health education into existing curricula.

Growing Healthy consists of 10 content areas, including environmental and community health. Topics covered in environmental health include the health aspects of air pollution, passive smoking, solid and hazardous waste, water pollution, and radon. Content areas are explored at each grade level in developmentally appropriate ways. The curriculum consists of a teacher's manual, student workbook, and teaching materials, including books, films, filmstrips, slides and cassettes, anatomical models, mobiles, charts, posters, and computer software. Complete training workshops are conducted by regional project facilitators, training coordinators, and teacher trainers as needed.

Ordering Information. Complete costs for teaching materials at each grade level are as follows:

K	\$1,100	1	\$1,650
2	\$2,400	3	\$2,600
4	\$3,600	5	\$3,850
6	\$4,525	7	\$6,850

Materials can be shared by three to four classrooms of the same grade level each year. Films and filmstrips account for one-half of the material costs and can be shared by many more classrooms. or complete information on obtaining materials and integrating *Growing Healthy* into your school, contact NCHE.

National Science Foundation
Directorate for Science and Engineering
Education Division of Research Career Development
Washington, DC 20550

Federal agency

(202) 357-7538
FAX (202) 357-7009

**Organization
Information**

The National Science Foundation (NSF) is an independent agency of the federal government that promotes and advances scientific progress in the United States. The Foundation does this primarily by sponsoring scientific and engineering research and education.

**Materials and
Services Provided**

The Young Scholars Program, initiated by the NSF in 1988, is designed to encourage students in grades 8 to 12 to investigate and pursue careers in science, mathematics, engineering, and technology. To accomplish this goal, the NSF provides funding to post-secondary educational institutions and other scientific organizations to offer educational activities for these students. Projects provide a combination of instruction, problem-solving activities, opportunities to participate in scientific research, and discussions of career preparation and science ethics. Projects available in each state are described in a directory published annually by the NSF:

■ **Directory of NSF-Supported Young Scholars Projects.** Published annually. The 1990 Directory lists 133 projects offered by universities, research vessels, off-shore island laboratories, museums, and national parks throughout the United States. Each entry includes location, instructional focus, project activities, application deadline, costs (including financial aid and stipends), contact person, and other information. Many of these projects focus specifically on environmental sciences, including those sponsored by:

- Foundation for Glacier and Environmental Research (Idaho)
- University of Kentucky
- Essex Community College (Maryland)
- Cornell University (New York)
- Cabrini College (Pennsylvania)
- Rhode Island College
- Furman University (South Carolina)
- Northwest College (Wyoming)

Information. For more information about the Young Scholars Program (or other NSF programs), call the NSF at the number listed above. To request multiple copies of the *Directory of NSF-Supported Young Scholars Projects*, call the NSF Forms and Publications Office at (202) 357-7861.

National Science Teachers Association

1742 Connecticut Avenue, NW
Washington, DC 20009-1171

Sheila Marshall

Professional association

(202) 328-5800

Organization Information

The National Science Teachers Association (NSTA), the largest organization of science teachers in the world, is devoted to improving science teaching, improving science curricula, and providing professional growth opportunities for educators. The NSTA provides information and resources to help teachers establish or modify science programs in their schools. This organization also sponsors nationwide surveys, offers testimony to Congress on education legislation and issues, sets professional standards for teacher training, develops position statements on professional and ethical issues relating to science and science teaching, and develops links between academia and government/industry.

Materials and Services Provided

The NSTA sponsors special projects, award programs, and competitions for science teachers and students; runs workshops and conventions; and publishes four journals, a newsletter, position statements, curricula, and other publications. NSTA's Publications and Membership Catalog describes most of these publications and programs. NSTA's newsletter, *NSTA Reports!*, reviews teaching materials, announces programs for students and teachers, and describes NSTA conventions, activities, and publications. Members receive *NSTA Reports!* free, as well as a 10% discount on all publications available through the NSTA. Publications and programs particularly relevant to teachers and students interested in environmental health risk include:

■ **Tapestry.** A joint project of Toyota and the NSTA, *Tapestry* provides small grants to high school teachers for special projects in environmental and physical science.

■ **Real Science, Real Decisions: A Collection of Thinking Activities from the Science Teacher** (#PB-82). \$7.50; 32-page book published in 1990. This book presents information about a number of modern scientific advances; discussion questions are designed to stimulate critical thinking by students about the technical and ethical issues associated with these topics. Topics include animal rights, acid rain, AIDS, genetic screening, chemical warfare, hunting, and fetal cell transplants.

■ **Opportunities in Chemistry: Today and Tomorrow** (#OP-34). \$10.00; 244-page book published in 1987 (grades 9-college). This book discusses the role of chemistry in today's world. Topics covered include environmental control through chemistry, human needs and the technical applications of chemistry, the risk/benefit equation in environmental chemistry, career opportunities, and much more.

■ **Teaching about Nuclear War** (#PB-51). \$6.00; 72-page book published in 1985 (grades 7-college). This collection of articles describes existing courses about nuclear politics, the mechanics of nuclear bombs, and the physiological and environmental effects of bombs. It provides the materials needed to develop a course or instructional unit on this subject.

■ **Experimentation and Measurement** (#PB-2). \$6.00; 98-page book published in 1985 (grades 9-college). This text guides students through the process of selecting measurement equipment, measuring, and evaluating sources of error. It is designed to convey the value of statistics and careful measurement.

■ **Earth: The Water Planet** (#PB-76). \$16.50; 204-page book published in 1990 (grades 6-10). This book provides instructions for a variety of activities designed to help students investigate the importance of water to the planet and heighten environmental awareness. Activities include purifying swampwater, evaluating water use and misuse, and role-playing opposing arguments at a town meeting.

■ **Criteria for Excellence** (#PB-64). \$4.00; 42-page book published in 1990 (grades K-college). The NSTA conducted a Search for Excellence in Science Education from 1982 to 1986. This book describes the results of this search and provides rating systems and criteria to evaluate the effectiveness of science education programs, including environmental education programs.

■ **Science and Technology Education for the 21st Century.** NSTA position paper published in January, 1990. The paper describes NSTA's vision for the future of science/environmental education, including specific recommendations about instructional content and design. The NSTA emphasizes the importance of integrating science, health, and other disciplines in order to encourage students to make connections, explore risk-benefit concepts and develop attitudes and values knowledgeably.

■ **Science/Technology/Society: A New Effort for Providing Appropriate Science for All.** NSTA position paper published in July 1990. This paper discusses the benefits associated with an STS approach to science education. These benefits include empowering students to make connections and changes, emphasizing responsible decision-making, and requiring critical thinking skills. The NSTA seeks a massive revision of curricula in order to accomplish these goals.

■ **Other publications of interest include:**

- **Enhancing Critical Thinking in the Sciences** (#OP-71, 1989, 117 pp, \$7.00)
- **Expanding Children's Thinking Through Science** (#OP-42/3, 1981, 160 pp, \$9.20)
- **Science For All Americans: Project 2061** (#MS-41, 1989, 217 pp, \$14.50)
- **Connections: Science by Writing** (#OP-79, 143 pp, \$16.95)

Additional Information. For membership information, to receive a free copy of NSTA's Publications and Membership Catalog, or to order any of the above publications, call the Member Services Office at the phone number listed above. For information about special projects, award programs, and competitions for teachers and students, call or write Marilyn Suthard at the address noted above.

National Wildlife Federation

1400 Sixteenth Street, N.W.
Washington, DC 20036-2266

Nonprofit

Debby Stansell, School Programs

(202) 797-6800

Organization Information

The National Wildlife Federation (NWF) is the world's largest and most influential organization of private citizens promoting the wise use of natural resources. It is a nongovernmental, nonprofit, conservation education organization governed by an all-volunteer Board of Directors. The Federation is composed of affiliate organizations in nearly every state and territory. Each affiliate is an independent, self-governing organization. These affiliates establish the NWF's conservation policies and back those policies through educational activities and citizen action programs.

Materials Available

The NWF produces a variety of educational materials for children, youth, and adults, including many titles appropriate for use as background in environmental health education, including:

■ **Let's Clear the Air.** Grades K-9. Available as filmstrip or slides with accompanying audiotape, 15 min; professionally narrated (filmstrip is \$26.95; slideshow is \$29.95). This program also includes an educator's guide and explains what causes air pollution and what is being done to control it. It also explains acid rain - what it is, what it does, and why some parts of the country are more affected than others. Filmstrip \$26.95/slideshow \$29.95.

■ **Danger Downwind.** Spiral bound; 80 pages; \$9.00 (includes shipping and handling). This NWF report covers 308 individual chemicals and 20 classes of toxic chemicals.

■ **Danger on Tap.** 68 pages; \$7.00 (includes shipping and handling). This NWF report outlines a program to aggressively clean up our country's public water systems.

■ **The CLASS Project.** Curriculum for middle school grades. Three-ring binder includes background information, student worksheets, teacher

transparency worksheets, and six color posters. \$8.00 plus postage and handling. This program was developed to enhance existing middle school science and social studies curricula. It focuses on six content areas: energy use, environmental issues, forest watershed management, hazardous substances, wetlands, and wildlife habitat.

In addition, the NWF produces supplementary environmental education materials for elementary and middle school educators, including:

■ **Nature Scope.** An environmental education activity guide series for K-8 educators. Each of the 18 issues in the series focuses on a single topic and includes background information, activities, ready-to-copy activity sheets, a craft section, and an up-to-date bibliography of additional resources. Topics covered in this series include: pollution, rain forests, endangered species, wetlands, and others.

Additional Information. For further information, contact Debby Stansell at the above address.

New York Science, Technology, and Society Education Project

State Education Department
Room 232-M, EB
89 Washington Avenue
Albany, NY 12234

Dr. Dennis W. Cheek,
Coordinator of Curriculum Development

State-industry-university

(518) 473-1759
FAX (518) 473-0858

Organization Description

The New York Science, Technology, and Society Education Project (NYSTEP) is a partnership among the New York State Education Department, the New York Power Pool (composed of all utility companies in New York), and the Atmospheric Sciences Research Center of the State University of New York at Albany. NYSTEP produces and distributes curricula and conducts workshops for teachers dealing with a variety of topics in science, technology, and society.

Materials and Services Provided

NYSTEP designs 3- to 4-week modular courses to educate students to think globally and act locally on perennial science, technology, and society issues. The modules focus on problem solving, decision-making, and action taking/product production; complex thinking, cooperative learning, and conceptual change are emphasized. Included are activity guides for teachers and administrators to use in

administering the courses. Curriculum materials are produced by writing teams drawn from the ranks of classroom teachers, students, corporate representatives, scientists, and engineers. Curricula and activity booklets are correlated with New York State science and technology education syllabi. NYSTEP also provides a wide range of services for educators.

■ **Energy Futures: A Guide for Energy Educators.** Published in 1986 (by the New York Energy Education Project, a predecessor agency to NYSTEP). The guide provides indices of energy readings, transparency/ditto masters, student activity books, suggested units of instruction ranging from 4 days to a full semester, and energy education resources. The guide also features a unit entitled "Helping Students to Evaluate Risk/Benefit Issues." This unit provides classroom activities designed to encourage students to think about risk assessment in occupational and lifestyle choices as well as environmental decision making.

■ **Problem-Solving Modules.** Over the next year, NYSTEP plans to produce a series of 12 middle-level modules that engage students in problem-solving activities addressing topics such as emergency management planning, water quality assessment, and infectious diseases. Pilot modules currently under development include:

- epidemics
- water resources
- disasters

■ **Services offered by NYSTEP include:**

- awareness workshops about New York State's middle-level science initiative;
- opportunities to field test middle-level science materials in development;
- workshops on the use of NYSTEP materials;
- activity booklets for middle-level students on topics such as energy; conservation, renewable energy, fossil fuels, and nuclear energy;
- a series of energy and safety activities for elementary students;
- a series of readings on various sources of energy and transparency/ditto; and
- masters conveying important energy data.

Additional Information. For information on any of the above materials, contact the project office at the above address. Note that the modules under development will not be available for national distribution until the fall of 1991 or later.

North Carolina Office of Environmental Education

Department of Environment, Health, and Natural Resources

P.O. Box 27687

Raleigh, NC 27611-7687

State agency

Dr. Linda W. Little, Director

Sandra P. Washington, Deputy Director

(919) 733-0711

FAX (919) 733-0713

Organization Description

The Office of Environmental Education was established in July 1990 in accordance with a directive from the Governor. It will coordinate the Department of Environment, Health, and Natural Resources' existing environmental education programs and activities and serve as a clearinghouse of environmental information for communities and school systems, thereby promoting a greater public awareness and knowledge of environmental issues. In addition, the office will take a lead role in establishing the new Project Tomorrow Awards Program for schools.

Materials and Services Provided

In its first year, the Office of Environmental Education plans to:

- develop a database of existing environmental education programs within the Department of Environment, Health, and Natural Resources;
- work with the Department of Public Instruction for integrating environmental education into course curricula;
- assess the opportunities for affiliating with regional environmental education centers across the state; and
- develop the Project Tomorrow Awards Program to encourage schools, through creative projects, to discover and explore ways to protect their health and environment;

Through these efforts, the Office of Environmental Education hopes to consolidate the state's environmental education programs so that they will be more useful and accessible to the general public and to promote public education and awareness of environmental issues.

Additional Information. To obtain more information on the Project Tomorrow Awards Program and the Office of Environmental Education, please contact Dr. Linda Little or Sandra P. Washington.

Northeast Regional Environmental Public Health Center

School of Public Health
University of Massachusetts
Amherst, MA 01003

Edward J. Calabrese, Director
Charles E. Gilbert, Assistant Director

Regional

(413) 545-4222
FAX (413) 545-4692

Organization Information

The Departments of Public Health of the six New England states, along with the Divisions of Public Health of the University of Massachusetts, created the Northeast Regional Environmental Public Health Center to enhance both regional communication and cooperation in order to better address critical environmental public health problems. Center activities are guided by an Executive Committee that oversees and reviews the projects of the Center; the Committee includes representatives from each member state, the U.S. EPA, and the Agency for Toxic Substances and Disease Registry. The Center is advised on scientific issues by an external scientific advisory committee composed of scientists from the state and federal governments as well as the public and private sectors.

Materials Provided

Recognition of the importance of waste management education prompted staff of the Northeast Regional Environmental Public Health Center to

compile a comprehensive list of waste management curricula available in the United States. A database search was used to identify existing programs. State and federal government officials, environmental organizations, academic institutions, and private curriculum development firms were subsequently contacted for information about their programs. Although most programs summarized in the text are concerned with waste management issues in a broader sense, some include units on hazardous wastes and/or the health consequences of inadequate waste management strategies.

■ **Environmental Curricula Concerning Waste Management.** 112- page manuscript; to be published by Lewis Press in September, 1990. The text summarizes waste management curricula for each state by category and features specific to each program. State-by-state program summaries include sections addressing availability of materials, relevant state recycling regulations and specific curriculum requirements, and classroom implementation. A project history and description is presented for each program, along with information about

the availability of teacher training and in-service credit offerings. A curriculum description section discusses program validation by the Department of Education, program topics, target age group, availability of teacher and student materials, and evaluations. A bibliography describes programs containing a model school waste management program, along with references to additional curriculum materials that may be available.

Additional Information. For more information, contact Charles Gilbert at the above address and phone number.

Oak Ridge Associated Universities

Training and Management Systems Division
Post Office Box 117
Oak Ridge, Tennessee 37831-0117

Rose S. Foster, Research Associate
Mary Benton, R.N., M.P.H.

Government-academic partnership

(615) 576-9342
(615) 576-1942

Organization Information

Oak Ridge Associated Universities (ORAU) is both a federal laboratory and a 55-member university consortium. ORAU develops and manages programs that encourage collaborative research between universities and laboratories. ORAU's efforts are focused in four major areas: science/engineering education, training and management systems, medical sciences, and energy/environment systems.

Materials and Services Provided

ORAU develops need-based training and educational programs in toxicology-related areas, including on-line database searching and basic toxicology. ORAU's staff members have expertise in both instructional systems development and environmental science. Educational materials include a module entitled *Chemical Hazards Awareness Using the Online Toxicology Information Program Files of the National Library of Medicine*, developed for students who participated in a half-day workshop as part of ORAU'S Minority Challenge Program.

• **Chemical Hazards Awareness: Using the Online Toxicology Information Program Files of the National Library of Medicine.** Module for grades 10-12 (includes student and instructor materials); 1990. This module is designed to provide students with better information on environmental health risk issues related to the use of common household products. Following an introduction to basic toxicology principles, students are guided through on-line searches of the National Library of Medicine's Toxicology Information Program, including the Toxicology Data Network (TOXNET) and the Hazardous Substance Data Bank (HSDB). Sample scenarios and database excerpts are used to help the student understand the type and extent of information available. Student materials for the course include toxicology information handout sheets, TOXNET and HSDB fact sheets, fact sheets on routes of exposure and health effects of chemicals, demonstration problems, and sample search problems and solutions.

Information. For more information about the *Chemical Hazards Awareness* module or other materials and services available from ORAU, contact Rose Foster or Mary Benton at the above address and phone number.

**Office of Environmental Education
U.S. Environmental Protection Agency (EPA)**

A-107

**U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460**

Federal agency

Michael O'Reilly, Acting Director

**(202) 382-4965
Fax (202) 382-4309**

**Organization
Information**

The Office of Environmental Education (OEE) was established in September 1990 to focus and coordinate the Environmental Protection Agency's (EPA's) environmental education activities and to carry out the mandates of the National Environmental Education Act. The overall goal of this new office is to instill in citizens a sense of environmental ethic and to endow them with the tools and values they need to make environmentally protective choices in their daily lives.

The National Environmental Education Act, signed into law late in 1990, is intended to increase public understanding of the natural environment and to advance and develop environmental education and training. While the Act establishes a grants program, administered by EPA, its main emphasis is on augmenting cooperation among the EPA, other federal agencies, state and local education institutions, not-for-profit educational and environmental organizations, and private sector interests.

The Act calls for the OEE to include a headquarters staff of six to ten plus one employee in each of EPA's ten regional offices. The Act also requires the establishment of an Environmental Education and Training Program to award an annual grant, not to exceed \$250,000, to an institute or consortium to support environmental education.

Under the Act, EPA will provide internships for up to 150 college students per year, support national awards recognizing outstanding contributions to environmental education, and establish an Environmental Education Advisory Council and Task Force to advise the EPA on environmental education activities. Finally, the Act creates a grants program to encourage environmental education activities and calls for establishment of a National Environmental Education Foundation.

**Materials and
Service Provided**

The OEE will perform four major functions. First, it will carry out the activities called for under the National Environmental Education Act. Second, it will support development of an access mechanism to ensure that information on environmental education resources is readily available to those who need it. Third, it will continue to support youth-oriented environmental awards programs such as the President's Environmental Youth Awards. Fourth, it will work with other interested parties, both within and outside of the federal government, to identify and fill important gaps in available environmental literacy resources.

The office intends to publish and distribute a newsletter for environmental educators beginning in 1991, and support other promising information exchange activities in this rapidly developing field.

Ohio Sea Grant College Program

The Ohio State University
1541 Research Center
1314 Kinnear Road
Columbus OH 43121-1194

Rosanne W. Fortner, Associate Professor
Victor J. Mayer, Professor

Government-academic partnership

(614) 292-1078
FAX (614) 292-7061

Organization Information

The National Sea Grant Program was established by Congress in 1966 with the goal of accelerating the development, conservation, management, and utilization of the aquatic resources of the United States. With Sea Grant assistance, coastal states develop research, advisory services, and education efforts related to the oceans or Great Lakes. The Ohio Sea Grant Program began in 1977; its education component is coordinated through the School of Natural Resources and the College of Education at The Ohio State University.

Materials and Services Provided

The Ohio Sea Grant Program educational publications are the products of over ten years of curriculum development, teacher training, research, and evaluation by leaders in science education and environmental communications.

Best known to teachers are its curriculum infusion activities for middle schools, the Oceanic Education Activities for Great Lake Schools (OEAGLS, pronounced "eagles"). These activities are based on standard curriculum topics in grades 5-9 with an aquatic context. OEAGLS materials are designed to be easily integrated into existing curricula. Each title consists of a student workbook and a teacher guide and costs \$3.00 for the publication, postage, and handling. Recent development efforts in the Ohio Sea Grant Education program have broadened the original format of OEAGLS by creating additional activities for use with children in the primary grades (OEAGLets).

In addition to education publications, the Sea Grant Education office offers information about graduate programs in aquatic education, teacher workshops, and advice on adapting materials to local needs.

A variety of activities available from the Ohio Sea Grant Program are appropriate as background information; however, two OEAGLS activities are particularly relevant to environmental health risk education:

■ PCBs in Fish: A Problem?

(Publication #Ed-023). Grades 5-9. Student workbook, 10 pages; Teacher's Guide, 25 pages. Revised in 1988. This module includes an introduction to PCBs, followed by two activities. The first activity shows that only a small amount of PCBs can create a problem; the second activity includes a simulation of processes used in government to develop policies to protect public health.

■ Pollution in Lake Erie: An Introduction

(Publication #EP-008). Grades 5-9. Student workbook, 14 pages; Teacher's Guide, 17 pages. Revised in 1987. This module uses a 1970 essay to illustrate how to read skillfully and carefully for facts about water quality in the lake. A 1980 article updates and clarifies information presented in the earlier article; the associated activity is designed to teach students to analyze reading materials to determine the truthfulness and value of what they are reading.

Additional Information. For a full publications list or more information about Sea Grant Program materials and services, contact the Program office at the above address and phone number.

Olin Corporation
120 Long Ridge Road
Stamford, CT 06904-1355

Publicly traded corporation

**Carmella Piacentini, Manager, Corporate
Contributions and Community Relations**

(203) 356-3301

**Organization
Description**

Olin Corporation is a Fortune 200 company whose businesses are primarily concentrated in chemicals, metals, and ammunitions, with special emphasis on electronic materials and services and defense/aerospace products. Olin has 17,000 employees worldwide and annual sales of around \$2.5 billion.

**Materials and
Services Provided**

Olin environmental engineers and other health and safety experts are presenting **Exploring the Environment: An Olin Educational Outreach Program** to fifth and sixth graders and high school students in two Stamford (Connecticut) public schools. Designed to be adapted by other Olin locations or other organizations, this program consists of a five-part series of classroom lessons and a field trip that are focused on environmental problems and solutions.

The series begins with a visit to an old industrial waste disposal site that Olin is now remediating. Chosen because it is safe to supervised visitors, this site offers an ideal chance to explain the history of industrial waste disposal, the process of identifying contaminants and developing remediation plans, and the role that ground water and geology play in pollution and cleanup efforts.

The four classroom lectures include one session on hydrology and basic geology; one on the design of hazardous waste landfills and the cost of alternatives; one on air pollution, the role that individuals play in creating it, and what they can do to limit it; and one on interactive emergency response.

The lessons and visual materials used in the classroom sessions are designed to be easily adapted for similar outreach programs elsewhere.

Information. For more information on this Olin Educational Outreach Program, please contact Carmella Piacentini at the above address and phone number.

Organization for Economic Cooperation and Development

2, rue Andre-Pascal
75775 Paris Cedex 16
France

International

Kathleen Kelley, Head of Project

011-33-1-45249190
FAX 011-33-1-45249098

Organization Information

The Organization for Economic Cooperation and Development (OECD) is an international organization with 24 member countries. The OECD administers projects in a wide range of fields, including economics, the environment, and energy. The Center for Educational Research and Innovation (CERI), an organization within the OECD's Directorate for Social Affairs, Manpower and Education, conducts projects to encourage innovation within the field of education.

Materials and Services Provided

In 1990, in recognition of the growing importance of environmental education, the OECD established the Environment and School Initiatives Project within CERI. By the end of 1990, CERI will begin distributing a newsletter about this project.

■ **Environment and School Initiatives Project.** This project will identify and evaluate school projects that incorporate innovative ways of teaching about environmental issues. In selecting school programs to study, the OECD emphasizes the importance of student participation in designing and implementing projects in which students work to change the local environment. The OECD will disseminate information about successful school programs and construct criteria for designing and evaluating environmental education programs. The OECD hopes to address seven main concerns:

- Practical and political barriers to "teaching the environment"
- New forms of interaction between teachers, students, and the community
- The changing roles of teachers and students in environmental education
- Quality standards for interdisciplinary projects

- The scope of environmental education (natural, cultural, social, economic, technological, architectural, etc.)

- Encouraging "dynamic" qualities in students

- Support structures needed for environmental education programs

■ **The Observer.** Published bimonthly by the OECD. This magazine includes articles describing OECD projects and the activities of member countries. An article in the August/September 1990 issue ("The Environment at School") describes the establishment and goals of the Environment and School Initiatives Project; this article also describes some case examples of environmental education programs in member countries.

Additional Information. For more information about the Environment and School Initiatives Project or CERI, call or write to Kathleen Kelley at the phone number and address listed above.

Penn State Conservation Leadership Schools

102 Wagner Building
The Pennsylvania State University
University Park, PA 16802

Dr. James Hamilton, Director

Academic organization

(814) 865-3443

Organization Information

The Penn State Conservation Leadership Schools (CLS) are a continuing education service of the Pennsylvania State University College of Health and Human Development in cooperation with the Pennsylvania Department of Education. Each summer, CLS runs outdoor workshops for high school students interested in natural resource management, conservation, and solutions to environmental problems.

One of the major educational philosophies is that students can make a difference: CLS encourages knowledge, independent thinking, environmental responsibility, and leadership. CLS teachers include resident instructors, representatives of the Pennsylvania Fish Commission and the Pennsylvania Game Commission, and faculty from several academic departments at Penn State. CLS facilities include the 700 acres of the Stone Valley recreation area, a 72-acre lake, 7,000 acres of the University's Experimental Forest, and Penn State's University Park Campus.

Materials and Services Provided

Each year, CLS teaches three summer sessions: CLS I and CLS II (the same workshop is run twice per summer), and Advanced CLS. Topics for CLS I and CLS II include risk assessment, forestry (silviculture), water quality management, energy production and use, wildlife management, soil analysis and use, conservation legislation and regulation, public speaking, environmental issues, low impact recreation, and more. Advanced CLS emphasizes leadership and problem solving, and is designed for students who wish to lead environmental activities and/or become involved with local, state, or national resource management and conservation issues. Students develop and present a multiple-use master plan for more than 700 acres of field, forest, and water resources.

Students may be interested in participating in these CLS workshops. Of particular interest to teachers are CLS' environmental risk assessment curriculum, as well as a "CLS Curriculum Summary" (both described below). Teachers also may be interested in "Conservation Leadership School Philosophy," a handout that describes the educational and environmental philosophy upon which the school's curricula are based.

■ **Environmental Risk Assessment Lesson Plan.** Instructional unit for CLS I and CLS II; developed in 1989. This unit consists of an introduction to the factors involved in assessing risk and a case history-based risk assessment activity. Both the introduction and the activity are based on risk assessment principles developed by the U.S. Environmental Protection Agency. Given a set of evaluation criteria, students are asked to determine the ecological risk, human health risk, and economic/social risk involved in the case history. Students then assign an overall perceived risk to the case and develop strategies to prioritize environmental problems.

■ **Conservation Leadership School Curriculum Summary 1989.** This seven-page document briefly describes the content and pedagogical strategies of all of the curricula (and other services/activities) taught at CLS. Course descriptions for both the regular and advanced workshops are included.

Additional Information. For further information about CLS workshops, call or write to the Continuing Education Office at the address and phone number listed above. To request the *Environmental Risk Assessment Lesson Plan*, other lesson plans, or the other documents described, call or write to Dr. Hamilton at the address and phone number listed above.

Pennsylvania Office of Environmental Education
Pennsylvania Department of Education
333 Market Street
Harrisburg, PA 17126-0333

State agency

Dr. Dean R. Steinhart, Director

(717) 787-9845
FAX (717) 783-5420

**Organization
Information**

The Office of Environmental Education (OEE) serves as the primary implementation agency and network/communication system for environmental education across the state of Pennsylvania. In addition to recommending standards for environmental curricula in Pennsylvania schools, the OEE encourages resource management, community, environmental, professional, youth, and religious organizations to become actively involved in environmental education in the community.

The OEE was established in 1984 in response to recommendations made by the Environmental Education Master Plan Task Force (EEMPTF). The EEMPTF was charged with the task of assessing the status of environmental education in Pennsylvania, drafting recommendations for the redirection and implementation of a state-wide environmental education effort, and establishing a network to promote environmental education through an information and program exchange. The Master Plan developed by the EEMPTF has served as a model for similar efforts in other states.

**Materials and
Services Provided**

The OEE offers technical assistance to educators establishing environmental education programs in Pennsylvania. Publications, resources, and curricula developed by the OEE and other organizations are available through this office.

■ **Environmental Education Scope and Sequence: K-12.** Published in 1988.

This booklet was developed by the Curriculum Subcommittee of the Environmental Education Advisory Council. It briefly defines the goals of environmental education and outlines a comprehensive plan for the development of environmental curricula at all grade levels. The curriculum plan is intended to be interdisciplinary and encourage educators to "teach problem-solving, attitudes, and environmental values."

■ **Regeneration: You and Your Environment. Teacher's Guide** published in 1987. This teacher's guide introduces the concept of regenerative environmental education and includes activities designed to broaden students' views and knowledge of nature, the community, and themselves. Activities designed for grades K-6 and grades 7-12 are included. For example, in the "Toxic Substance Search" activity, students identify toxic substances and explore safer alternatives. Another activity, "Pollution Investigation," encourages students to take action against environmental pollution.

■ **Project Learning Tree (PLT).** PLT, a project of the OEE, provides classroom activities for grades K-12 to help teachers with environmental education. In addition to teaching concepts about the environment, this program helps educators teach problem-solving, higher order thinking skills, and critical thinking. For example, "Who Runs This Place?" is an activity in which students explore the relationships between government policy/law and environmental quality/practices. The OEE administers a free 6-hour workshop to train teachers to implement PLT.

■ **Governor Casey's Earth Week Classroom Program.** Published in 1990.

This booklet was produced to take advantage of the learning opportunities afforded by the 20th anniversary of Earth Day. It includes suggestions for environmental education activities on six topics. Each activity includes an informational overview to the topic, lesson objectives, activity ideas, and a resource list. Of particular interest is "Air and the Atmosphere," which asks students to describe human activities and behaviors that contribute to atmospheric pollution and describe the environmental consequences of various types of air pollution, including their impact on human health. The booklet also describes ideas and resources for longer term projects, such as local environmental monitoring. An extensive resource guide is also provided.

■ **The Newspaper: A Tool for Teaching Environmental Awareness.** Published in 1989. This teacher's guide for using newspaper articles as a tool for environmental education includes articles on 14 topics; each article is accompanied by goals (by grade level) and suggested activities. Topics include acid rain, water pollution, health risks associated with asbestos, waste disposal, and more.

Additional Information. For information about the EEMPTF Master Plan or any of the publications described, call or write Dean Steinhart at the phone number and address listed above. For more information about Project Learning Tree, ask for Patti Vathis.

Regeneration: You and Your Environment also is available from Rodale Press: The Regeneration Project, 33 East Minor Street, Emmaus, PA 18098.

Pocono Environmental Education Center

R.D. 2, Box 1010
Dingmans Ferry, PA 18328

Nonprofit

John Padalino, President

(717) 828-2319

Organization Information

The Pocono Environmental Education Center (PEEC), in cooperation with the National Park Service, is the largest residential center in the Western Hemisphere for education about the environment. Located on 38 acres in the Delaware Water Gap National Recreational Area, PEEC serves as a field center for outdoor environmental studies and many other educational activities. PEEC is committed to the education of individuals, minorities, people with special needs, and social communities in order to promote understanding of both natural and built environments. PEEC has been designated a national Environmental Study Area and an Exemplary Center for Excellence in Science and Energy Education. PEEC receives no state or federal aid, and is funded primarily through visitor use fees and membership contributions.

Materials and Services Provided

PEEC provides a wide range of educational materials and services for students, teachers, and the community: "hands-on/minds-on" environmental education programs and activities, science leadership seminars, school field trips, in-service credit workshops for teachers, instructor/internships in environmental and outdoor education, educational family vacations, natural history programs, and newsletters.

Special educational programs, events, and activities are designed and implemented each year; although topics vary from year to year, activities related to environmental health risk are likely to be available in any given year. Programs and services of particular interest to teachers and students include:

■ **Workshops for Educators.** Educators can attend PEEC's regularly scheduled weekend and week-long workshops for continuing education credit. Topics vary each year; examples include Environmental Issue Analysis Strategies, Recycling, Acid Rain, Environmental Issues, and Outdoor Leadership and Human Relations Skills.

■ **Staff Development Workshops.** PEEC will provide its resources to help educators create a staff development workshop that meets the specific needs of an individual school system.

■ **Instructor/Internships.** Six- to twelve-month positions in environmental education are available to secondary school students, undergraduate students, and others with experience in the fields of science and education.

■ **PEEC Seasons.** Published quarterly. This quarterly newsletter contains an unusual combination of informative and educational features:

- articles about environmental issues (including health risk);
- suggestions and tips for promoting environmental health and safety;
- how-to guides to create your own educational activities;
- puzzles, quizzes, and other activities for children and students;
- contributions from children and students;
- descriptions of upcoming events at PEEC; and
- book reviews.

■ **Field Trips and Special Events.** Students (and the general public) can take educational field trips to PEEC and attend PEEC's weekend and week-long educational events. Topics vary each year.

Additional Information. For information about these or other programs available at PEEC, call John Padalino at the phone number listed above or write to PEEC at the address noted above.

**Public Information Center (PIC) -
U.S. Environmental Protection Agency (EPA)**
PM-211B
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460

Federal government

(202) 382-2080
(202) 475-7751

**Organization
Description**

The U.S. Environmental Protection Agency (EPA), the U.S. agency charged with protecting the environment, is a large organization that publishes a multitude of materials on environmental topics. The Public Information Center (PIC) is a good source for finding useful material on a specific topic. The goal of the PIC is to get nontechnical or consumer-related information to the public. It supplies publications of the EPA's various branches on the environment and related issues.

**Materials and
Services Provided**

PIC makes available educational materials, consumer guides, brochures on EPA programs, and fact sheets and pamphlets on environmental topics. All of their materials are free and may be photocopied. Staffers at the PIC are available to refer callers to the appropriate source or document. Often they will be able to cite part of some larger publication that would not be obvious to someone reading through a list of documents. Environmental risk assessment materials that are available includes:

■ **Environmental Backgrounds.** This is a series of nontechnical explorations of selected environmental topics. They include hotline phone numbers and clearing-house information, when these are available. A few examples:

- Hazardous Wastes
- Asbestos
- Hazardous Chemicals: Emergency Planning and Community Right-to-Know

■ **Pamphlets.** PIC has available hundreds of pamphlets including such titles as:- A Family Guide to Pollution Prevention
- Chemical Hazards Big And Small
- Evaluating the Environment At Superfund Sites: A Citizens Guide

Here are a few examples of other publications of interest to educators:

■ **Books For Young People On Environmental Issues.** An environmental reading list divided by grade level, this pamphlet lists over 70 books appropriate to grades 7 - 12. Listings include such titles as: We Are the Targets: The Story of Environmental Impact, The Poison That Fell From the Sky, and Unfit for Human Consumption. (The EPA does not stock the listed titles).

■ **Environmental Literacy in the 21st Century.** This is the text of a high school commencement address delivered by EPA Administrator, William K. Reilly.

■ **Focus on Ecological Risk Assessment.** This is a two-page capsule, nontechnical description of the steps the government takes in such an assessment. Those interested in this document should mention that it is a pull-out centerfold from the December 1989 issue of The Information Broker, the monthly publication of the EPA Headquarters Library.

Ordering Information. Everything available from the PIC is free and can be ordered by phone or by simply sending a post card. They will send as many as 10 items immediately. Requests for larger amounts may take up to six weeks.

Southern Illinois University
Department of Curriculum and Instruction
Carbondale, IL 62901

Dr. Harold Hungerford
Dr. Trudi Volk

Academic organization

(618) 453-4211
(618) 453-4214
FAX (618) 453-1646

**Organization
Description**

At the Department of Curriculum and Instruction at Southern Illinois University (SIU), Dr. Harold Hungerford and colleagues have developed a set of curricular goals for environmental education and a model for teaching issues investigation to students in grades 5 through 12. This model focuses on investigation of environmental issues and STS (Science-Technology-Society) issues. It begins by providing a foundation of knowledge in the issue being considered, proceeds through analysis -- helping students organize and understand the issue -- and continues through investigation to, finally, involving students in solutions. The model incorporates training in the critical thinking skills of analysis, synthesis, and evaluation.

**Materials and
Services Provided**

Dr. Hungerford and colleagues have developed an informal network of trainers who can present workshops in his method. They range from teacher educators who have studied with Hungerford at SIU to teachers who have been trained in the method, have gone on to assist at other trainings, and now train other teachers. Occasionally Dr. Hungerford or his colleague Dr. Volk will be able to recommend someone from this group who is nearer a client's location or whose interest or expertise coincide with the clients.

Both published curricula and workshops are available as part of the Issue Investigation Model.

■ **Workshops.** Dr. Hungerford and his colleagues offer a wide range of workshops in his model, from a one-hour informational presentation to a two-week, in-service training. Workshops include:

- **One-and-a-Half-Day Issues Analysis Training.** Teaches participants how to understand the societal as well as the scientific implications of an issue. Focuses on such questions as: Who is involved? What is at stake? What values are driving the issue?

- **Two Week In-Service Training.** This in-depth training provides the more sophisticated skills needed in order to involve students in issue investigation/evaluation and issue resolution. The 2-week training (10 working days) includes and builds upon the issues analysis training and incorporates instrument design, sampling techniques, data collection and interpretation, citizenship participation skills, and decision-making.

■ **Curricula.** Dr. Hungerford has developed three curricula appropriate for grades 5 through 12:

- **Investigating and Evaluating Environmental Issues and Actions.** First developed in 1974, this curriculum has been regularly revised, most recently in 1988. It also has been used at the university level but its language is appropriate to the younger grades it is prescribed for. This interdisciplinary program involves students in the investigation and resolution of environmental and science-related social issues. It introduces the skills needed to investigate issues, process the information, and take action. Student edition: \$8.40. Teacher edition: \$10.40.

- **A Science-Technology-Society Case Study: Municipal Solid Waste.** This program focuses on knowledge and issues related to the generation, reduction, and disposal of household and commercial solid waste (including a small section on hazardous waste). It is designed for the teacher who wants a class research project that focuses on a single issue (rather than the autonomous investigation that the other curricula encourage). Nevertheless it does teach the skills associated with issue analysis. Students investigate one aspect of solid waste management in their community, make recommendations and, at the teacher's discretion, can proceed to helping resolve the issues they discover. Teacher notes bound with reproducible student activities: \$14.60

- **Science-Technology-Society: Investigating and Evaluating STS Issues and Solutions.** This curriculum is designed to involve students in today's important science-related social issues. It describes the interrelationship of science, technology, and society, and introduces issues that arise from these three forces. Students learn to analyze the issues, and to collect and process information related to the issues. They then choose an issue, which they independently investigate. The program then introduces citizenship skills and a decision-making model to teach how issues are resolved through responsible citizen participation. Student edition: \$9.80. Teacher edition: \$14.80.

Ordering Information. These curricula are available from Stipes Publishing Company, 10-12 Chester St., Champaign, IL, 61820. Phone: (217)356-8391. Fax: (217)356 5753. There is a 15% discount for orders of 10 or more of any title.

Tennessee Valley Authority

Citizen Action Office

400 West Summit Hill Drive

Knoxville, TN 37902

Judy Driscoll, Project Manager

Regional

in Tennessee: (800) 545-4222
in other TVA states: (800) 251-9250
others: (615) 632-1570

Organization Information

The Tennessee Valley Authority (TVA), created in 1933, is composed of the seven Tennessee River states. The TVA functioned in many capacities, building dams, undertaking forestry projects, and providing formal and informal educational programs. A traditional source of assistance to land-grant colleges and universities in the region, the TVA in 1977 began an experiment with Murray State University in Kentucky to develop the first university-based Center for the Environmental/Energy Education Program. The program has since expanded to include 11 other centers in the region. Each center provides its service area with teacher training, regional services, technical assistance, and program development and research. Together, the 12 centers function as a network and delivery system for environmental and energy education programs. The nationwide Alliance for Environmental Education is currently using the TVA university-based system as a model for a national network.

Materials Provided

More than 40 educational programs have been developed under the auspices of the Environmental/Energy Education Program, many in the form of curricula and instructional materials that have been widely distributed throughout the

region. One such program, *Waste: A Hidden Resource*, developed by Tennessee Valley Authority and distributed nationally by *Keep America Beautiful*, contains an 11-activity unit on Hazardous Wastes for students in grades 7 to 12. Each activity includes a statement on the concept presented in the activity, a list of objectives, background information, procedural instructions, suggested extension activities, and evaluation criteria. Several of these activities are directly relevant to environmental health risk education:

■ **Magnifying the Problem** (grades 9-12; two class periods). This activity simulates the process of biological magnification as it relates to hazardous wastes. Using a case study approach, it demonstrates the spread of contamination through the food chain and through various sectors of the economy.

■ **Toxin Trace** (grades 9-12; two class periods). This activity introduces hazardous substances involved in the production and manufacture of nonhazardous consumer goods. Student activities include handouts summarizing the potential health effects of common household products and offering nonhazardous alternatives to each.

■ **Hazards of Life** (grades 7-12; two to three class periods). This activity introduces students to toxicity, reactivity, ignitability, and corrosivity as properties of hazardous substances.

■ **Read the Label** (grades 9-12; two to three class periods). This activity uses simulations to explore routes of exposure to liquid and solid hazards and introduce students to toxicologic principles such as tolerance and lethal dose values.

Additional Information. For more information about *Waste: A Hidden Resource* or other Environmental/Energy Education Programs, contact the TVA environmental information office at the address and phone number listed above. To order *Waste: A Hidden Resource*, contact *Keep America Beautiful: KAB Inc.*, Mill River Plaza, 9 West Broad Street, Stamford CT 06902, (203) 323-8987.

UNESCO ED/STE

7 Place de Fontenoy
Paris 75700
France

International

011-33-1-45680839
FAX 011-33-1-40659405

Organization Information

UNESCO has collaborated with the United Nations Environment Programme (UNEP) since 1975 to promote environmental education and awareness at the international, regional, and national levels. The primary goal of these efforts is to promote understanding of the human environment and the interaction between its biological, physical, socioeconomic, and cultural dimensions. UNESCO focuses on eight major problem areas: climate change and atmospheric pollution, management of shared freshwater resources, deterioration of coastal areas and oceans, land degradation, biological impoverishments, hazardous wastes and toxic chemicals, and degradation of human health conditions and the quality of life.

UNESCO's current educational goals include contributing significantly to the renewal of science curricula and the introduction of new teaching methods, promoting information exchange and networking, and continuing a pilot project in microcomputers. UNESCO's Information Exchange on Science and Technology Education (INISTE) has played a key role in these activities.

Materials and Services Provided

UNESCO conducts a wide range of educational activities. It sponsors pilot projects to promote interdisciplinary science education, expand the use of technology in general education, and link science and technology with industry. It also runs workshops and seminars, including a European Seminar on Education for Children in Hospitals and an International Seminar on Primary Science Teacher Training. UNESCO also publishes and distributes numerous documents on science and technology education, integrated sciences, and environmental education. Many of these documents are free; some are available on microfiche. Most publications are available in several languages, including English.

■ **The balance of "lifekind": an introduction to the human environment** (#333.3). 26 pages; published in 1986. Free.

■ **Comparative survey of the incorporation of environmental education into school curricula** (#333.4). Published in 1985. Free.

■ **Environmental education. Training of teacher educators, curriculum developers, educational planners, and administrators** (#333.21). 327 pages; published in 1988. Free.

■ **International directory of institutions active in the field of environmental education** (#333.30 document; #333.29 microfiche). 526 pages; published in 1989. Document is free; microfiche is available for sale.

■ **Strategies for the training of teachers in environmental education** (#333.35). 152 pages; published in 1987. Free. This is a discussion guide for UNESCO training seminars on environmental education.

■ **Prototype environmental education curriculum for the middle school** (#333.49). 161 pages; published in 1989. Free.

■ **Field work in ecology for secondary schools in tropical countries** (#333.51). 273 pages; published in 1988. Free.

■ **Trends in environmental education** (#333.41). 307 pages; published in 1977. For sale.

Ordering Information. For a complete publications list, or to order any of the free documents, write to UNESCO at the address listed above. To order any of the publications for sale, write to:

UNIPUB
4611-F Assembly Ave.
Lanham, MD 20706-4391

or

United Nations Bookshop
New York, NY 10017

U.S. Department of Education: Secretary's Fund for Innovation in Education

Federal agency

U.S. Department of Education
Fund for the Improvement and Reform of Schools and Teaching
555 New Jersey Ave. NW
Room 522
Washington, DC 20208-5524

Organization Description

The Fund for Innovation in Education (FIE) supports four separate programs:

Innovation in Education - provides assistance for projects that show promise of identifying and disseminating innovative educational approaches at the preschool, elementary, and secondary levels. For 1990/91 projects (funded in mid 1990) it had about \$2,400,000 available to be awarded in grants of \$50,000 to \$400,000. Funded projects could last up to 36 months. [CFDA No. 84.215A]

Health Education - supports projects for the improvement of comprehensive school health education for elementary and secondary students. For 1990/91 projects it had \$1,515,000 available to be awarded in grants of \$50,000 to \$250,000. Funded projects could last from 12 to 36 months. [CFDA No. 84.215B]

Technology Education - provides assistance for development of educational television and radio programming and the use of telecommunications technology for student instruction and teacher training. For 1990/91 projects it had about

\$650,000 available to be awarded in grants of \$100,000 to \$400,000 and for projects lasting from 12 to 36 months. [CFDA No. 84.215C]

Computer-Based Instruction - provides assistance for projects that strengthen and expand computer-based education resources in public and private elementary and secondary schools. For 1990/91 projects it had \$900,000 available to be awarded in grants of \$50,000 to \$200,000 and for projects lasting up to 36 months. [CFDA No. 84.215D]

Financial resources available vary from year to year. Specific information is available from the Fund each year after the federal budget is legislated.

Application Process

State or local agencies, institutions of higher education, and other public and private agencies and organizations may apply. Teachers may not apply as individuals.

Applicants must submit the appropriate forms (available from the Fund), and an application narrative, which should encompass each function or activity for which funds are being requested.

Selection Criteria - the Secretary uses the following criteria in evaluating applications:

- How well the project meets the purposes of the program
- Extent of need for the project
- Quality of the plan of operation
- Quality of key personnel
- Budget and cost effectiveness
- Evaluation plan
- Adequacy of resources

Deadline: Applications must be submitted in the spring. The exact date will be available from the Fund after the completion of the federal budget process for that year.

Applications and information are available from the Fund for the Improvement and Reform of Schools and Teaching at the address above. Requests should include the specific program title and its CFDA number.

U.S. Environmental Protection Agency (EPA) - Region 2

26 Federal Plaza, Room 737
New York, NY 10278

Federal agency

Dr. Maria Pavlova, M.D., Ph.D., Program Coordinator

(212) 264-7364
FAX (212) 264-9331

Organization Description

The U.S. Environmental Protection Agency (EPA) is divided into geographical regions. Region 2, based in New York City, is responsible for New York State, New Jersey, Puerto Rico and the Virgin Islands. Like all the EPA's regions it is responsible for the regional component of the Agency's environmental education effort.

Materials and Services Provided

Region 2 conducted a public education program at an EPA Superfund hazardous waste site in Toms River, New Jersey. The purposes of the education program, called "Communicating Risks," were to (1) identify environmental concerns related to the site, (2) determine the information needs of the community, (3) develop educational materials to address the community's needs, (4) disseminate to a broad audience the appropriate material, and (5) evaluate the effectiveness of the materials in increasing knowledge and understanding of the relevant issues.

A major objective of the program was to increase community awareness of and involvement in all phases of the cleanup effort. This was accomplished through

community presentations and distribution of fact sheets. One of the cornerstones of this program was the establishment of a community leaders network. The network, comprising leaders of social, civic, and environmental, government, and other groups, enabled the program to reach a broad cross-section of the community, including many citizens who ordinarily would not get involved in environmental issues. The network, through meetings with leaders and with their constituencies, gave program planners a better understanding of the needs of the community. Members also assisted in the development and dissemination of educational materials.

EPA Region 2's "Communicating Risks" project included producing 18 fact sheets that provide information about hazardous wastes, their management and cleanup, and associated health and environmental effects. These fact sheets are 8-1/2 by 11-inch booklets of from two to eight pages, written in non-technical language. Here are a few titles:

■ **Protecting Our Environment: Federal Environmental Laws** - Outlines the legislation that the EPA administers, including the Toxic Substances Control Act, the Safe Drinking Water Act, and the Clean Air Act, and gives examples of progress under these laws. (FF)

■ **Groundwater** - Covers the area of ground water contaminations. Answers such questions as "What is Groundwater?" and "How Does Groundwater Become Contaminated?" (EE)

■ **The Process of Risk Assessment and Risk Management** - Discusses the scientific evaluation of the probability of risk incurred by exposure to environmental chemicals. Covers hazard identification, dose-response relationships, exposure assessment, and risk characterization, and management of environmental risks. (BB)

■ **Chemical Exposures: Effects on Health** - Covers the primary factors that determine the risk involved in a chemical exposure and the kinds of health effects that may result. (CC)

■ **Routes of Exposure** (DD)

■ **Government Agencies that Regulate Chemical Substances** (HH)

Ordering Information. These booklets (and a list of other available titles) can be ordered free from Region 2. When ordering use the codes listed above with each item.

World Resources Institute
1709 New York Avenue, NW, Suite 700
Washington, DC 20006

Nonprofit
(202) 638-6300

Elizabeth Pollock

Organization Information

The World Resources Institute (WRI) is a research and policy institute helping governments, the private sector, and environmental and developmental organizations address a fundamental question: how can society meet human needs and nurture economic growth while preserving the natural resources and environmental integrity on which its life and economic vitality ultimately depend? WRI is an independent, not-for-profit corporation which receives its financial support from private foundations, governmental and intergovernmental institutions, private corporations, and interested individuals.

Materials Provided

Through its Center for International Development and Environment, WRI has collaborated with the Office of International Affairs of the U.S. Fish and Wildlife Service in the publication of two guides for use by individuals or groups undertaking development of environmental education programs:

■ **How to Plan a Conservation Education Program.** 47 pages (available in Spanish and English); published in 1987, reprinted in 1990. This manual is designed to help natural resource managers and nongovernment officials in the preparation of environmental education programs. It outlines and discusses five steps considered essential in this preparation process: assessing the environmental situation, identifying the audience, identifying the message, selecting an educational strategy, and evaluating the program.

■ **A Directory of Selected Environmental Education Materials.** 74 pages; published in 1988. This manual offers select references to programs or materials that already have been produced. Without trying to provide a comprehensive guide to the existing materials, the directory lists sources of readily available materials that may be used by those planning education programs. In compiling the directory, preference was given to materials that encourage active, "hands-on" learning about conservation education, and attempts were made to include materials that can be adapted to a variety of geographic and cultural settings.

Ordering Information. Both publications are available in Spanish and English at a cost of \$5.00, plus \$3.00 postage and handling (for first copy, \$0.60 each additional copy), and free of charge to developing country nongovernment organizations, by writing to Center Publications, WRI, 1709 New York Avenue, NW, Suite 700, Washington, DC 20006.

3. DISSEMINATION OF INFORMATION AND NETWORKING

Alliance for Environmental Education.

Tom Benjamin or Jan Hunt, 10751 Ambassador Drive, Suite 201, Manassas, VA 22110; (703) 335-1025.

The Alliance is composed of diverse regional and national groups, ranging from the American Medical Association to the Wilderness Society to the National Association of Biology Teachers. The Alliance has joined with the U.S. Environmental Protection Agency to establish a network of interactive environmental education centers that, by the end of 1990, should be in operation at 100 colleges and universities across the United States. Each center will provide workshops, lectures, newsletters, and cooperative programs on the environment and serve as a technical assistance, information, and training resource for the schools and the community. Centers will be electronically linked to universities, government agencies, public interest organizations, and businesses to share the most current information on environmental education materials.

American Society for Testing Materials.

Subcommittee T04.02 (Environmental Education), Wendy Dyer, Manager, New Activity Development, 1916 Pace St., Philadelphia, PA 19103; (215) 299-5400. ASTM is developing new standards for environmental education. Four subcommittees were formed to address specific areas of environmental education: environmental literacy, formal education, nonformal education, and technical training. Society membership is not required to participate in this activity at the task group level.

Conservation Education Association.

Robert Rye, President, R.R. #1, Box 53, Guthrie Center, IA 50115. The Conservation Education Association encourages local, state, and national

conservation education programs by disseminating news, ideas, and suggestions on conservation education through annual conferences and reports, a newsletter, other publications, special projects, and cooperation with organizations and agencies active in this field.

Environmental Compact of the States.

Jack Dittmore, Executive Director, 300 Centennial Bldg., 658 Cedar St., St. Paul, MN 55155; (612) 296-9007. ECOS is intended as an ongoing forum through which states, environmental groups, the business community, and academia can collaborate to address critical environmental problems. To foster such collaboration, ECOS is developing an information clearinghouse for gathering and sharing information on how to improve environmental and natural resource management.

U.S. Environmental Protection Agency.

Bonnie Smith, Director, Center for Environmental Learning, Region 3, 841 Chestnut Bldg., Philadelphia, PA 19107; (215) 597-9076/9072. The various EPA regional offices have supported a range of environmental education activities, such as working partnerships, poem and poster contests, adopted schools, speakers' bureaus, information dissemination, and support of other environmental education activities. Region 3 created the Center for Environmental Learning in 1986 to begin to work with regional environmental educators. One of its activities is to maintain a directory of EPA regional and headquarters contacts for environmental education.

Educational Resources Information Center (ERIC)
Clearinghouse for Science, Mathematics, and Environmental Education (SMEAC). Ohio State

University, 1200 Chambers Road, Third Floor, Columbus, OH 43212; (614) 292-6717. This clearinghouse covers curricula and instructional materials, teacher education, learning theory and outcomes, research and evaluative studies, media applications, and computer applications. See entry under Section 2.

Fund for the Improvement and Reform of Schools and Teaching.

Department of Education, National Program for Comprehensive School Health Education. Alan Schneider, Program Operations, 555 New Jersey Ave., NW, Room 522, Washington, DC 20208; (202) 357-6496. This program provides funds to state and local educational agencies, colleges, universities, private schools, and other public and private agencies, organizations, and institutions for a broad variety of activities relating to improving health education for elementary and secondary students. Activities include programs providing information on nutrition, personal health and fitness, disease prevention, accident prevention, and community and environmental health. The 1989 competition awarded \$3 million to 18 projects selected from 80 applications. Program results are designed to be shared nationwide.

General Federation of Women's Clubs (GFWC). Ruth Bartfeld, Program Director, 1734 N Street, NW, Washington, DC 20036-2990; (202) 347-3168. The General Federation of Women's Clubs is the oldest and largest volunteer women's organization in the world with a membership of approximately 350,000 in 8,500 clubs in the United States. GFWC has a longstanding commitment to environmental education and encourages its members to network with resource organizations in the public and private sectors and institute partnerships with local schools. Program direction is provided by GFWC Headquarters with

implementation at the local level to meet local community needs. GFWC Headquarters offers resource suggestions and program ideas to its clubs through its magazine, special bulletins, and meetings.

National Governors Association/Environmental Youth Forum. Michael Cohen or McCarthy O'Reilly, 444 North Capitol St., Suite 250, Washington, DC 20001. The Environmental Youth Forum is designed to enhance public awareness of environmental issues through the involvement of high school students and environmental/science teachers and administrators. Each governor will nominate two high school students from the state. This annual forum will consist of small work group sessions, panel discussions by experts in environmental media areas, global issues discussions, exhibits, as well as international youth participation and interaction.

National Diffusion Network. Mary Lewis Sivertsen, U.S. Department of Education, Office of the Assistant Secretary for Education Research and Improvement, 555 New Jersey Avenue, NW, Washington, DC 20208. The National Diffusion Network (NDN) is a dissemination system for bringing exemplary educational programs to schools and other educational institutions around the country. Projects disseminated by the NDN are often developed locally and tried and field-tested with students and teachers. The Department of Education's Program Effectiveness Panel certifies the effectiveness of every project for regional and national as well as local use. To adopt an NDN program, a school should contact an NDN state facilitator, who will help identify the needs in a particular school and which NDN program offers a solution. Each year, NDN programs are installed in approximately 29,000 schools.

National Science Supervisors Association. Robert Farrel, Executive Secretary, P.O. Box AL, Amagansett, NY 11930; (516) 267-3692. The NSSA publishes a newsletter, journal, and videotape catalog.

National Science Teachers Association. 1742 Connecticut Ave., NW, Washington, DC 20009; (202) 328-5800. A nonprofit educational organization for all who are interested in improving the teaching of science, pre-school through college. NSTA is an affiliate of the American Association for the Advancement of Science. See the entry in Section 2.

National Wildlife Federation. Division of School Programs, Judy Braus, 1400 16th St., NW, Washington, DC 20036; (202) 790-4279. The National Wildlife Federation annually publishes a conservation directory that lists organizations, agencies, and officials concerned with natural resource use and management. See the entry in Section 2.

Rachel Carson Council, Inc. 8940 Jones Mill Rd., Chevy Chase, MD 20815; (301) 652-1877. An international clearinghouse of information on ecology of the environment for both scientists and laypersons related to chemical contamination, especially pesticides, through publications, conferences, and response to specific questions.

SOPRIS West. 1140 Boston Ave., Longmont, CA 80501; (303) 651-2829. This publishing house disseminates curricula in a wide range of areas, including, for example, an AIDS curriculum for both elementary/intermediate and high school levels.

Teacher Centers. 101 Mill Rd., Chelmsford, MA 01824; (508) 256-3985. There are over 600 centers in the United States run by teachers as educational research and development and professional development centers. These may be multi-school-district collaborations or state or municipal organizations. They assist teachers by providing expertise rather than materials. They can be good sources for disseminating information about programs of interest to teachers. Merrimac Education Center (at the address above) provides both a book listing these centers (\$16.95) and a set of mailing labels for the centers in zip-code order (\$65).

Tennessee Valley Authority. John Paulk, East Tower 2A-4B, 400 Summit Hill Dr., Knoxville, TN 37902; (615) 632-3474. Since 1977, TVA has established 10 university-based centers for environmental education and is planning to broaden that network by another 7 centers. All of these centers provide programs in teacher training, program development, regional service, and research. Since 1977, for example, the network has provided teacher training to approximately 20,000 teachers. In addition, over 40 environmental and energy programs have been developed. Examples include a set of curricular activities developed by Memphis State that is designed to focus on the intercity as a unique environment. Special services offered through each center include responses to requests for technical assistance, programs on issues, and services such as proposal writing. In one instance, a center was used as a communication base for warning urban children about a chemical spill in a local creek and swimming hole. The 40 research projects completed over the past decade have covered such issues as validation of educational materials, field-testing of new products, testing for impact and knowledge resulting from programs, and student-teacher attitude surveys. See the entry in Section 2.

4. ADDITIONAL ORGANIZATIONS

Air Pollution Control Association

P.O. Box 2861
Pittsburgh, PA 15230
412-232-3444

APCA is a nonprofit, nongovernmental technical association whose activities are directed to the collection and dissemination of authoritative information about air pollution control and hazardous waste management. The organization produces a sourcebook on air pollution topics.

American Federation of Teachers

555 New Jersey St. NW
Washington, DC 20001
Darryl Alexander
202-879-4400

The primary focus of this organization is the environmental concerns related to occupational hazards (e.g., asbestos, radon, indoor air quality). The organization produces fact sheets, pamphlets, and articles in the organization's magazine, *American Educators*.

American Institute of Architects

School Zone Institute
111 South Jackson
P.O. Box 4508
Seattle, WA 98104
Anne Taylor, Ph.D.
206-621-2250

This organization has been involved in elementary and secondary education since 1966, in an effort to teach children to understand the factors that shape environments.

American Nature Study Society

70 Lenape Trail
Washington, NJ 07882
Kerry Kirk Pflugh, Editor
609-633-2312

This society produces a newsletter including, for example, teachers' tips on how to enliven various environmental lessons and a journal of environmental education and interpretation called *Nature Study*.

American Public Health Association

c/o Molly McCauley
AT&T
295 N. Maple Avenue, #4414 G2
Basking Ridge, NJ 07920
201-221-4171

The public health education section of the APHA publishes a newsletter on public health education.

Association for the Advancement of Health Education

American Alliance for Health, Physical Education, Recreation, and Dance
1900 Association Drive
Reston, VA 22091
Becky Smith, Executive Editor 703-264-3988

This organization, which is a member of the Alliance for Health, Physical Education, Recreation, and Dance, publishes the journal *Health Education* (10 issues a year) and various newsletters. It is working on AIDS education projects and on a national adolescent health survey.

Centers for Disease Control

Center for Environmental Health and Injury Control
Information Resources Management Group
Atlanta, GA 30333
404-488-4400

This division of the CDC publishes a number of useful resources, including these catalogs: *Some Publicly Available Sources of Computerized Information on Environmental Health and Toxicology* and *Environmental Health and Toxicology: A Selected Bibliography of Printed Information Sources*.

Charles Stewart Mott Foundation

Mott Foundation Building
Flint, MI 48502-1851
Maureen H. Smyth, Program Officer
313-238-5651

This foundation provides grants to support educational and environmental research.

Citizens Clearinghouse for Hazardous Wastes

Box 926
Arlington, VA 22216
Steven Laster, Administrator 703-276-7070

This organization, established to respond to the Love Canal, New York, crisis, publishes guidebooks about hazardous wastes and how the public can respond.

Educators for Social Responsibility

Cambridge, MA 02138
Larry Dieringer 617-492-1764

This organization develops training programs for teachers, consults with schools, and develops environmental health curricula. Along with Global Education Associates, ESR published *Caring for the Environment: An Annotated Bibliography and Resource Guide for Grades K-12*.

Environmental Defense Fund

1616 P Street, NW
Washington, DC 20036
Kathie A. Stein,
Director, Environmental Information Exchange
202-387-3500

EDF pursues responsible reform of public policy in the fields of energy and resource conservation, toxic chemicals, water resources, air quality, land use, and wildlife. EDF works through research and public education as well as judicial, administrative, and legislative action.

Environmental Education Center

2055 Central Avenue
Fort Meyers, FL 33901
William Hammond
813-275-4007
The Environmental Education Center has a comprehensive environmental program in science/environmental issues for grades K through 12.

Global Education Associates
475 Riverside Dr., Suite #456
New York, NY 10115
212-870-3290

GEA is an international network of professionals who conduct research and educational programs aimed at advancing world peace and security, cooperative economic development, human rights, and ecological sustainability. Along with Educators for Social Responsibility, GEA published *Caring for the Environment: An Annotated Bibliography and Resource Guide for Grades K-12*.

National Association for Humane and Environmental Education
67 Salem Road
East Haddam, CT 06423-0362
Patty A. Finch, Executive Director
203-434-8666

This division of the Humane Society of the United States develops educational materials on the interaction of animals, humans, and the environment. One project covers the health risk involved in consuming meat and how meat production affects the environment. The association produces a newspaper for children covering some of these topics.

National Water Well Association
6375 Riverside Dr.
Dublin, OH 43017
614-761-1711

The NWWA is committed to the study of the occurrence, development, and protection of ground water. The association annually sponsors more than 70 educational programs covering a wide variety of water issues, including toxic substances, solid waste, and water pollution.

New York Academy of Sciences
2 East 63rd Street
New York, NY 10021
Talbert Spence
Director, Pre-College Education Programs
212-838-0230, ext. 223

The NAS is a consortium of organizations in the New York metropolitan area that provides programs designed to provide

information on environmental/scientific issues, careers, and social factors involved in environmental science.

North American Association for Environmental Education
P.O. Box 400
Troy, OH 45373
Joan Heidelberg
513-339-6835

The NAEE is designed to promote environmental education at all levels, coordinate environmental education activities among such programs and educational institutions, disseminate information on programs, and assist institutions in beginning or developing programs. The organization publishes a newsletter bimonthly and *Current Issues in Environmental Education* annually.

Pan American Health Organization
Regional Office for the World Health Organization
525 Twenty-third Street, NW
Washington, DC 20037
Marilyn Rice
202-861-3200

This organization promotes and coordinates efforts of western hemisphere countries to combat disease, lengthen life, and promote physical and mental health of the people. The Health Programs Development division provides resource information on issues of environmental health, tropical diseases, and epidemiology.

Planned Parenthood Federation of America, Inc.
810 Seventh Ave.
New York, NY 10019
212-541-7800

This voluntary nonprofit health and advocacy agency provides family planning and health information to 3.6 million Americans.

Project Learning Tree
1250 Connecticut Avenue, NW
Suite 320
Washington, DC 20036

This national organization runs workshops for teachers and Girl Scout leaders. It creates and distributes activity guides on how to read, environmental issues (e.g., noise pollution and curricula on conservation/science.

Sierra Club
730 Polk St.
San Francisco, CA 94109
415-776-2211

With 57 chapters and 340 groups nationwide, the club's nonprofit program includes work on legislation, litigation, public information, publishing, wilderness outings, and conferences.

Society for Public Health Education
2001 Addison Street, Suite 220
Berkeley, CA 94704
415-644-9242

The organization seeks to promote, encourage, and contribute to the advancement of public health by encouraging distribution of public health resource information and elevating standards of achievement in public health education.

Worldwatch Institute
1776 Massachusetts Ave., NW
Washington, DC 20036
202-452-1999
Worldwatch is a nonprofit research organization concerned with identifying and analyzing emerging global problems and trends and bringing them to the attention of opinion leaders and the general public.

World Wildlife Fund-U.S.
1250 Twenty-fourth Street, NW
Washington, DC 20037
Lynne C. Hardie
202-293-4800

Affiliated with the Conservation Foundation, WWF is the largest private U.S. organization working worldwide to protect endangered wildlife and wildlands. WWF has helped protect some 180 national parks and nature reserves; assists local groups to take the lead in needed conservation projects; monitors international trade in wildlife, and seeks to influence public opinion and the policies of governments and private institutions to provide conservation of the earth's living resources.