

ENVIRONMENTAL EDUCATION RESOURCES: GOVERNMENT AGENCIES, RESEARCH FACILITIES, AND PROFESSIONAL ASSOCIATIONS

Frederick W. Stoss <fs6@stc06.ctd.ornl.gov>

Carbon Dioxide Information Analysis Center, Environmental Sciences Division, Oak Ridge National Laboratory, P.O. Box 2008 (MS-6335), Oak Ridge, TN 37831-6335 USA. TEL: 615-574- 0390 FAX: 615-574-2232

Sam H. Ham outlined in the Spring 1992 issue of the Green Library Journal (v. I, no. 2) ways that librarians can perform strategic tasks in breaking traditional barriers to environmental education. He praised this journal for having taken the lead in serving as a forum for presenting environmental information and related issues to the library and information profession.

This column brings resources, issues, concerns, and organizations related to environmental education to the attention of librarians. Future issues will continue to serve as a forum to keep librarians up-to-date in the areas of environmental, outdoor, nature, and conservation education. If you have any materials, programs or organizations you would like featured in this column, please contact Fred Stoss at the address below.

Efforts to increase the public's understanding of the environment, especially among students from preschool through university programs is a result of more than twenty years of environmental activity in the U.S. Increased awareness about the environment was stimulated by the myriad of activities of Earth Day '90, celebrating the 20 twentieth anniversary of Earth Day. Classrooms at all levels have seen unprecedented efforts bringing environmental themes, projects, and activities to students and teachers.

Government agencies, research centers, and professional associations, typically identified with the scientific and technical aspects of the environment, have dedicated programs and resources to help the student, educator, parent, and concerned citizen learn more about the nature and complexity of the environment. Education materials from both the private and public sectors are designed to increase understanding for the science and technology underlying current environmental problems and attempt to reduce the uncertainties often connected to environmental issues. Designed to inform general non-technical audiences, these types of environmental education materials have broad application as supplemental materials for undergraduate college courses, student resources, and teacher aids for elementary through senior high school. In many cases these education materials can serve as outstanding teaching tools for other, more sophisticated audiences: background briefings for the media, educational tools for citizen groups, and overviews for elected officials at all levels of government.

Energy and the Environment: Where Horizons Meet

The U.S Department of Energy's (DOE's) Energy Information Administration has released Energy Education Resources: Kindergarten Through 12th Grade (DOE/IEA- 0546(92)). This publication is undertaken each year by the National Energy Information Center, a service of the Energy Information Administration. This inventory provides educators and students with a list of materials that are generally available free or at a low cost. Topics cover a broad range of energy issues, with environmental topics well represented: energy conservation and efficiency, global warming, oil pollution and cleanup, recycling, alternative energy sources, and general environmental studies. The levels of activity presented range from simple posters and

classroom experiments to science fair-related projects. More than 150 sources of energy education information have been compiled in the 1992 version of this timely publication. To order a copy of Energy Education Resources contact the National Energy Information Center (EI-231) Energy Information Administration, Room 1F-048, Forestal Building, 1000 Independence Avenue, SW, Washington, DC 20585; 202/586- 8800, 202/586-1181 TDD.

CAREIRS (Conservation and Renewable Energy Inquiry and Referral Service) is a U.S. DOE information service providing information on the full spectrum of renewable energy technologies and energy conservation. This information service maintains a data base containing a nationwide network of public and private organizations which specialize in technical or region-specific information. CAREIRS provides fact sheets, booklets, bibliographies, and referrals related to such issues of energy conservation and renewable energy as active and passive solar, photovoltaic, wind, biofuels, wood heating, alcohol fuels, ocean energy, geothermal, and municipal waste. Featured titles available from CAREIRS include: *Converting a Home to Solar Heat (FS110)*, *Energy-Efficient Lighting (FS141)*, and *Is the Wind a Practical Source of Energy for You?* To obtain a list of resources available, contact CAREIRS, P.O. Box 8900, Silver Spring, MD 20907, or call toll-free at 800/523-2929.

The U.S. Department of Energy supports a wide variety of environmental education programs from high school through post-graduate levels. DOE efforts are undertaken to ensure that an adequate supply of scientists, engineers, technicians, and policy analysts will be available in future years. In 1989 DOE convened a national conference in Berkeley, California, to examine its role and responsibilities related to its educational mission. Many of the programs reviewed at this meeting are compiled in the Education Programs Catalog (DOE/ER-0540P). Included in this compendium are descriptions of DOE-sponsored regional and national pre-college programs, programs for undergraduates, graduate programs, and other programs related to public awareness and science literacy. These listings also include program descriptions for teachers from the middle through high school levels, college and university faculty programs, and minority programs. Introductory sections of the catalog detail the department's objectives and goals related to its education mission. Brief descriptions of the DOE national laboratories, technology centers, and other facilities that sponsor or host DOE education programs are provided. All addresses for contacting specific programs or centers, including appropriate request forms are provided. To order this catalog contact: Science/Engineering Education Division, Oak Ridge Institute for Science Education, P.O. Box 117, Oak Ridge, TN 37831-0117; 615/576-3350. Copies of the catalog are also available from Information Services, Office of Scientific and Technical Information, U.S. Department of Energy, P.O. Box 62 Oak Ridge, TN 37831; 655/576-8401.

The Electric Power Research Institute (EPRI) plans and manages an extensive research and development program for U.S. electric utilities. EPRI's research program covers all aspects of power production and use, including environmental aspects of the energy picture. In response to public awareness associated with the intersection of energy and environmental issues EPRI has produced a number of materials to establish a scientific basis for policy and management decisions.

The EPRI Technical Interest Profile (TIP) System is designed to keep persons interested in energy-related issues abreast of EPRI research activities. Many of the materials produced for the TIP program are written for quick reading, and twice per month these EPRI mailings provide the most recent information on any chosen interest area. Part of TIP is the production of a series of Technical Briefs, which summarize the

current status of an EPRI research program and provides details on results of interest. Relevant titles include: Acid Rain Research Results (1989), Acid Rain and Forest Health (1988), Acid Rain and Materials Damage (1990), Environment Division: Research Review (1990), The Greenhouse Effect... To What Degree? (1989), Ozone: One Gas, Two Environmental Issues (1988), Ozone and Forest Health (1988), Reforestation: A Tool for Offsetting Carbon Dioxide Emissions (1992), and Restoration of Acidic Ecosystems (1991). To receive a subscribers brochure for the Technical Interest Profile, contact the Electric Power Research Institute, EPRI Membership Division, P.O. Box 10412, Palo Alto, CA 94303-9743; 415/855-2859.

Changing Perspectives Through Global Change Education

The Office for Interdisciplinary Earth Studies, in conjunction with the Office of Global Programs of the National Oceanic and Atmospheric Administration, has produced Our Ozone Shield as the second part of a series titled, Reports to the Nation on Our Changing Planet. The series is intended to raise the level of public awareness on the issues dealing with global environmental change and are distributed to teachers (K-12 and colleges and universities). The first title in this series, The Climate System, won wide acclaim for its comprehensive and intelligible treatment of the topic. To receive a copy of either of these pamphlets contact Diane Ehret, Office of Interdisciplinary Earth Studies, University Corporation for Atmospheric Research, P.O. Box 3000, Boulder, CO 80307-3000; 303/497-1688, 303/497-1679 FAX.

The International Geosphere-Biosphere Programme (IGBP) has recently published a booklet that serves as a general introduction and overview of the international research and policy initiatives related to global environmental change. Global Change: Reducing Uncertainties is a forty page report that describes the motivating efforts of the IGBP and the core science projects that are under its auspices. The IGBP has developed a science program of interlinked projects to examine the interactions between the oceans, atmosphere, and land as they pertain to the issues of global change. To obtain a copy of this report and be placed on the distribution list of the IGBP Global Change Newsletter, contact the IGBP Secretariat, Royal Swedish Academy of Sciences, Box 5005, S-105 05 Stockholm, Sweden; +46-8- 166448, +46-8-166405.

The National Agricultural Library (NAL) has revised its 1991 Global Change Information Packet. In response to the public's reaction to scientific observations related to changes in the earth's climate, NAL updated its information packet on global climate change providing a variety of materials for the general public. The packet contains several fact sheets describing the surrounding concerns and potential effects of global climate change. Lists of books and journal articles, and contacts to other information centers and organizations are provided. Reprints of popular articles discussing the issues of climate change are also included in the packet. Many of the materials described in the packet are directly available through public or school libraries or from the U.S. Department of Agriculture (USDA). For additional copies of this free NAL Information Packet, send your request and a pre-addressed mailing label to the Reference Section, Room 111, National Agriculture Library, 10301 Baltimore Blvd., Beltsville, MD 20705. For additional information about the USDA's role in the study of global climate change contact the Reference Center of the NAL, Room 1052 South, U.S. Department of Agriculture, 14th & Independence Aves., SW, Washington, DC 20250; 202/720-3434.

The editorial team of the newsletter *Tiempo: Global Warming and the Third World* (School of Environmental Sciences, University of East Anglia, Norwich NR4 7TJ, U.K.; 44-603-592722, FAX: 44-603-507784) has recently produced an inventory of global change-related titles largely drawn from a database of environment

and development documentaries maintained by the Moving Pictures project of the Television Trust for the Environment (TVE). TVE was established by the United Nations Environment Programme and Central Television in 1984 as a nonprofit organization to promote environment and development issues through broadcast television and radio. TVE co-produces films and assists filmmakers in developing regions to make films on regional environmental issues. TVE also acts as a distributor for many such documentaries. TVE produces a quarterly publication in English (*Moving Pictures Bulletin*), French (*Les Cahiers du Futur*), and Italian (*Tam Tam Video News*). TVE contacts are: Television Trust for the Environment, 46 Charlotte Street, London W1P 1LX, U.K.; Les Cahiers du Futur, Environnement- Développement, 5 Passage Montgallet, 75012 Paris, France; Tam Tam Video News, CEIS, via Palermo 36, 00184 Rome, Italy; and TVE Distribution and Training Centre, Postbus 7, 3700 AA Zeist, The Netherlands.

Getting Your Feet Wet

The U.S. Fish and Wildlife Service (USFWS) and the U.S. Geological Survey (USGS) of the U.S. Department of Interior have produced a new wetlands educational poster to assist teachers with an all-important environmental topic. The poster, *Wetlands: Water, Wildlife, Plants, and People* provides classroom activities for elementary and middle school students. The objective is to teach children about wetland ecology and the need to conserve these resources. The poster displays various types of wetlands and how they are used. On the reverse are textual components including terms and activities for classroom instruction. The poster is provided in three versions: two in color for elementary level students (K-5) and middle school (6-8). A black and white version with no text is available for younger children to color. The National Science Teachers Association has distributed 50,000 of the posters through its Science Scope and Science and Children publications. An additional 200,000 copies are available for other distribution outlets.

Wetlands is the third in a series of nine posters being developed in response to former President Bush's Education 2000 challenge. The Wetlands poster can be obtained by contacting the USGS, Branch of Distribution, P.O. Box 25286, Denver Federal Center, Denver, CO 80225 or the USFWS, Publications Unit, 4401 North Fairfax Drive, MS-130, Arlington, VA 22203. The two earlier posters, *Water, the Resource that Gets Used and Used and Used for Everything* and *Wastewater Treatment*, can be obtained from the American Water Resources Association, 5410 Grosvenor Lane, Bethesda, MD 20814-2192 and the National Science Teachers Association, 1742 Connecticut Avenue, NW, Washington, DC 20009.

Better Understanding Through Chemistry

The Office of Legislative and Regulatory Programs (OLRP) of the American Chemical Society's Department of Government Relations and Science Policy serves as a focal point of the society's government activities at the federal, state, and local level. To increase public understanding of the role that chemistry plays in various policy developments, OLRP has produced a number of Information Pamphlets. The pamphlets are written by scientists expert in their respective fields and undergo an extensive review process to help ensure the pamphlet's completeness and accuracy. The series is geared primarily for understanding at the high school level and serves as an excellent resource for instructional purposes at the undergraduate level especially in the setting of the two year associates and four year liberal arts colleges. They can be used as extremely effective tools for adult audiences, where these guides provide a general overview of the topic with balance in an understandable text.

Environmental titles (and dates of production or revision) are: *Acid Rain* (3rd revision, 1991), *Biotechnology* (1985), *Chemical Risk: Personal Decisions* (1989), *Personal Risk: A Primer* (1984), *Global Climate Change* (1990), *Ground Water* (1989), *Hazardous Waste Management* (1992), and *Pesticides* (1987).

The ACS Department of Government Policy also oversees the development of technical brochures that enable scientific and technical personnel better understand the laws and regulations affecting them. The following technical brochures are also available from ACS: *Chemical Risk Communication: Preparing for Community Interest in Chemical Release Data* (1988), *Informing Workers of Chemical Hazards: The OSHA Hazard Communication Standard* (1990), *Issues in Peer Review of the Scientific Basis for Regulatory Decisions* (1985), *Less is Better: Laboratory Chemical Management for Waste Reduction* (1985), *Principles of Environmental Sampling* (1990), *RCRA & Laboratories* (1986), and *The Waste Manual for Laboratory Personnel* (1990).

Other ACS publications of an environmental interest include public policy statements. These statements are written to key Congressional members or appointed officials and cover topics such as the Clean Air Act; proposed regulations defining laboratories as a "source" category; the Environmental Risk Reduction Act; U.S. Department of Energy's National Energy Strategy; and waste management research, development, and demonstration.

Single copies of any of these publications, a brochure describing the Department of Government Relations and Science Policy, and an ACS publications order form are available at no cost and can be ordered directly from the American Chemical Society, Department of Government Relations and Science Policy, Room, 1155 Sixteenth Street, NW, Washington, DC 20036. For information on receiving multiple copies of these materials call the ACS at 202/872- 4479. Enclosing a self-addressed mailing label will expedite the processing of your request.

University of Wisconsin chemistry Professor Bassam Z. Shakhashiri has completed the twenty-third rendering of his now famous (or infamous) chemistry magic show, "Once Upon a Christmas Cheery, In the Lab of Shakhashiri." The show was videotaped prior to the 1992 holiday season as part of a Public Broadcasting System effort aimed at achieving science literacy by the public at large, as well as by non-science students. Exploding balloons, fireballs, floating and disappearing color solutions, breath testing for carbon dioxide, and the non-burning of a \$20 bill soaked in a mixture of isopropyl alcohol and water are among the stunts performed by Dr. Shakhashiri. The show traveled extensively across the country including stops at the National Academy of Sciences and the Boston Museum of Science. The videotape includes some dramatic slow-motion footage of the experiments and is available for US\$30.00 payable to UW Christmas Lecture from the Department of Chemistry, University of Wisconsin, 1101 University Avenue, Madison, WI 53706-1322.

Educational Materials from National Geographic

The National Geographic Society provides a wide variety of information products specifically developed for environmental educational purposes at all levels. These materials include video tapes and film strips, computerized courseware, and books. Topics include specific environmental concepts such as pollution, acid rain, ecosystems, ecology, endangered species, geology and earth sciences, wildlife, land resources, and, of course, geography! These materials are best suited for classroom settings, and they are captivating for

students, teachers, and adult guests. The National Geographic education resources need not be restricted to use in formal education settings. The videos and computer courseware are also very well suited for youth groups, museum programs, and nature center activities. The quality of materials is unsurpassed, and they are recommended highly. The National Geographic Educational Services Catalog is available by contacting the National Geographic Service, P.O. Box 37357, Washington DC 20077- 9979; 800/368-2728; FAX (301) 921-1380.

Basics of General Science

The American Association for the Advancement of Science has embarked on a long-term program to revitalize and reform science and technology education (including environmental topics) in the United States. Project 2061 (the date of the next appearance of Halley's Comet) will develop a new set of curriculum modules for instructing children in grades K-12. The planning phase of the project was culminated in 1989 with the publication of *Science for All Americans* (Oxford University Press).

This report is now being used to design curricula at six different school settings. At each site a team of science, mathematics, and social science teachers from all grade levels and administrators are working toward meeting a 1994 goal for implementing Project 2061. Many other schools across the country are using *Science for All Americans* to independently reform their own science programs. For more information about this effort and to receive a free quarterly newsletter contact Sheila Harty, Project 2061, American Association for the Advancement of Science, 1333 H Street NW, Washington DC 20005; 202/326-6666.

Online Search Hints

When looking for appropriate education resources online, one is faced with a dilemma of where to turn and what to do when you get there. In 1991, I had the opportunity to initiate a three-part series of articles that appeared in the journal *Database* (Stoss, 1991). This article provided an overview of environmental information that is available from various online databases, including a brief section on environmental education. A side bar of environmental terms was included as part of this article (Alston and Stoss, 1991). You might want to start expanding your ENVIRONMENTAL EDUCATION search strategy by including the following related terms: CONSERVATION EDUCATION, ENERGY EDUCATION, NATURE EDUCATION, and OUTDOOR EDUCATION. Specific types of information (e.g., curricula, teacher aids/guides, reports, journal articles) or issues and topics (e.g., acid rain, the greenhouse effect, stream ecology, recycling) can then be selected and extracted from the more universal body of environmental education resources.

The next installment of this column will include descriptions of the Ohio State University's Earth System Education (ESE) program, general interest materials for the U.S. Environmental Protection Agency's Public Information Center, the education activities of the American Water Works Association, and what the Future Fisherman Foundation is doing to get kids Hooked on Fishing, Not on Drugs.

References

1. Alston, P. G., and F. W. Stoss. 1991. Environmental Terms and Phrases: A Suggested List. *Database* 14(4):22-26 (sidebar).
2. Stoss, F.W. 1991. Environment Online: The Greening of the Databases, Part 1. *General Interest Databases. Database* 14(4):13-27.