United States
Environmental Protection
Agency

Office of Pollution Prevention
Washington, DC 20460

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EPA

Pollution Prevention News

Inside:

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Pollution Prevention News
U.S. EPA
401 M Street SW (PM-222B)
Washington, DC 20460

Editorial Staff:
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University of Michigan Awarded National Center

The University of Michigan has been awarded funding for a national pollution prevention center. The new center will develop pollution prevention curriculum modules for undergraduate and graduate engineering, business, and natural resources classes, and for broad distribution to other universities nationwide.

Creation of the university center responds to an urgent need for development of curricular materials that incorporate technical information and pollution prevention concepts into university education, particularly in engineering and business schools.

The University of Michigan plans to conduct outreach efforts through short summer courses, offer pollution prevention internships for students at business and industrial facilities, and provide information and education for university faculty through departmental and interdepartmental seminars. The University has committed to support the center for three years with substantial supplemental funding.

The award, worth over $300,000, grows out of a "2% set-aside" project initiated by

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33/50 Progress Report

Response to EPA's voluntary "33/50 Program" has been extremely positive, EPA announced in the first of a series of progress reports. The 33/50 program is a voluntary program initiated in February of this year to encourage reductions in toxic waste generation from industrial sources. The overall national goal is a 50% reduction by 1995 in the generation of 17 high-priority toxic chemicals, with an interim goal of a 33% reduction by 1992.

Some 6,000 companies report to EPA's Toxic Release Inventory one or more of the 17 chemicals covered by the 33/50 Program. In the first round of contacts, EPA sent letters to nearly 600 companies, informing them of the program and inviting their participation. The 600 companies account for 79% (1.1 billion pounds) of releases and transfers of the 17 target chemicals reported to TRI in 1989.

As of June 1991, 236 companies have responded with commitments; of them, 140 companies provided explicit, company-wide, numerical commitments to reduce their waste generation, for a total of 201 million pounds in planned reductions to date. Twenty-seven companies offered reduction commitments that went beyond the target chemicals, often including all chemicals listed under TRI.

We like your 33/50 Program. From our experience, we have concluded that substantial pollution prevention and/or reduction can be achieved cost effectively.
—Martin Marietta Corporation
(76% reduction by 1995)

EPA expects to receive commitment letters on a continuing basis throughout the year, and will issue progress reports periodically. For more information, contact the TSCA Hotline at 202-554-1404.

Back to School . . .

New Institute Offers Course Modules on Environmental Issues in Management

The non-profit Management Institute for Environment and Business (MEB) has developed a series of course modules designed to cover environmental issues in traditional business disciplines. The first modules in the series are "An Environmental Reader for Production and Operations Management" and "Marketing an Ecology."

The course module on production has a particular emphasis on prevention. Readings discuss such topics as source reduction methods and industrial "ecosystems" for integrated pollution control.

"One of the goals of the module is to demonstrate to the manager that being environmentally sound doesn't necessarily require adoption of some global, visionary strategy but may simply mean being careful, i.e., exercising a reasonable amount of caution in routine processes, purchasing decisions, quality control, etc.," MEB notes.

Already, business faculties at Stanford, New York University, Berkeley, UCLA, and Penn State plan to use MEB's modules in the coming year. Additional modules are planned in finance, accounting, business policy and strategic management.

To order publications or obtain additional information, contact MEB, 1401 Wilson Boulevard, Suite 60, Arlington, VA 22209. Tel: 703-525-1133. Fax: 703-247-8343.

Environmental Literacy at Tufts Institute

Tufts University has created an Environmental Literacy Institute (TELI) to assist its faculty in developing the capability of teaching environmental issues in the context of their disciplines. The program, under the leadership of Dean Anthony Cortese, seeks to have *all* Tufts graduates — in liberal arts and engineering, medicine, veterinary medicine, dentistry and nutrition, law and diplomacy, and graduate school — become environmentally literate and responsible citizens.

Tufts officials believe that environmental literacy depends on a broad, continuing, and repetitive program throughout a student's educational experience. The emphasis is on integrating environmental concepts into existing courses rather than requiring all students to take a few specialized courses.

Among the experiential learning programs available to Tufts students is participation in Tufts CLEAN! (Cooperation, Learning and Environmental Awareness Now!), a demonstration project funded by EPA's Office of Pollution Prevention to analyze the energy and materials flow throughout the university with the aim of developing cost effective methods for reducing and recycling waste and energy use. The project is using the research capabilities of Tufts' Center for Environmental Management; students are involved in audit design, data collection and analysis, implementation, and evaluation.

For more information on current programs, contact 617-381-3486.

Curriculum Seminar

Some 75 faculty members from 13 institutions attended a two-day June seminar on "Incorporating Pollution Prevention Concepts in Higher Education Curricula," sponsored by Washington State's Department of Ecology in cooperation with Washington State University and the Waste Reduction Institute for Training. Seminar organizers have prepared a $25 resource package that includes 18 sample syllabi for courses in business, agricultural engineering, and chemical engineering; a directory of faculty across the country involved in teaching pollution prevention; a bibliography; and other reference materials. For more information or a copy of the resource package, contact Timothy Gaffney, Dep't of Ecology, Waste Reduction, Recycling and Litter Control Program, Mail Stop (PV-11), Olympia, WA 98504; (206) 483-7873.

UCLA Curriculum Development

Fouling of heat transfer tubes in heat exchangers in the chemical and petroleum industries results in periodic plant shutdowns and potential waste generation. Calculate the payback time on a pollution prevention strategy of building a spare reboiler if reboiler cleanout is required every 360 days.

Pollution prevention has entered the engineering curriculum at the University of California at Los Angeles, with homework and design problems such as the one excerpted above, designed by Dr. David Allen with the support of the EPA-sponsored American Institute for Pollution Prevention. The problems are based on case studies solicited from industry, professional societies, and other sources and emphasize integrating life cycle analysis, material substitution, and waste targeting into standard engineering subjects. A workbook of problem sets will be distributed to all academic chemical engineering departments through the AIChE Center for Waste Reduction Technologies.

Among other environmental education efforts at UCLA, the Graduate School of Architecture and Urban Planning conducted a comprehensive environmental audit of the UCLA campus which resulted in a number of pollution prevention measures being implemented. The *Campus Environmental Audit* produced by the UCLA audit team will be published as a national textbook within the year; the original UCLA audit report has been adopted as a text in more than a dozen universities and will also be published this year.

For more information on UCLA activities, contact Dr. Allen at 213-206-0300.

University of Michigan

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EPA's Office of Toxic Substances. Selection of the University of Michigan was made by an Agency-wide review panel, which considered 28 proposals. For more information, contact Karen Hoffman, 202-260-7849.

Louisiana Cuts Tax Breaks for Polluters

Louisiana, which is second in the nation in toxic waste releases, has launched a new program designed to make industry see pollution prevention as a bargain. Companies that don't clean up their act stand to lose up to half of their state property tax exemptions for new capital investment, which can be worth millions of dollars.

"This program says, 'Look, tax exemption is a privilege, not a right,' " explains state policy and planning administrator John Glenn, one of the architects of the plan. "This has been a very bitter pill for industry to swallow."

More than 200 tax exemption applications have been reviewed under the program, with 97 of the applications coming from petrochemical facilities, which are generally the biggest polluters. The applications reviewed so far would result in $15 million in lost tax breaks. However, the "heaviest hitters" seem to have delayed their applications until the program's rules were finalized in late August. "We expect to see a flood of applications now," Glenn said.

One of the first companies to be told it would lose millions of dollars in tax breaks asked for a chance to revise its application. One of the revisions was a guarantee of an 85 percent reduction in toxic emissions by 1996, which improved its environmental score considerably.

Companies can lose as much as 25 percent of their tax exemption if their emissions-to-jobs ratios are too high.

The program was conceived by Secretary of Environmental Quality Paul Templet, with the strong support of Governor Buddy Roemer. "We weren't going to be able to solve Louisiana's problems if we continued to bring in these huge bulk chemical plants," said Templet, a former professor of environmental studies. More than 90 percent of the state's hazardous waste is generated by less than 7 percent of its industrial facilities.

Industrial tax exemptions are intended to stimulate the state's economic development, but "many of the exemptions granted were to companies already located within Louisiana for expansions which created few or no permanent jobs," according to state policy and planning administrator Maurice Knight. Louisiana ranks 46th in the nation in per capita income, despite exempting over $300 million in industrial taxes every year.

The new program in part uses an emissions-to-jobs ratio to give incentive to industries that are labor-intensive rather than pollution-intensive, Knight explained. Companies can lose as much as 25 percent of their tax exemption if their emissions-to-jobs ratios are too high.

Also, companies can lose up to another 25 percent of their tax exemption if they have bad records for environmental violations, going back to January 1990. To reward companies for improving environmental performance, past violations are discounted over time, and no longer considered after 5 years. To discourage companies from tying up every penalty in litigation, the program stipulates that violations that are voluntarily settled have their impact on tax exemption awards cut in half.

To offset these tax exemption losses, the program offers bonus percentage points for companies that, for example, have reduced or will pledge to reduce emissions from 1988 levels by at least 5 percent per year, or will create new jobs in the state's high-unemployment regions. "Major companies are coming to us and saying, 'What do we have to do to win these bonus points?' " said Glenn.

Companies automatically lose half their tax exemption if more than one-fifth of their products are EPA-banned or designated-to-be-banned materials such as DDT or CFCs. They lose their entire tax exemption if more than 15 percent of their net hazardous waste comes from out of state. Facilities with groundwater contamination or a history of negligence may have to undergo a more detailed environmental review before their tax exemption status is determined.

For more information about Louisiana's program, contact J. Glenn or M. Knight in the Louisiana Department of Environmental Quality, (504) 765-0720.

Post Office Issues Pollution Prevention Policy

In one of the most far-reaching pollution prevention policies adopted by a federal agency, the U.S. Postal Service has issued management instructions to adopt pollution prevention practices in all postal facilities. The policy calls for:

- encouraging the use of nonpolluting technologies and waste minimization in the development of equipment, products, and operations;
- promoting the sustainable use of natural resources and protection of the environment through conservation, recycling, and reuse of material internally and in working with customers;
- including environmental considerations among the criteria by which projects, products, processes, and purchases are evaluated;
- developing in postal service employees an awareness of environmental responsibilities; and
- maintaining an ongoing quality assurance program.

Guidelines are included for forming recycling teams at each of the Postal Service's 38,000 offices, stations, and branches, and implementing a recycling program. Source reduction guidelines are under preparation and will be issued at a later date. For more information, contact Robert H. Coven at 202-268-5595.

Corporate Notes

New Form R Requirements Coming

New requirements are being proposed for Form R, the Toxic Release Inventory, as mandated by the Pollution Prevention Act of 1990. The proposed requirements will affect all facilities required to submit Form R under section 313 of the Emergency Planning and Community Right-to-Know Act. EPA is advising companies to begin planning now, since the requirements are applicable to calendar year 1991, which will first be reported to EPA and states by July 1, 1992.

The Pollution Prevention Act requires that the following data be submitted for each toxic chemical for which a facility submits Form R:

- The quantity of the toxic chemical entering any waste stream (or otherwise released to the environment) prior to recycling, treatment, or disposal during the calendar year; the percentage change from the previous year; and estimates for the following two years.
- The amount of the toxic chemical which is recycled at the facility or elsewhere; the percent change from the previous year; estimates for the following two years; and the recycling process(es) used.
- The amount of toxic chemical that is treated at the facility or elsewhere during the year and the percent change from the previous year.
- The amount of toxic chemical released into the environment as a result of a catastrophic event, remedial action, or other one-time event, and which is not associated with production processes.
- Source reduction practices used with respect to the toxic chemical at the facility.
- Techniques used to identify source reduction opportunities, including employee recommendations, external and internal audits, participatory team management, and material balance audits.
- A ratio of production in the reporting year to production in the previous year.

The proposed rule will be published in the *Federal Register* in the Fall 1991, with a final rule scheduled for the end of the year. EPA is also preparing guidance to help facilities develop estimates for these new data elements and identify sources of data. For more information, contact the EPCRA Information Hotline at 1-800-535-0202.

Profile: Xerox's Environmental Programs Worth Copying

It's nice to know that the people who make it easy to generate multiple copies of documents are also at the forefront of industrial recycling and source reduction efforts.

Xerox repairs and remanufactures many used parts, including power supplies, motors, paper transport systems, and metal rollers. In 1990, Xerox recycled 1 million parts in this way, worth some $200 million. They are mostly used as replacement parts, but sometimes are used in new equipment. "They are tested to the same standards as new parts. The quality is always the same," said Jack Azar, corporate manager of operations and product safety. To trim inventory needs and make it easier to recycle parts, Xerox is changing designs so that related products share a greater proportion of interchangeable components.

Xerox is testing toner containers made from 25 percent recycled plastic resins, and is studying the feasibility of using recyclable and recycled plastics in its copiers themselves. "We're working with the plastics manufacturers as well as some of the recyclers," said Azar.

Also, every year, the company recovers some 34 million pounds of metal and other materials from scrapped parts, and reclaims nickel, aluminum, and selenium from used photoreceptors.

Xerox cut its hazardous emissions and releases in half between 1988 and 1989 and another 15 percent between 1989 and 1990. New recovery systems in Xerox's organic photoreceptor plants are expected to cut methylene chloride emissions by more than 85 percent by this October. The company helped to develop limonene, a biodegradable terpene extracted from orange peels, which is used with water to replace 1,1,1-trichloroethane in cleaning, saving Xerox 1.5 million pounds of chlorinated hydrocarbon waste and a half million pounds in air emissions per year. Now Xerox is evaluating an alternative cleaning method that would minimize the use of limonene and water.

Xerox has taken steps to make energy conservation inherent in the design of their machines themselves. In the early 1980s, Xerox was the first U.S. company to incorporate automatic energy-saving modes into the design of copiers and printers. Today, Xerox is also working on toners that fuse at lower temperatures and improved insulation to reduce heat loss around the fuser. Also, Xerox workstations have a "quick power-down" option that allows users to shut off idle equipment with minimum delay during power-down and power-up.

Joseph Stulb, operations manager, Environmental Engineering: "A compound made from orange peels . . . has replaced the need for a chlorinated solvent."

For more information on Xerox's pollution prevention efforts, contact Abhay K. Bhushan, manager of environmental leadership programs, at (408) 737-4407 (Sunnyvale, Calif.).

Case Study

Waste Reduction Options at a Printing Company

A printing company produces, on a quick turnaround basis, legal forms, business cards, and office supplies for the legal profession. The manufacturing operations of the facility involve two major procedures, engraving and printing. These activities and related procedures, including photo processes and etching, present potential opportunities for waste reduction.

One objective of this study was to make the most efficient use of limited technical time resources by developing a concise listing of opportunity areas and technology options.

Processes, Waste Streams, and Options

The first step in either engraving or printing is a photographic operation. After the creative design, artistic, and layout work is completed by the design group, a photographic negative is produced using a normal photographic process with typical development techniques. Subsequently, a phototransfer step is used to reproduce the image on a metal plate. Copper plates are used in the engraving process and aluminum plates in the printing process.

Currently, the developer and related solutions are managed as hazardous waste. Because of the silver content of the photographic process, it is possible that the liquid waste streams, particularly the spent developer solution, contain enough silver to support a silver recovery operation.

The Engraving Process

The primary step within the engraving process where waste reduction opportunities occur is in the etching operation. Fundamentally, the etching step accomplishes the chemical removal of unprotected copper from the copper plate creating depth differences on the plate which can be used to transfer the image to the paper. The chemical system uses a solution consisting of 55% ferric chloride and 45% hydrochloric acid. The spent acidic iron and copper chloride solution is currently disposed of at annual cost exceeding $10,000.

A number of waste reduction options can be proposed for this operation. The first is to identify and use an off-site vendor which would regenerate the bath solution by copper removal, and return the renewed solution to the company, for reuse. The second option would encourage the acquisition of electrolytic equipment to carry out the bath regeneration on site. A third option is to shift to a new chemical system using a cupric chloride solution as the etchant rather than the ferric chloride solution now used.

The final step in engraving plate preparation is plate cleaning. Removal of the polymeric photoresist protective coating is accomplished by immersing the plate in a bath of of N-methylpyrolidone. Currently, the spent solvent from this cleaning process is handled as a hazardous waste. Two options provide opportunities for waste reduction. One is recovery and reuse of the organic solvent via distillation. The other option is to switch from a chemical cleaning process to a mechanical cleaning technique such as polishing, brushing or sandblasting.

The final operation in the engraving process is the impression itself. Ink sludge is generated by the cleaning of equipment at the rate of approximately 110 gal/yr. Two waste reduction options exist for this waste - dewatering via filtration, centrifugation or drying, or use of the ink solids as raw material in the manufacturing of the ink.

The Printing Process

The fundamental differences between the engraving process and the printing processlie in the type of plate used and the composition of the ink. The two areas within the printing process which present the most promising pollution prevention opportunities are in the impression step and in the equipment cleaning step. The impression step would involve a change from solvent based inks to a water based ink system. The equipment cleaning waste reduction option would involve a switch to water based cleaner.

The full report entitled "Waste Reduction Activities and Options at a Printer of Forms and Supplies for the Legal Profession" by Patrick Eyraud and Daniel J. Watts is available from: EPA/RREL, Pollution Prevention Research Branch, 26 W. Martin Luther King Drive, Cincinnati, OH 45268.

PG&E, EPA Team Up

Pacific Gas and Electric (PG&E) and EPA Region 9 have entered into an agreement to work together on pollution prevention activities. The partnership will promote programs that prevent and reduce pollution and increase public understanding and action in pollution prevention.

In addition to a research project, four projects have been identified:

- The "Energy Efficiency in Federal Buildings" project targets federally owned and leased buildings on which to perform energy audits, and to implement the audit recommendations for energy improvements.
- The "Home Audit" project aims to expand the existing energy audits PG&E performs to address radon gas, carbon monoxide, asbestos, and household hazardous wastes.
- The "Clean Fuel Vehicles" project will assist and more effectively promote PG&E's existing clean fuels program.
- A "Pollution Prevention Education" project will combine PG&E's access to its 4.2 million electric customers with EPA's environmental expertise to educate consumers and encourage individual actions to prevent pollution.

For more information, contact Alisa Greene at EPA, 415-744-2190.

Environmental Education News

Study Says Local Committees Opt Out of Pollution Prevention

A new study suggests that local emergency planning committees (LEPCs) established under the 1986 Emergency Planning and Community Right-to-Know Act are not getting involved in risk reduction or pollution prevention. Researchers at **Tufts University's Center for Environmental Management** say that LEPCs appear not to be going beyond their legal obligation to develop emergency response plans for environmental disasters.

Under the 1986 act (also known as SARA Title III), LEPCs have access to previously unavailable information about the use and emission of toxic chemicals in their area. "These committees could play an important role in prevention, but they will have to be persuaded and they will need help," said former project manager Kathleen Rest.

For a copy of the study, "Risk Communication ad Community Right-to-Know: A Four-Community Study of SARA Title III," send a check for $18, payable to "Trustees of Tufts College," to Karen McDonald, CEM, Tufts University, Curtis Hall, 474 Boston Ave., Medford, MA 02155 (617-381-3486).

Training Begins for Toxic Use Reduction Planners

Jack Luskin, Sc.D.
Associate Director
for Education and Training
Massachusetts Toxics Use
Reduction Institute

The Massachusetts Toxics Use Reduction Act of 1989 established a new paradigm for industry-government relationships in which cooperation toward achieving a common goal (a 50% reduction in the amount of toxic waste generated by 1997) replaced a "compliance only" approach to environmental protection.

Under the Act, companies that use toxic chemicals above an applicable threshold amount must develop toxic use reduction plans. These plans are due in 1994 and must be approved by certified Toxics Use Reduction Planners.

Beginning in October, the Toxics Use Reduction Institute will be offering a pilot course for planners. The course, which is the first step in the certification process for planners, will be 48 hours long, consisting of three hour sessions, twice per week for eight weeks, to be held at the University of Massachusetts at Lowell.

This fall will also see the start of an exciting new pollution prevention education project. Pollution Prevention in the Pulp and Paper Industry is targeted to middle school teachers and students, and will utilize new interactive and participatory learning technologies, including distance learning.

Working jointly with the Massachusetts Corporation for Educational Telecommunications, the Institute will be developing curriculum to make students more aware of the pollution-generating aspects of consumer lifestyles, and their own ability to affect the environment through the use of selective consumerism. It will also give middle school teachers experience in the theory and practice of pollution prevention education.

For more information, contact the Massachusetts Toxics Use Reduction Institute, University of Lowell, 1 University Avenue, Lowell, MA 01854, tel: 508-934-3275.

Native American College Students Pair up with SERI Researchers

An agreement between the Solar Energy Research Institute (SERI) and the Council of Energy Resource Tribes (CERT) will bring Native American students to SERI to broaden their education in energy, science, and engineering. The students will use the knowledge gained in the fellowship program to help guide the environmentally safe development of tribal resources.

Under the agreement, CERT will recruit and screen student applicants for the program. The fellowships will pair students with SERI researchers who will be exposed to the new energy technologies being developed at SERI. SERI, owned by the U.S. Department of Energy, is a leading laboratory in solar and renewable energy research. For more information, contact Syl Morgan-Smith at SERI, 303-231-7683.

EPA's 1991 National Environmental Information Conference
December 2-5, 1991
Philadelphia, PA
Contact: Joe Hamilton
Tel: 215-597-8046, Fax: 215-597-8255

WERCForce

WERCForce, an innovative education and research consortium of New Mexico institutions, is hosting a weekly video-conference running through November 1991 that offers training on hazardous and radioactive waste management, including methods of waste minimization. Members of the consortium include New Mexico State University, University of New Mexico, New Mexico Institute of Mining and Technology, Sandia National Laboratories, Los Alamos National Laboratory, and Navajo Community College (Associate). For more information, call 505-646-2038.

Resources

EPA Office of Pollution Prevention

Recent publications from EPA's Office of Pollution Prevention include:

- The 1991 edition of *Pollution Prevention Training Opportunities Guide* — contains listings of workshops, training courses, manuals, videos, etc.
- *Report on EPA's Pollution Prevention Program* (May 1991) — a 25-page summary of EPA's activities in pollution prevention over the last three years.
- Fact Sheets on topics in pollution prevention, including: *EPA's Pollution Prevention Strategy;* the *Pollution Prevention Act of 1990; Local Governments and Pollution Prevention;* and *Recent EPA Publications on Pollution Prevention.*

To obtain copies of any of these publications, call Priscilla Flattery at 202-260-1023.

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Pollution Prevention at Denver Airport

Making pollution prevention a reality at the Denver International Airport will be the goal of David Duster, an environmental scientist with EPA serving as the Pollution Prevention Coordinator to the New Airport Office at Stapleton, CO for a one-year IPA assignment. EPA Region 8 signed an agreement in March 1991 with the Denver International Airport to promote pollution prevention in the airport's design, operation and maintenance. Airport staff have applied state-of-the-art technology in areas of fueling, air quality, water conservation and glycol (de-icing) handling. EPA is providing additional technical support on pollution prevention in the areas of waste management, water and energy conservation, and air quality. The cooperative effort represents a model for EPA's work with local governments in a supportive, ex-officio role. For more information, contact Sharon Childs in EPA Region 8, 303-293-1471.

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Final Groundwater Strategy

EPA has released its *Final Ground Water Strategy*, emphasizing prevention of pollution and sustainability of ground-water resources for present and future generations. The strategy, representing the final report of an EPA Groundwater Task Force formed in 1989, indicates how EPA will use water quality standards and cancer risk levels in making specific decisions on prevention and cleanup. For copies of the report, contact EPA at 202-260-4454.

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Gulfline BBS. . .

. . . is a free electronic bulletin board operated by the EPA Gulf of Mexico Program. Resources available include an electronic mail system, full text of the program's newsletter *Gulfline*, news and event updates, and a directory of Gulf experts. To access, call 1-800-235-4662 or FTS 494-7081 (9600 baud, data 8/stop 1, parity-none, duplex full). For help, call the system manager, Robert Glass, FTS 494-1065.

Environmental Consumer Market

An EPA report released in April 1991, *Assessing the Environmental Consumer Market*, documents over 40 examples of environmentally-oriented goods and services that promote source reduction, recycling, natural resource conservation, and animal species preservation. Examples range from "Wetlands Preserve," an environmental bar that opened in 1989 in New York City, to Melitta's line of unbleached coffee filters. Single copies of the report are available (while supplies last) from: Public Information Center, U.S. EPA, 401 M St. SW, Washington, DC 20460.

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Scrap and Save

The Northeast Waste Management Officials Association has released two reports, *Scrap Tire Management in the NEWMOA States* ($40) and *Source Reduction of Toxic Metals in Household Batteries: Federal, State and Industry Initiatives* ($30). Copies are half-price for government and non-profit organizations. Available from NEWMOA, 85 Merrimac St., Boston, MA 02114, Tel: 617-367-8558.

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The Green Business Letter. . .

. . . is a monthly newsletter that offers hands-on information for "environmentally conscious companies" and those that would like to be. A recent issue covers how to save electricity in office equipment. For a free sample copy, write: Joel Makower, Editor, The Green Business Letter, 1526 Connecticut Ave. NW, Washington, DC 20036 or call: 202-332-1700.

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Report on Barriers to Pollution Prevention

prepared by the Minnesota Office of Waste Management (March 1991), examines regulatory, economic, educational, and institutional barriers to promoting pollution prevention in Minnesota, and outlines recommendations for how the state government can serve as a role model. For copies of the publication, call 612-649-5750 or 800-652-9747.

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EPA's Wetlands Hotline: 800-832-7828

Open Mon-Fri, 9-5:30 EST. Callers can receive information and answers to questions regarding wetlands functions, value, and protection programs.

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Groundwater Reference Guide

A 26-page, easy-to-use bibliography of groundwater materials has been compiled by the University of Michigan Biological Station with support from the Groundwater Education in Michigan program. For a free copy, write to UMBS, Pellston, MI 49769, or call 616-539-8789.

Calendar

Title	Sponsor	Date/Location	Contact
8th Annual New Jersey Environmental Expo	NJ Dept. of Env. Protection, others	Oct. 21-23 Edison, NJ	Virginia Maguire 201-379-1100
W.Va. Conference on the Environment	W.Va. Environmental Institute	Oct. 3-4 Charleston, WV	Patrick Gallagher 304-342-2123
Enviro Expo	BIC Resources	Oct. 29-30 Beaumont, TX	Tel: 800-467-3141 Fax: 504-752-0140
International WasteCycle Waste Tech/Canadian Waste Management Conf., ISWA Annual Technical Conference	Environment Canada, NSWMA APWA, U.S. -Canadian Federation, SWANA	Oct. 29-Nov. 1 Toronto, ON	Cynthia Clemmer 202-659-4613 800-424-2869
Special Solid Wastes	Clemson Univ. College of Engineering	Oct. 29-30 Columbia, SC	800-277-1109 803-656-3308
Pollution Prevention Course	Government Institutes	Oct. 31-Nov. 1 Washington, DC	Tel: 301-921-2345 Fax: 301-921-0373

Environmental Shopping/ Labeling Conferences

Sponsored by EPA Region 3 and the Pennsylvania Resources Council, Sept. 30 - Oct. 2, in Baltimore, MD. Speakers will discuss local, state, national, and international labeling initiatives, examine the environmental costs of convenience, and explore the establishment of a national labeling policy. Contact: 215-565-9131 (PRC); 215-597-6728 (EPA).

1991 Binational Great Lakes/ St. Lawrence River Pollution Prevention Symposium

Sponsored by Environment Canada and U.S. EPA, Sept. 30-Oct. 1, Traverse City, MI, to be held in conjunction with the International Joint Commission's 1991 Biennial Meeting. Focus on industrial competitiveness through pollution prevention, individual empowerment and the use of regulations and incentives. Contact: Cathy Stubitsch, 312-263-2383.

Environmental Protection Information Conference

Sponsored by the Environmental Learning Institute, Oct. 22-24 in Washington, D.C. Sessions on energy efficiency, transportation, life cycle analyses, environmental business opportunities abroad, model programs, procurement, agriculture. Keynote address by Senator Al Gore. For information, call 301-309-0700; fax: 301-340-7214.

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"Pollution Prevention Tips" EPA Region 9/Fraser Felter, 415-744-2181