



POLLUTION PREVENTION  
FACULTY AND PROGRAMS:  
**CENTERS**



## **GENERAL POLLUTION PREVENTION CENTERS**

### **61 MR. MATTHEW ARNOLD**

Management Institute for Environment and Business

1101 17th Street, NW

Suite 502

Washington, DC 20036

**Phone:** (202) 833-6556

**Fax:** (202) 833-6228

The Management Institute for Environment and Business (MEB) is an independent non-profit organization that empowers future leaders to contribute to environmental progress by engaging businesses, universities, and communities in creative problem-solving. MEB has worked with over 100 universities and corporations, undertaking several environmental management education initiatives such as (1) publication of course development modules and a resource guide of abstracted materials, (2) curriculum development assistance for faculty members building new courses, and (3) production of new case study materials on environmental issues in business.

### **62 DR. ZIONA AUSTRIAN**

Associate Director, Great Lakes Environmental Finance Center

Cleveland State University

Levin College of Urban Affairs

Cleveland, OH 44115

**Phone:** (216) 687-6947

**Fax:** (216) 687-9277

**E-mail:** ziona@cua3.csuohio.edu

The Great Lakes Environmental Finance Center (GLEFC) was created in June 1995 with the mission to increase the capacity of public and private sectors of Great Lakes States and communities to finance environmental improvements which are economically productive and which enhance the quality of life for citizens. It is a technical assistance, training and research resource for state and local government, private sector, and non-profit organizations. GLEFC helps solve financial problems related to environmental facilities and resources. In addition GLEFC sponsors training seminars and conferences. It is one of six environmental centers across the country financed (with a seed grant) by the U.S. EPA. The Center focuses on three areas: (1) pollution prevention financing; (2) financing the redevelopment of brownfields; (3) privatization. For more information about the people involved with the Great Lakes Environmental Finance Center, see record number 75 (Iannone).

### **63 DR. JONATHAN BULKLEY**

Director, National Pollution Prevention Center for Higher Education

Professor, Natural Resources and Civil

and Environmental Engineering

University of Michigan

430 East University

Ann Arbor, MI 48109-1115

**Phone:** (313) 764-1412

**Fax:** (313) 9647-5841

**E-mail:** jbulkley@umich.edu

The National Pollution Prevention Center (NPPC) was established in 1991 by the US EPA to develop and disseminate pollution prevention educational materials for colleges and universities in a variety of disciplines. The NPPC is a collaborative effort between academia, industry, government, and public interest groups. It is actively collecting educational resources from faculty nationwide, as well as developing new material. The P2 compendia are composed of some of the following types of materials: introductory/background materials, readings, journal articles, close-ended problems, open-ended problems, case studies,

videos, computer software, and other resources. The current list of compendia disciplines include *Accounting, Business Law, Chemical Engineering, Chemistry, Corporate Strategy, Environmental Studies, Environmental Engineering, Finance, Industrial Ecology, Industrial Engineering and Operations Research, and Operations Management*. The NPPC is currently working with faculty from not only the University of Michigan, but also Cornell University, University of Minnesota, University of Virginia, Vanderbilt University and the University of Miami to develop effective educational materials which integrate P2 and core concepts of the discipline. The discipline areas in which these faculty are developing P2 compendia include *Architecture, Agriculture, Finance, Strategic Management, Marketing, Coastal Pollution Prevention and Chemistry*. A list of documents is available upon request. The NPPC also administers an internship program which places Undergraduate and Graduate students into internships at industries and businesses engaging in P2 projects. Dr. Bulkley also teaches, with Dr. Keoleian, a professional education course, *Design for Environment (DfE): Fundamentals for Sustainable Development* through the University of Michigan College of Engineering. For more information about others involved with the NPPC, see record number 99 (Keoleian).

#### 64 **MS. BARBARA BUSH**

Executive Director, American Institute of Pollution Prevention

1616 P Street, NW

Suite 100

Washington, DC 20036

**Phone:** (202) 797-6567

**Fax:** (202) 797-6559

**E-mail:** cd001001@interramp.com

The American Institute for Pollution Prevention (AIPP) is a non-profit organization formed to promote the adoption of the P2 ethic by catalyzing change and defining and promoting new directions that are environmentally compatible. AIPP's members consist of industrial trade associations and professional societies. It serves as a link between EPA, DOE, and industry by generating public and private sector support among its member organizations to aid efforts to achieve the cultural change necessary to adoption of the P2 ethic. Part of the Institute's mission is: to serve as a bridge for communication on the subject of P2, to promote necessary institutional culture shifts, to identify and foster incentives/driving forces, to define and communicate the economics of P2, and to influence the future directions of the field. Within the general mission, programs and projects are conducted with an overall view of communicating and advocating P2 policies, techniques and services. The AIPP is dedicated to communication and service; it is not a research organization. It generates educational and informational materials; reviews and comments on policies, programs, rules and regulations of various environmental agencies and organizations; participates in and co-sponsors educational and informational symposia and roundtables. For more information, visit WWW site at <http://es.inel.gov/aipp/>.

#### 65 **DR. NEVIN COHEN**

Research Director, Center for Environmental Communication

Rutgers University

P.O. Box 231

New Brunswick, NJ 08903

**Phone:** (908) 932-8795

**Fax:** (908) 932-7815

**E-mail:** cohen@aesop.rutgers.edu

The Center for Environmental Communication specializes in corporate communication of environmental performance, citizen-corporate cooperation, and the effects of informational regulation on corporate environmental performance. The Center conducts research and training to improve communication among industry, government, and the public about a range of environmental, technological, health, and agricultural issues. The center studies such topics as understanding public response to risk, conveying technical information, improving public participation, and managing effective risk communication. For more information, visit WWW site at <http://aesop.rutgers.edu/www/misc/centist.htm#cec>.

**66 DR. ANTHONY CORTESE**

CEO, Second Nature  
44 Bromfield Street  
5th Floor  
Boston, MA 02108

**Phone:** (617) 227-8888  
**Fax:** (617) 227-0104  
**E-mail:** info@2nature.org

Second Nature is a new non-profit environmental organization located in Cambridge, MA. Its main goals are to (1) form partnerships with colleges and universities, and (2) facilitate the training of their existing faculties in ways that will help them embed environmental thinking in their curricula. Second Nature has developed partnerships with the Historically Black Colleges and Universities/Minority Institutions (HBCU/MI) consortium, and the Brazilian Consortium for Environmental Education and Research. These consortia represent 17 American universities, 4 Brazilian universities, and 7 Brazilian governmental and non-governmental organizations. For more information, visit WWW site at <http://www.2nature.org>.

**67 DR. CLIFF DAVIDSON**

Director, Environmental Institute  
Professor of Civil & Environmental Engineering  
and Engineering & Public Policy  
Carnegie Mellon University  
Pittsburgh, PA 15213-3890

**Phone:** (412) 268-2951  
**Fax:** (412) 268-7813  
**E-mail:** cliff@andrew.cmu.edu

The Environmental Institute at Carnegie Mellon is an umbrella organization dedicated to promoting environmental education and research. A key effort of the Institute is the *Environment Across the Curriculum Program*, where many courses throughout the campus are being revised to include examples of environmental issues. In this way, all students at Carnegie Mellon have the opportunity to learn about environmental issues in the context of different disciplines. For example, each of the six engineering departments has an introductory course designed to acquaint freshmen with that particular engineering discipline; these six courses are being modified to include material on topics such as recycling, process and product design for the environment, waste minimization, and pollution control. Upper level Undergraduate courses in engineering are also being modified. Additional revisions are planned for core courses in the sciences, humanities, and other disciplines.

**68 MR. PAUL R. DICKINSON**

Executive Director, Partnership for Environmental Technology Education  
6601 Owens Drive  
Suite 235  
Pleasanton, CA 94588

**Phone:** (510) 225-0669  
**Fax:** (510) 225-0679

The need for a broad cooperative effort directed toward the enhancement of science, mathematics and technical education, including environmental science and technology, has been recognized as a national priority by government, industry, and the academic community. In an effort to address this need, the Partnership for Environmental Technology Education (PETE) has been established as a national non-profit organization designed to link the technical resources of the DOE, DOD, EPA, and NASA Laboratories, federal and state agencies, private industry and professional societies with participating community colleges. PETE's programmatic focus is to assist in the development and presentation of curricula for training environmental technicians, to encourage more transfer students to pursue studies in environmental science, engineering and management at four-year institutions and to conduct special projects designed to enhance the participation of underrepresented minorities and women in environmental fields, promote technology transfer, etc.

The PETE network, piloted originally in the five western states of Arizona, California, Hawaii, Nevada and Utah, now consists of six regional public/private partnerships (Western PETE, North West PETE, North Central PETE, North East PETE, South East PETE, and South Central PETE) serving all fifty states, Puerto Rico and the U.S. territories. For more information, visit WWW site at <http://ateec.kirkwood.cc.ia.us/pete.html>.

**69 DR. IHAB H. FARAG**

Director, New Hampshire Pollution Prevention Partnership  
 Professor, Chemical Engineering  
 University of New Hampshire  
 255 Kingsbury Hall  
 Durham, NH 03824-3591

**Phone:** (603) 862-2313  
**Fax:** (603) 862-3747  
**E-mail:** [ihab.farag@unh.edu](mailto:ihab.farag@unh.edu)

Director of the New Hampshire Pollution Prevention Partnership. The Pollution Partnership is developing pollution prevention case studies, P2 exercises and problems, P2 workshops, P2 talks, and P2 summer program for high schools. Dr. Farag is involved in a pollution prevention internship program.

**70 MR. KURT FISCHER**

US Coordinator, The Greening of Industry Network  
 Research Professor, The George Perkins  
 Marsh Institute  
 Clark University  
 950 Main Street  
 Worcester, MA 00610-1477

**Phone:** (508) 751 4607  
**Fax:** (508) 751 4600  
**E-mail:** [kfischer@vax.clarku.edu](mailto:kfischer@vax.clarku.edu)

The Greening of Industry Network is a research and policy institute, without walls, dedicated to building a sustainable future. It is an international partnership with two coordinating offices—one at Clark University and one at the University of Twente in the Netherlands. The Network's mission is to stimulate, coordinate and promote research of high quality and relevance to ensure that the activities of industry—including business, labor, consumers, government and others—are consistent with building a sustainable future. Guided by a 19—member international advisory board, the Network carries out this mission through linked international conventions, publications and a communications network. The Network is 1100 people from 50 countries working in academia, business, NGOs, public interest, labor and government, to develop and implement sound strategies which emphasize the goals of sustainable development—both economic and environmental well being. The Network conducts conferences and workshops to connect people and ideas in order to develop useful policies, strategies and actions. The next international conference is planned for November 24—27, 1996 in Heidelberg, Germany. In addition to publishing its own conference and policy reports, the Network is affiliated with the international journal, *Business Strategy and the Environment*, published by John Wiley & Sons UK. Network publications include *Environmental Strategies for Industry* (Island Press, 1993) and *The Greening of Industry Resource Guide and Bibliography* (Island Press, 1996). The Network's quarterly newsletter appears in the journal and is posted to electronic lists and bulletin boards; an electronic list server has been established to link the 40 most active Network volunteers.

**71 DR. ROBERT L. FORD**

Director, Center for Energy & Environmental Studies  
Southern University at Baton Rouge  
Cottage #8, P.O. Box 9764  
Baton Rouge, LA 70813

**Phone:** (504) 771-4723  
**Fax:** (504) 771-4722  
**E-mail:** robert@subrvm.subr.edu

The Center for Energy and Environmental Studies (CEES) facilitates the engagement of the University and surrounding communities in interdisciplinary studies and community improvement activities focusing on energy and environmental issues. A multidisciplinary team of physical, biological, computer, and social scientists, engineers, and policy professionals engage in pure and applied research at the University, national labs, and various agencies. They teach at pre-college and college levels and conduct outreach activities such as conferences, Saturday pre-college educational sessions, after school computer literacy programs, and symposia. Objectives of the Center include (1) developing and disseminating environmental and energy-related information and strategies, (2) technology transfer, and (3) outreach. CEES has the capability of assessing the level of public awareness of environmental issues. It focuses on P2 and environmental equity issues.

**72 DR. VICTOR GOLDSMITH**

Director, Center for Applied Studies of the Environment  
City University of New York—Hunter College  
695 Park Avenue  
New York, NY 20021

**Phone:** (212) 772-5450 or 5046  
**Fax:** (212) 650-3528  
**E-mail:** vfg@everest.hunter.cuny.edu

The Center for Applied Studies of the Environment (CAPSE) was established by a grant from the New York State Legislature at the City University of New York's Hunter College Campus. The Center is comprised of 22 scientists recognized for their activities and for their contributions in a number of important environmental areas. CAPSE has been formally approved by the Board of Trustees of the City University of New York, and has the strongest support of the Chancellor, the President of the Graduate School, as well as the presidents of the individual campuses. The missions of CAPSE are: (1) to undertake a multi-campus applied research effort specifically charged with improving the economy of New York State by assisting businesses with their environmental problems and by developing new environmental technology; and (2) to improve the business climate and the economy of New York State through a variety of approaches including working with appropriate New York City, New York State and Federal agencies on significant environmental problems, outreach programs, training, and on other aspects.

**73 DR. DAVID GUTE**

Center for Environmental Management  
Tufts University  
177 College Avenue  
Medford, MA 02155

**Phone:** (617) 627-3486  
**Fax:** (617) 627-3099  
**E-mail:** dgute@pearl.tufts.edu

The Tufts University Center for Environmental Management is involved with a variety of educational programs that emphasize pollution prevention topics. These include the Tufts Environmental Literacy Institute (TELI)—a faculty development workshop held twice a year, the Environmental Management Institute (EMI)—a series of short courses emphasizing the development of technical and managerial skills, and the Environmental Professional Development Program (EPD) which targets individuals seeking further enhancement of their environmental skill set or the ability to branch into a new career trajectory.

**74 DR. JAMES W. HOTCHKIES**

Manager, Sheridan Environmental Technology Institute

Sheridan College

Box 7500

Brampton, Ontario

CANADA L6V 1G6

**Phone:** (905) 874-4364

**Fax:** (905) 874-4363

**E-mail:** james.hotchkies@sheridanc.on.ca

The Sheridan Environmental Technology Institute develops and delivers seminars and workshops on a wide range of environmental technology issues including pollution prevention planning, resource recovery technologies, clean production technologies, air/solid/water pollution control, environmental assessment, risk management, life cycle analysis, etc. The Institute is involved in projects across North America, Eastern Europe, China, South Asia, and South America.

**75 DR. DONNARD IANNONE**

Executive Director, Great Lakes Environmental Finance Center

Cleveland State University

Levin College of Urban Affairs

Cleveland, OH 44115

**Phone:** (216) 687-6947

**Fax:** (216) 687-9277

**E-mail:** di@cua3.csuohio.edu

The Great Lakes Environmental Finance Center (GLEFC) was created in June 1995 with the mission to increase the capacity of public and private sectors of Great Lakes States and communities to finance environmental improvements which are economically productive and which enhance the quality of life for citizens. It is a technical assistance, training and research resource for state and local government, private sector, and non-profit organizations. GLEFC helps solve financial problems related to environmental facilities and resources. In addition GLEFC sponsors training seminars and conferences. It is one of six environmental centers across the country financed (with a seed grant) by the U.S. EPA. The Center focuses on three areas: (1) pollution prevention financing; (2) financing the redevelopment of brownfields; and (3) privatization. For more information about the people involved with the Great Lakes Environmental Finance Center, see record number 62 (Austrian).

**76 DR. LEE PEYTON**

Director, Center for Waste Management

Associate Professor, Department of

Civil Engineering

University of Missouri—Columbia

E2509 Engineering Building East

Columbia, MO 65211

**Phone:** (573) 882-6269

**Fax:** (573) 882-4784

**E-mail:** peyton@ecvax2.ecn.missouri.edu

The Center for Waste Management at the University of Missouri—Columbia consists of 70 faculty from 15 academic departments with expertise in environmental science and engineering. Pollution prevention is a major topic in the following graduate-level courses: *Solid Waste Management*, *Hazardous Waste Management*, *Biochemical Treatment*, *Physicochemical Treatment*, *Design of Water and Wastewater Treatment Facilities*, *Air Pollution Control*, *Safe Handling of Radioisotopes*, *Radiation Safety*, and *Energy Systems and Resources*. In addition, the College of Engineering Continuing Education program offers a short course on a variety of pollution prevention issues including: advanced water treatment, Hazmat training, hazardous waste management, environmental site assessment, risk-based corrective action, and hazardous waste operations and emergency response (HAZWOPER).

**77 DR. RONALD M. PIKE**

National Microscale Chemistry Center  
Merrimack College  
Cushing Hall Room 305  
North Andover, MA 01854

**Phone:** (508) 837-5137  
**Fax:** (508) 837-5017  
**E-mail:** rpike@merrimack.edu

The mission of the National Microscale Chemistry Center is to implement the ideas of chemical use reduction, air quality improvement, exposure limitation, recycling, and waste reduction into every worker's and every student's thinking. The program seeks to introduce the microscale concept in the educational curriculum at all levels to familiarize future generations of scientists including chemists and engineers with the techniques and equipment necessary to work with micro-quantities of chemicals, and undergo a cultural change in the way they view the use of chemicals. The Center has been established at Merrimack College in cooperation with US EPA, the Toxics Use Reduction Institute, and the National Science Foundation. Projects include training workshops for elementary, high school, and college/university instructors in microscale techniques. The Center provides information, training, and visitations in second and third world countries. The Center prepares microscale laboratory experiments and textbooks for elementary school and high school level as well. For more information on people involved with the National Microscale Chemistry Center, see record numbers 79 (Szafran) and 398 (Singh).

**78 DR. SAIFUR RAHMAN**

Professor and Director, Center for Energy and the Global Environment  
Virginia Polytechnic Institute & State University  
Bradley Department of Electrical Engineering  
Blacksburg, VA 24061-0111

**Phone:** (540) 231-7204  
**Fax:** (540) 231-3362  
**E-mail:** srahman@vt.edu

The Center for Energy and the Global Environment (CEAGE) is particularly interested in working with the developing countries and the emerging economies in Europe. The Center's personnel offer seminars, workshops, training programs and joint research activities in collaboration with scientists and researchers from the U.S. and international institutions. The goal is to formulate regional and global solutions for energy development and environmental sustainability through mutual understanding. Dr. Rahman teaches undergraduate and graduate courses on *Electric Energy and its Impact on Global Environment, Environment, and Renewable Energy Systems*. He also conducts research in the areas of global warming and the impacts of electric power generation on climate change worldwide. For more information on the CEAGE, visit WWW site at <http://www.ee.vt.edu/ceage/>.

**79 DR. ZVISZAFRAN**

National Microscale Chemistry Center  
Merrimack College  
Cushing Hall Room 305  
North Andover, MA 01854

**Phone:** (508) 837-5000  
**Fax:** (508) 837-5017  
**E-mail:** zszafran@merrimack.edu

The mission of the National Microscale Chemistry Center is to implement the ideas of chemical use reduction, air quality improvement, exposure limitation, recycling and waste reduction into every worker's and every student's thinking. The program seeks to introduce the microscale concept in the educational curriculum at all levels to familiarize future generations of scientists including chemists and engineers with the techniques and equipment necessary to work with micro-quantities of chemicals, and undergo a cultural change in the way they view the use of chemicals. The Center has been established at Merrimack College in cooperation with US EPA, the Massachusetts Toxics Use Reduction Institute, and the National Science Foundation. Projects include training workshops for elementary, high school, and college/university instructors in microscale techniques. They provide information, training, and visitations in second and third world countries. They also prepare microscale laboratory experiments and textbooks for elementary school and

high school level. For more information on people involved with the National Microscale Chemistry Center, see record numbers 77 (Pike) and 398 (Singh).

**80 DR. STEVEN B. YOUNG**

Research Associate, Centre for Biomaterials  
University of Toronto  
72 Isabella Street  
Toronto, Ontario  
CANADA M4Y 1N4

**Phone:** (416) 562-6108  
**Fax:** (416) 978-1462  
**E-mail:** lca@io.org

The Centre for Biomaterials participates in course development, lectures and assignments focusing on product-oriented pollution prevention. Topics include: life cycle analysis, industrial ecology, ISO 14000, Design for Environment. For more information, visit WWW site at <http://www.io.org/~LCA>.

**81 DR. DONALD E. ZIMMERMAN**

Center for Research on Writing & Communication Technologies  
Colorado State University  
Department of Journalism and  
Technical Communication  
C-225 Clark Building  
Fort Collins, CO 80523-1785

**Phone:** (970) 491-5674  
**Fax:** (970) 491-2908  
**E-mail:** dzimmerman@vines.colostate.edu

The Center for Research on Writing & Communication Technologies focuses on helping pollution prevention efforts by conducting surveys and focus groups (amongst other techniques) designed to understand the P2 activities of business, industry, and homeowners; assess P2 attitudes and behaviors; identify communication channels; develop and evaluate communication programs and information delivery systems; and participate in technology transfer efforts. The Center capitalizes on the emerging field of communication science and technical communication. For more information, visit the Colorado State University WWW site at <http://www.colostate.edu> (look under colleges and departments).



**82 DR. EDGAR BERKEY**

Director, Center for Hazardous Materials Research  
Adjunct Professor, Environmental  
Engineering Department  
University of Pittsburgh  
320 William Pitt Way  
Pittsburgh, PA 15238

**Phone:** (412) 826-5321 x203  
**Fax:** (412) 826-5552  
**E-mail:** edb@chmr.org

Edgar Berkey is adjunct professor in the Environmental Engineering Department of the University of Pittsburgh School of Engineering. Dr. Berkey and his staff at the Center for Hazardous Materials Research (CHMR) teach a variety of courses at the University and in local community colleges. University offerings include courses on hazardous waste management and the course, *Environmental Issues in Manufacturing and Processing*, which emphasizes environmental regulations, pollution prevention, and environmental management systems. This course is taught using interactive video at several locations simultaneously. CHMR offers a practicum for the *Environmental Technician Program* (ETP) offered by the Community College of Allegheny County. ETP classes cover a wide spectrum of environmental issues including pollution prevention. CHMR has also offered a wide variety of courses on pollution prevention to the public, industrial and international sectors, as well as OSHA training for hazardous waste operations. For more information about others involved with CHMR, see record numbers 105 (Ostheim) and 107 (Paff).

**83 DR. RON BHADA**

Waste Management Education & Research Consortium  
New Mexico State University  
Box 30001  
Las Cruces, NM 88003-8001

**Phone:** (505) 646-2038  
**Fax:** (505) 646-4149  
**E-mail:** rbhada@nmsu.edu

Waste Management Education & Research Consortium (WERC) conducts education and technology development on all aspects of environmental issues. Its pollution prevention activities are directed at Environmentally Conscious Manufacturing Processes. Education ranges from Associate (2-year) to Ph.D. degrees with options and minors available to students. For more information on people involved with WERC, see record number 103 (Morgan).

**84 MR. REMI BLANCON**

Institute for Design, Mechanics and Environment  
École Nationale Supérieure d'Arts et Métiers  
Savoie Technolac BP 295  
Le Bourget du Lac Cedex  
F-73375 FRANCE

**Phone:** (33) 79 25 36 63  
**Fax:** (33) 79 25 36 70  
**E-mail:** remi.blancon@paris.ensam.fr

The Institute for Design, Mechanics and Environment was established by the École Nationale Supérieure d'Arts et Métiers, an important French Engineering High School, to address the problem of sustainable design and manufacturing of products. The Institute has three missions: (1) Develop research projects and industrial applications that integrate environmental concerns, in particular product recyclability, into design and manufacturing processes; (2) Provide postgraduate education in the form of a specialized master's

degree to non-specialized engineers intending to work in the areas of product design and manufacturing; and (3) Offer continuing education in this field to engineers in position of responsibility in firms. The objective of the Specialized Masters degree in Design, Mechanics and Environment is to familiarize product and process engineers with the tools that allow them to take environmental factors into account. The program is product-centered. Focus points include product design, material selection, plant design, and manufacturing processes. Some research subjects include influence of the ageing of polymers on their durability and recyclability, energy and information in recycling oriented design of manufactured goods, green marketing in environmental strategy of firms, integration of environmental concerns into value analysis, and what influence component makers have on the whole eco-design process of end-products.

**85 DR. REGGIE J. CAUDILL**

Executive Director, Multi—Lifecycle Engineering Research Center

New Jersey Institute of Technology

University Heights

Newark, NJ 07102

**Phone:** (201) 596-5856

**Fax:** (201) 596-6056

**E-mail:** caudill@admin.njit.edu

The Multi—Lifecycle Engineering Research Center is a comprehensive, multidisciplinary program dedicated to transforming environmental responsibility into competitive advantage through innovative new materials, such as engineered from waste streams, better products designed for efficient demanufacture as well as manufacture, and cleaner production processes which not only minimize waste but maximize its quality and value. Working in close collaboration with industry partners, the Center develops advanced product design and processing technologies that give special emphasis to the use of cost-effective, re-engineered materials derived from commercial waste and discarded product streams. In addition, the Center serves as a national forum and source of technical information for public policy makers and corporate leaders on issues critical to sustainability and competitiveness. For more information, visit WWW site at <http://www.njit.edu/MERC>.

**86 DR. BRUCE WAYNE CLEMENS**

Research Associate, Energy, Environment, and Resources Center

University of Tennessee

600 Henley Street

Suite 311

Knoxville, TN 37996

**Phone:** (423) 974-1924

**Fax:** (423) 974-1838

**E-mail:** bclemens@utk.edu

The Energy, Environment, and Resources Center (EERC) at the University of Tennessee, Knoxville, conducts high-level, multidisciplinary research using the intellectual resources of the University and its regional partners. Regional partners include Oak Ridge National Laboratory and the Tennessee Valley Authority. This research seeks to find real-world solutions to problems in the fields of energy, environment, technology, and economic development. The Center consists of programs that probe scores of research areas, among them, waste management, techniques for making cleaner products, and advanced software development and utilization.

**87 MR. GARY A. DAVIS**  
Director, Center for Clean Products and Clean Technologies  
The University of Tennessee  
600 Henley Street, Suite 311  
Knoxville, TN 37996  
**Phone:** (615) 974-8979  
**Fax:** (615) 974-1838  
**E-mail:** gdavis@utk.edu

The University of Tennessee organized the Center for Clean Products and Clean Technologies to focus on the earliest stages of pollution prevention: the design of products and the processes by which they are made. Design choices can sustain or prevent persistent pollution problems, among them toxic waste. This new approach involves the redesign of products and processes with the environment in mind, avoiding the need to install expensive pollution control systems or to site unwanted waste management facilities. The mission of the Center is to develop, evaluate, and promote cleaner technologies that minimize pollution at the source and contribute to long-term sustainable development. The focus of the Center's research is to evaluate products and processes for their life cycle environmental impacts, developing and demonstrating new cleaner products and processes, and assessing and formulating government and market-based measures to encourage the use of cleaner products and cleaner technologies.

**88 DR. L. DOUGLAS DOBSON**  
Hazardous Waste Management Research Fund  
University of South Carolina  
Institute of Public Affairs  
Carolina Plaza  
Columbia, SC 29208  
**Phone:** (803) 777-8157  
**Fax:** (803) 777-4575

Serves as the Director of the South Carolina Hazardous Waste Management Research Fund (the Fund). The Fund was established by the South Carolina General Assembly as a component of the South Carolina Universities Research and Education Foundation in 1989. Its purpose is to stimulate research, education, and other activities that will help to reduce the amount of hazardous wastes generated, treated, stored, and disposed of in South Carolina. Drawing on faculty expertise at the University of South Carolina, Clemson, MUSC, and South Carolina State University, the Fund has established an extensive program of research directed toward both site remediation and waste reduction issues facing the state. The Fund publishes *P2SC: Pollution Prevention in South Carolina* quarterly. *P2SC* is designed to reach South Carolina's nearly 3,000 generators of hazardous waste, many of whom are not technically trained. *P2SC* informs its readers about research, technologies, and strategies that will help to meet the goal of preventing pollution before it has to be treated, stored, or discarded. It also offers reviews and explanations of the laws, regulations, and policies related to waste reduction.

**89 MR. JOHN E. DRESTY, JR.**  
Executive Director, Pollution Prevention Research and Development Center  
University of Connecticut  
270 Middle Turnpike U-210  
Storrs, CT 06269-3210  
**Phone:** (860) 486-2299  
**Fax:** (860) 486-5488  
**E-mail:** jdresty@eri.uconn.edu

The Pollution Prevention Research and Development Center (PPR&DC) at the University of Connecticut is involved with both basic and applied research in P2 and recycling, and Graduate and professional educational programs related to P2. PPR&DC's pollution prevention research focuses on fundamental changes in manufacturing processes to reflect P2, and more short-range, practical P2 solutions. Specific research areas include efficient and clean combustion processes/alternative fuels, high performance polymeric coatings and plastics recycling, toxic substitutions in chemical and materials processing, alternative and non-polluting energy systems, and detinning post-consumer tin cans for improved recyclability. PPR&DC also offers a

practice-oriented Graduate degree in environmental engineering. The focus of the degree program is retraining displaced engineers from defense-related activities to work as environmental engineers with a core concentration in P2. In addition, PPR&DC offers short courses in environmental technology, quickly transferring useful state-of-the-art technology to government and industry. For more information on people involved with PPR&DC, see record number 92 (Fenton).

**90 DR. JOHN R. EHRENFELD**

Director, Technology, Business and Environment Program

Massachusetts Institute of Technology

Center for Technology, Policy, and

Industrial Development

77 Massachusetts Avenue, Room E40-241

Cambridge, MA 02139

**Phone:** (617) 253-1694

**Fax:** (617) 253-7140

**E-mail:** jehren@mit.edu

The Technology, Business and Environment Program does research on the management practices of business, particularly in the areas of Design for Environment (DfE), product development and emerging sustainable practices. The Center offers a Master's program in *Technology and Policy* that fits the interests of students in the area of environmental management as well as other areas. Center faculty offer courses in the general MIT curriculum, based on pollution prevention, Design for Environment, life cycle analysis, industrial ecology and other subjects tied to pollution prevention. For more information, visit WWW site at <http://web.mit.edu/ctpid/www/tbe>.

**91 DR. LARRY E. ERICKSON**

Director, Hazardous Substance Research Center

Kansas State University

101 Ward Hall

Manhattan, KS 66506

**Phone:** (913) 532-4313 or 2380

**Fax:** (913) 532-5985

**E-mail:** lerick@ksu.ksu.edu

The Hazardous Waste Substance Research Center conducts research and does technology transfer, with primary emphasis on contaminated soil, including remediation technologies and fate and transport. Dr. Erickson also teaches *Hazardous Waste Engineering Seminar* at Kansas State University with help from guest presenters.

**92 DR. JAMES M. FENTON**

Director, Pollution Prevention Research and Development Center (PPRDC)  
University of Connecticut  
Environmental Research Institute  
U-210  
Storrs, CT 06269-3210

**Phone:** (860) 486-2490  
**Fax:** (860) 486-2959  
**E-mail:** jmfent@eng2.uconn.edu

The Environmental Research Institute (ERI) of the University of Connecticut created The Pollution Prevention Research and Development Center (PPRDC) in 1993 with the mission of stimulating economic development by providing the technological boost to develop the next generation of pollution prevention technology and manufacturing process that inherently avoids pollution in their very design. PPRDC accomplishes this mission through research, educational programs, and working partnerships with government and industry. Faculty and staff of the ERI apply pollution prevention expertise to the research areas of surface chemistry and catalysis, clean and efficient combustion processes, environmental biotechnology, alternative fuels, plastics recycling, material separations, toxic substitutions, electrochemical processes for metal recovery, oxidation processes, advanced batteries and fuel cells, and the application of photonics to environmental sensing. For more information, visit WWW site at <http://www.eng2.uconn.edu/eri/sheet3.htm>. For more information on people involved with PPR&DC, see record number 89 (Dresty).

**93 DR. JOHN R. FROINES**

Co-Director, Pollution Prevention Education and Research Center  
University of California—Los Angeles  
School of Public Health  
10833 Le Conte Avenue  
Los Angeles, CA 90024

**Phone:** (310) 206-6141  
**Fax:** (310) 206-9903  
**E-mail:** iatojrf@mvs.oac.ucla.edu

The Pollution Prevention Education and Research Center (PPEREC) is an interdisciplinary program involving faculty from the fields of chemical engineering, public health, and public policy. Faculty have collaboratively taught courses in P2 and toxics reduction, and have incorporated P2 concepts into the classes they teach individually through their respective departments. In collaborative classes, graduate and undergraduate students work together in cross-disciplinary teams to address the health, policy, and engineering dimensions of particular industry problems. Through these projects, and individual research, faculty are developing a body of P2 case studies, some of which will be featured in two forthcoming books. The Center has also sponsored a P2 Forum Series, open to students and the general public, which featured speakers (and attracted guests) from industry, government, academia, and public interest and community groups. For more information on people involved with PPEREC, see record numbers 95 (Gottlieb) and 110 (Roque).

**94 DR. RAJIT GADH**

Director, ICARVE Lab  
Assistant Professor, Mechanical  
Engineering Department  
University of Wisconsin  
347 Mechanical Engineering Building  
Madison, WI 53706

**Phone:** (608) 262-9058  
**Fax:** (608) 265-2316  
**E-mail:** gadh@enr.wisc.edu

The research at the ICARVE lab addresses the need to devise design tools to create environmentally conscious products. This is accomplished through maximizing resources and minimizing energy costs by designing products for disassembly prior to the manufacturing stage. Designers can evaluate design options

in a virtual environment without building actual prototypes. The final outcome of this research is a *Computer-Aided Software Design Tool* that will design products which can be disassembled so that the materials in them can be most effectively reused or recycled. This software will combine three-dimensional geometric reasoning of assemblies in a virtual software environment with an environmental materials database. For more information, visit WWW site at <http://smartcad.me.wisc.edu>

**95 MR. ROBERT GOTTLIEB**

Co-Director, Pollution Prevention Education and Research Center

University of California—Los Angeles

School of Public Policy and Social Research

3250 Public Policy Building

Los Angeles, CA 90095-1656

**Phone:** (310) 825-2654 or (310) 206-2098

**Fax:** (310) 206-5566

**E-mail:** [gottlieb@ucla.edu](mailto:gottlieb@ucla.edu)

The Pollution Prevention Education and Research Center (PPEREC) is an interdisciplinary program involving faculty from the fields of chemical engineering, public health, and public policy. Faculty have collaboratively taught courses in P2 and toxics reduction, and have incorporated P2 concepts into the classes they teach individually through their respective departments. In collaborative classes, graduate and undergraduate students work together in cross-disciplinary teams to address the health, policy, and engineering dimensions of particular industry problems. Through these projects, and individual research, faculty are developing a body of P2 case studies, some of which will be featured in two forthcoming books. The Center has also sponsored a *P2 Forum Series*, open to students and the general public, which featured speakers (and attracted guests) from industry, government, academia, and public interest and community groups. For more information on people involved with PPEREC, see record numbers 93 (Froines) and 110 (Roque).

**96 MR. NICK HOUTMAN**

Director, Office of Water Resources

University of Maine

Coburn Hall

Orono, ME 04469-5715

**Phone:** (207) 581-1491

**Fax:** (207) 581-1426

**E-mail:** [Nick\\_Houtman@voyager.umeres.maine.edu](mailto:Nick_Houtman@voyager.umeres.maine.edu)

Administers a water research program that funds 3—4 faculty research projects per year. At a recent conference on wastewater, identified pollution prevention needs in conjunction with wastewater discharges at a large genetics lab. Acts as a consultant on water management planning. Mr. Houtman also administers a wastewater sludge clearinghouse.

- 97 DR. CHRIS JOHANNSEN**  
Environmental Sciences and Engineering Institute  
Purdue University  
1158 ENTM  
W. Lafayette, IN 47907-1158  
**Phone:** (317) 494-7054  
**Fax:** (317) 494-7753  
**E-mail:** johannsn@iies.ecn.purdue.edu

The Environmental Sciences and Engineering Institute provides a university-wide focus and coordination for interdisciplinary research relating to environmental and natural resource concerns. The Institute involves faculty from the schools of Engineering, Agriculture, Science, Pharmacy, Management, and other schools and departments as opportunities develop. The objective of the Institute is to bring the intellectual and physical resources of the University to bear in solving the increasingly important scientific, technical, economic, and management problems associated with the development of our basic natural resources. The Institute provides research data and information for private and government agencies interested in development, conservation, and/or protection of these resources. The research centers currently associated with the Institute are: the Laboratory for Applications of Remote Sensing, Water Resources Research Center, Indiana Mining and Minerals Resources Research Center, State Utility Forecasting Center, and Indian Pine Natural Resources Field Station.

- 98 DR. KAREN KATRINAK**  
Research Associate and Environmental Education Committee Chairperson  
Energy and Environmental Research Center  
University of North Dakota  
15 North 23rd Street, P.O. Box 9018  
Grand Forks, ND 58202-9018  
**Phone:** (701) 777-5283  
**Fax:** (701) 777-5181  
**E-mail:** kkatrinak@eerc.und.nodak.edu

The Energy and Environmental Research Center's (EERC) research programs embrace critical relationships in the energy and environment cycle. They include environmental management, pollution prevention and environmental cleanup technologies, experimental design and analytical methods development, groundwater, carbon-based energy, advanced power systems, non-carbon-based energy, non fuel products from coal, waste utilization, education, and training. The Center's activities in the area of P2 include: (1) a waste audit at University of North Dakota which led to increased levels of recycling on campus; (2) providing funding for environmental education classes at the University of North Dakota; and (3) working with schools in Grand Forks on environmental education for K-12.

- 99 DR. GREGORY A. KEOLEIAN**  
Research Manager, National Pollution Prevention Center for Higher Education  
University of Michigan  
School of Natural Resources and Environment  
430 East University  
Ann Arbor, MI 48109-1115  
**Phone:** (313) 764-1412  
**Fax:** (313) 936-2195  
**E-mail:** gregak@umich.edu

The major research areas of the National Pollution Prevention Center for Higher Education under investigation are life cycle design, life cycle assessment, and industrial ecology. The NPPC research seeks to guide and enhance environmental decision making through effective metrics, identification and analysis of multi-stakeholder requirements, and selection of resource conservation and pollution prevention strategies. Demonstration projects with industrial partners have targeted a wide range of products. Automotive products investigated include oil filters (AlliedSignal), air intake manifolds (Ford), fuel tanks (GM), automotive film (3M), instrument panels (Chrysler, Ford, GM, U.S. EPA Common Sense Initiative); electronic products include business telephones (AT&T), flat panel displays (Optical Imaging Systems), photovoltaics (United Solar Systems Corporation); and other systems studied include milk and juice packaging (Dow), and wet

technologies for garment cleaning. The research team is also participating in a life cycle inventory analysis of a generic vehicle for the US Consortium for Automotive Research (USCAR). Recently, an Industrial Ecology of the Automobile Seminar Series was organized to both characterize the environmental burdens associated with the automobile life cycle and identify opportunities for improvement through technology and design, policy and regulation, and changes in usage patterns. The seminar series brought together experts from industry (OEMs and suppliers), government, environmental organizations, and various academic disciplines. Dr. Keoleian also co-chairs, with Dr. Bulkley (record number 63), a professional education course, *Design for Environment (DfE: Fundamentals for Sustainable Development)*, through the University of Michigan College of Engineering). For a description of the NPPC's educational activities, see Dr. Bulkley's entry (record number 63). For more information on the NPPC, visit WWW site at <http://www.snre.umich.edu/nppc/>.

### 100 DR. JOSEPH S. LARSON

Advisory Board Chair, National Environmental Technology for Waste Prevention Institute  
 University of Massachusetts—Amherst  
 Blaisdell House  
 Amherst, MA 01003-0820

**Phone:** (413) 545-2842  
**Fax:** (413) 545-2304  
**E-mail:** [neti@tei.umass.edu](mailto:neti@tei.umass.edu)

The National Environmental Technology for Waste Prevention Institute (NETI), a partnership between industry, academia and government, is a research and technology transfer center specializing in innovative process design solutions to minimize and prevent pollution. NETI was established in 1994 by act of the Massachusetts Legislature at the urging of the Massachusetts Chemical Technology Alliance, an organization representing chemical manufacturers, suppliers, distributors, and users. NETI is administered by The Environmental Institute in the Graduate School at the University of Massachusetts—Amherst and is guided by an Advisory Board of industry, government, and University representatives who advise the Vice Chancellor for Research, Graduate Education, and Economic Development on NETI operations. The goal of NETI is to become a national leader in advancing innovative industrial process designs for waste prevention through research, development, and technology transfer. Working closely with industry partners, NETI researches and develops environmental solutions that reduce waste in industrial operations. NETI also provides a network for disseminating these solutions to industry.

### 101 DR. ARCHIE McDONNELL

Environmental Resource and Research Institute  
 The Pennsylvania State University  
 Land and Water Research Building  
 University Park, PA 16802

**Phone:** (814) 863-0291  
**Fax:** (814) 865-3378  
**E-mail:** [ajm2@ceres.erri.psu.edu](mailto:ajm2@ceres.erri.psu.edu)

The research and educational emphases at the Institute are on waste minimization, the bioremediation of hazardous waste, and process residue reclamation. The Institute is part of a consortium of four universities — NJIT, Ohio State, MIT, and Penn State. The research venture of the consortium is targeted at developing substitute solvents for the pharmaceutical industry.

**102 MS. ELIZABETH A. McGRATH**

Environmental Coordinator, Center for Process Analytical Chemistry

University of Washington

Building 10

Seattle, WA 98195

**Phone:** (206) 543-3530

**Fax:** (206) 543-6506

**E-mail:** betsy@cpac.washington.edu

Ms. McGrath is the Environmental Coordinator for the Center for Process Analytical Chemistry (CPAC), an NSF Industry/University Cooperative Research Center at the University of Washington, Seattle. CPAC's mission is to develop on-line, real-time chemical analyzer systems for process optimization and control for both increased industrial competitiveness and pollution prevention. Improved continuous real-time monitoring is necessary for regulatory compliance and implementation of P2 strategies. She also guest lectures in a process analytical chemistry class for Graduate and Senior level students on P2 concepts and the future direction of the environmental movement to give practical information to students so that they can make better evaluations of the work they undertake. She acts as an interface between the EPA and other environmental organizations to facilitate their involvement with CPAC. CPAC is also involved with the UW's science outreach program to high schools administered in the Chemistry department. For more information about others involved with CPAC, see record number 392 (Kowalski).

**103 DR. J. DERALD MORGAN**

Dean, School of Engineering

Chief Executive Officer, Waste Management

Education & Research Consortium

New Mexico State University

P.O. Box 30001, Dept. 3456

Las Cruces, NM 88003-0001

**Phone:** (505) 646-2038

**Fax:** (505) 646-4149

The Waste Management Education & Research Consortium (WERC) conducts education and technology development on all aspects of environmental issues. The pollution prevention activities of WERC are directed at environmentally conscious manufacturing processes. Education ranges from Associate (2-year) degrees to Ph.D. with options and minors available to students. For more information on people involved with WERC, see record number 83 (Bhada).

**104 DR. KARSTEN MORITZ**

Technical Director, Emission Reduction Research Center

New Jersey Institute of Technology

University Heights

Newark, NJ 07102

**Phone:** (201) 596-5844

**Fax:** (201) 642-7170

**E-mail:** moritz@admin.njit.edu

Through the Emission Reduction Research Center (ERRC), Dr. Moritz is working to develop CAD systems for use in industry and classrooms. Also is assisting industry in developing education and awareness programs for pollution prevention. The ERRC is a National Science Foundation Industry/University Cooperative Research Center dedicated to research in Pollution Prevention in all environmental media, but with a particular concern with air emission reduction. ERRC is organized around clusters of companies in specific manufacturing areas. The initial cluster represents the batch chemical processing industry and has a high proportion of membership by the pharmaceutical industry. Other clusters under development include the ordnance industry and the composite plastics industry. ERRC operates as a consortium of four universities—Massachusetts Institute of Technology, Ohio State University, and Pennsylvania State University, and NJIT. For more information, visit WWW site at <http://www.njit.edu/CEES/ERRC.html>.

**105 DR. STEVE OSTHEIM**

Center for Hazardous Materials Research  
 University of Pittsburgh  
 320 William Pitt Way  
 Pittsburgh, PA 15238

**Phone:** (412) 826-5320  
**Fax:** (412) 826-5552  
**E-mail:** steveo@chmr.com

Center for Hazardous Materials Research (CHMR) and its staff serve as adjunct faculty for classes at the University of Pittsburgh. CHMR has developed and is instructing a series of one week classes, which are part of a practicum for the *Environmental Technician Program* (ETP). ETP is a two year Associate Degree Program offered by the Community College of Allegheny County (CCAC) in Pittsburgh, PA. Other faculty who teach at the University of Pittsburgh and CCAC include: Roger L. Price, P.E., Anthony Sadar, Thomas Merski, Dr. Stanley Kabala, Dr. A. Bruce King, Jeffrey Sacre, Paul Wolsonovich, and William Gourdie. The classes cover a broad spectrum of environmental issues and have some component of P2 in their curriculum. CHMR also conducts P2 training programs for public and private sector audiences. For more information about others involved with CHMR, see record numbers 82 (Berkey) and 107 (Paff).

**106 DR. MICHAEL OVERCASH**

Pollution Prevention Research Center  
 North Carolina State University  
 Chemical Engineering Department  
 Raleigh, NC 27695-7905

**Phone:** (919) 515-2325  
**Fax:** (919) 515-3465  
**E-mail:** overcash@che.ncsu.edu

Based in the Chemical Engineering Department, Pollution Prevention Research Center is currently active in research related to P2 in petroleum refining textiles, pulp and paper, chemical manufacturing, pharmaceuticals, electroplating and silicon chip manufacturing. Offers a course on industrial waste reduction and life cycle analysis. The Center is a part of an environmental option in Chemical Engineering and individual researchers deal with P2 in many of their classes. For more information on people involved with the Pollution Prevention Research Center, see record number 197 (Ferrell).

**107 MR. STEPHEN W. PAFF**

Center for Hazardous Materials Research  
 University of Pittsburgh  
 320 William Pitt Way  
 Pittsburgh, PA 15238

**Phone:** (412) 826-5321 x233  
**Fax:** (412) 826-5552  
**E-mail:** stevep@chmr.org

Mr. Stephen Paff, CHMM serves as instructor for classes in pollution prevention and environmental management at the University of Pittsburgh. In addition, Mr. Paff serves as an instructor for the *Environmental Technician Program* through local community colleges. For more information about others involved with CHMR, see record numbers 82 (Berkey) and 105 (Ostheim).

**108 DR. SUSAN POWERS**

Hazardous Waste & Toxic Substance Research and Management Center

Clarkson University

Department of Civil and

Environmental Engineering

Potsdam, NY 13699-5715

**Phone:** (315) 268-6542

**Fax:** (315) 268-7636

**E-mail:** sep@craft.camp.clarkson.edu

The Hazardous Waste & Toxic Substance Research and Management Center seeks to integrate the fields of environmental policy, economics, and management in developing interdisciplinary research and education programs aimed at effective hazardous waste management. Research conducted by faculty members associated with the Center focuses on the following areas: (1) multimedia-exposure assessment of hazardous waste and toxic substances; (2) environmental and human health impacts of hazardous materials; (3) waste treatment, remediation, and disposal technologies; and (4) waste minimization and reduction. Teaches *Hazardous Waste Management* classes in the Department of Civil and Environmental Engineering which incorporate hazardous waste minimization as an integral part. Students in these classes have conducted a hazardous waste audit for Clarkson University with recommendations for minimization techniques for both the laboratories and the physical plant areas. Others have developed complete waste reduction and recycling alternatives for printed circuit board manufacture as part of the senior design course. For additional information on people involved with the Hazardous Waste Center, see record numbers 112 (Theis), 232 (Collins), 269 (Young) and 270 (Zander).

**109 DR. REINHARD RADERMACHER**

Director, Center for Environmental Energy Engineering

Professor, Mechanical Engineering Department

University of Maryland at College Park

College Park, MD 20742

**Phone:** (301) 405-5286

**Fax:** (301) 405-2025

**E-mail:** rader@eng.umd.edu

The University of Maryland Center for Environmental Energy Engineering (CEEE) is a cross-disciplinary program which contributes with research and education to advanced energy conversion techniques that meet environmental and economic concerns. The focus of CEEE is in four areas: (1) energy conversion cycles; (2) energy conversion systems; (3) enhanced heat and mass transfer; and (4) thermophysical property measurements and databases. The CEEE research team consists of six faculty, six post-doctoral researchers, and about thirty graduate students.

**110 MS. JULIE ROQUE**

Co-Director, Pollution Prevention Education and Research Center

University of California—Los Angeles

Department of Urban Planning

School of Public Policy

Perloff Hall

Los Angeles, CA 90024

**Phone:** (310) 825-6658

**E-mail:** ibdhjr1@mvs.oac.ucla.edu

Pollution Prevention Education and Research Center (PPEREC) is an interdisciplinary program involving faculty from the fields of chemical engineering, public health, and public policy. Faculty have collaboratively taught courses in P2 and toxics reduction, and have incorporated P2 concepts into the classes they teach individually through their respective departments. In collaborative classes, Graduate and Undergraduate students work together in cross-disciplinary teams to address the health, policy, and engineering dimensions of particular industry problems. Through these projects, and individual research, faculty are developing a body of P2 case studies, some of which will be featured in two forthcoming books. The Center has also sponsored a *P2 Forum Series*, open to students and the general public, which featured

speakers (and attracted guests) from industry, government, academia, and public interest and community groups. For more information on people involved with PPERC, see record numbers 93 (Froines) and 95 (Gottlieb).

**111 DR. RICHARD SCHULER**

Waste Management Institute  
Cornell University  
Center for the Environment  
Ithaca, NY 14853

**Phone:** (607) 255-8576  
**Fax:** (607) 255-0238

The Center promotes waste reduction education and research within the Cornell University by encouraging joint research proposals with non-center members. The Center is active in public information dissemination and education and routinely works with area businesses to reduce waste. The Center has developed short courses on solid waste reduction, and is presently expanding efforts to include P2 concepts into existing coursework. On-going projects include developing a source reduction tool kit for municipal waste for the EPA. For more information on people involved with the Waste Management Institute, see record number 348 (Harrison).

**112 DR. THOMAS L. THEIS**

Hazardous Waste and Toxic Substance Research and Management Center  
Clarkson University  
Department of Civil and  
Environmental Engineering  
Potsdam, NY 13699-5715

**Phone:** (315) 268-3853  
**Fax:** (315) 268-7636  
**E-mail:** tLtØ@sun.soe.clarkson.edu

The Hazardous Waste Center seeks to integrate the fields of environmental policy, economics, and management in developing interdisciplinary research and education programs aimed at effective hazardous waste management. The Center teaches hazardous waste management course which incorporates a unit on waste minimization. In it they use a case study approach to encourage students to analyze manufacturing processes for effects on the environment, and brainstorm changes such as solvent substitution or equipment updating to reduce those effects. They use case studies from a handbook by the American Institute of Chemical Engineers. For additional information on people involved with the Hazardous Waste Center, see record numbers 108 (Powers), 232 (Collins), 269 (Young) and 270 (Zander).

**113 DR. DAVID L. THOMAS**

Hazardous Waste Research & Information Center  
Illinois Department of Energy  
and Natural Resources  
One East Hazelwood Dr.  
Champaign, IL 61820

**Phone:** (217) 333-8940  
**Fax:** (217) 333-8944  
**E-mail:** dthomas@hwric.hazard.uiuc.edu

The Hazardous Waste Research & Information Center (HWRIC) combines research, technical assistance, and informational services to help the State of Illinois better understand and solve its hazardous waste problems. Education plays an important role in the Center's mission which includes P2 curriculum development (including areas with limited exposure to the P2 concept such as business and public health schools). The Center also conducts research and provide training and experience in P2 techniques and technologies at its state-of-the-art analytical and research laboratories. For more information on people involved with HWRIC, see record numbers 124 (Kramer) and 128 (Miller).



## TECHNICAL ASSISTANCE CENTERS

### 114 DR. ARVIND ATREYA

Director, Industrial Assessment Center  
Associate Professor, Department of Mechanical  
Engineering and Applied Mechanics  
University of Michigan  
2158 G.G. Brown  
Ann Arbor, MI 48109-2125

**Phone:** (313) 747-4790  
**Fax:** (313) 747-3170  
**E-mail:** aatreya@engin.umich.edu

Is the Director of the Industrial Assessment Center funded by the U.S. Department of Energy. The purpose of this is industrial energy conservation and pollution prevention. The Center carries out energy analyses to help small to medium-sized manufacturing industries to conserve energy resources and become more competitive. The scope and funding is slowly increasing to include pollution prevention aspects. It is the intent of the Center to expand to include energy and environmental considerations at the product design stage.

### 115 DR. STANLEY M. BARNETT

Professor and Chair, Chemical Engineering Department  
Director, Center for Pollution Prevention  
University of Rhode Island  
16 Greenhouse Road  
Kingston, RI 02881

**Phone:** (401) 874-2443  
**Fax:** (401) 782-1180  
**E-mail:** barnett@egr.uri.edu

The Center for Pollution Prevention works directly with industry to foster source reduction by changing the process or the materials used. This approach reduces toxic waste and disposal costs for industry by removing the source of wastes. The Center, supported by the Rhode Island Department of Environmental Management, is staffed by both undergraduate and graduate students plus faculty. The Center also offers a Graduate level course.

### 116 MS. MONICA M. BECKER

Research Associate, Massachusetts Toxics Use Reduction Institute  
University of Massachusetts—Lowell  
One University Avenue  
Lowell, MA 01854

**Phone:** (508) 934-3297  
**Fax:** (508) 934-3050  
**E-mail:** beckeremo@woods.uml.edu

Research Associate with the Massachusetts Toxic Use Reduction Institute (TURI). TURI provides education and training to TUR professionals, conducts a technology transfer program, and sponsors research into the development of safer and cleaner production materials and technologies. TURI was created in 1989 by the Massachusetts Toxics Use Reduction Act and supports a statewide program designed to reduce the use of toxic chemicals and generation of toxic waste in Massachusetts. Ms. Becker is also the Manager of the *Toxics Use Reduction Research Fellowship Program*, which provides one year fellowships to graduate students at the University of Massachusetts—Lowell for scientific, technology or policy related research on toxics use reduction. Working with two faculty from the Universities of Vermont and New Hampshire on a project to develop a book of quantitative homework problems for engineering subjects that illustrate the concepts and techniques of pollution prevention. These homework problems can be incorporated into

almost all major engineering disciplines, including chemical engineering, civil and environmental engineering, mechanical and materials processing engineering and industrial engineering. When complete (expected 1996) the problem book will be available to faculty in hardcopy and on diskette. For more information on people involved with TURI, see record numbers 121 (Hensley), 125 (Luskin) and 156 (Kennedy).

**117 DR. WILLIAM C. BOYLE**

Coordinator, Center for Clean Industrial Treatment and Technology

University of Wisconsin—Madison  
3230 Engineering Hall  
Madison, WI 53706

**Phone:** (608) 262-1777  
**Fax:** (608) 262-5199  
**E-mail:** boyle@engr.wisc.edu

Is the University of Wisconsin Coordinator for the US EPA Center for Clean Industrial Treatment and Technology (CENCITT). CENCITT is a consortium of three universities - Michigan Tech, University of Wisconsin—Madison, and the University of Minnesota. The consortium was founded in 1992 to address clean technology needs for industry in concert with the environmental interests of government and the public. Major areas of research are the Clean Process Advisory System, a computer based framework that allows engineers to examine process and product design alternatives by offering information on technologies, costs and environmental impacts, and chemical reaction pathways. Concentrating on devising and assessing green synthesis pathways for manufacturing chemical products. Other projects dealing with demanufacturing are also underway. For more information on people involved with CENCITT, see record number 119 (Crittenden).

**118 DR. LYNN A. CORSON**

Director, Indiana Pollution Prevention and Safe Materials Institute

Purdue University  
1291 Cumberland Avenue  
Suite C  
W. Lafayette, IN 49706

**Phone:** (317) 494-6450  
**Fax:** (317) 494-6422  
**E-mail:** corsonl@ecn.purdue.edu

The Indiana Pollution Prevention and Safe Materials Institute, authorized by the Indiana General Assembly in 1990, was formerly established at Purdue University in January 1994. The Institute is Indiana's focal point for P2 technical assistance, research, curriculum development and training, policy analysis, and development. Indiana's definition of P2 does not include a practice applied to an environmental waste after it has been generated or after it exists in a production process; therefore, out of loop recycling is not included. The Institute is authorized to make grants to individuals and organizations to provide P2 planning services; to engage in research, development, and demonstration of pollution prevention techniques and methods; to develop and deliver training and educational curricula to various audiences; to train and certify P2 planners; to conduct and publish studies concerning national, state, and local government and business policies affecting P2; and to develop methods to measure P2 progress at the plant and company level.

**119 DR. JOHN C. CRITTENDEN**

Center for Clean Industrial & Treatment Technologies  
Michigan Technological University  
1400 Townsend Dr.  
Houghton, MI 49931

**Phone:** (906) 487-3143  
**Fax:** (806) 487-3292  
**E-mail:** ppradeck@mtu.edu

The Center for Clean Industrial and Treatment Technologies (CENCITT) has a mission to assist industry in P2 by devising clean enabling technologies and process design tools, and by pursuing promising leads in treatment, beneficiation, and reuse where prevention is not feasible. CENCITT actively pursues education of participating, active Graduate students and promotes the incorporation of P2 concepts in classrooms across all disciplines. For more information on people involved with CENCITT, see record number 117 (Boyle).

**120 DR. HARRY EDWARDS**

Director, Waste Minimization Assessment Center  
Colorado State University  
Fort Collins, CO 80523

**Phone:** (970) 491-5317  
**E-mail:** edwards@lamar.colostate.edu

Primary focus is on performing waste minimization assessments for small- and medium-sized businesses. Also provides training and seminars. Pollution prevention course is presently taught as senior-level elective for engineering students. For more information on people involved with the Waste Minimization Assessment Center, see record number 123 (Kostrzewa).

**121 MS. JOSEPHINE S. HENSLEY**

The Massachusetts Toxics Use Reduction Institute  
University of Massachusetts—Lowell  
One University Ave.  
Lowell, MA 01854-2881

**Phone:** (508) 934-3275  
**Fax:** (508) 934-3050

The Toxics Use Reduction Institute (TURI) was established by the Massachusetts Toxics Use Reduction Act of 1989, and works in conjunction with the State Department of Environmental Protection and the State Office of Technical Assistance. It is a multidisciplinary research, education, and technical support center located at the University of Massachusetts—Lowell. The Institute sponsors and conducts research on a variety of policy initiatives and on technical problems such as examining the technical feasibility of safer alternatives to solvent-based inks. The Institute offers conferences and workshops on pollution prevention, Design for Environment, toxics use reduction, and other environmental topics. The Institute trains individuals who wish to become state certified Toxics Use Reduction Planners. The Institute also develops grade school and higher education curricula and delivers educational programs for teachers. For more information on people involved with TURI, see record numbers 116 (Becker), 125 (Luskin) and 156 (Kennedy).

**122 DR. JOHN KONEFES**

Director, Iowa Waste Reduction Center  
University of Northern Iowa  
75 Biology Research Complex  
Cedar Falls, IA 50614-0185

**Phone:** (319) 273-2079  
**Fax:** (319) 273-2926  
**E-mail:** john.konefes@uni.edu

Educates small business owners and operators about multi-media pollution prevention and regulatory compliance concerns. The Iowa Waste Reduction Center (IWRC) conducts confidential waste audits at businesses with less than 200 employees and has conducted over 1,200 such audits (more than any other

small business environmental assistance program in the nation). The IWRC also manages five other programs: (1) the Small Business Pollution Prevention Center which conducts applied research to find practical solutions to small business challenges; (2) Mobile Outreach for Pollution Prevention which takes waste reduction equipment and education to small businesses at community colleges and small business facilities; (3) Program for Toxic Air Pollutant Studies which identifies low-cost ways for small businesses to reduce toxic air emissions and meet new regulatory requirements; (4) Iowa Air Emissions Assistance Program, the Clean Air Act mandated program for small business aid in Iowa; and (5) the By-product and Waste Search Service which helps businesses of all sizes reuse and recycle waste. IWRC conducts workshop and other educational efforts to inform business people and the general public about environmental concerns. IWRC has also developed a pollution prevention curriculum for vehicle maintenance students at community colleges, and a specialized training program for spray painting technicians that focuses on pollution prevention. The Center has available twelve manuals on a variety of topics, and a video on Small Business Auditing.

**123 MR. MICHAEL F. KOSTRZEWA**

Waste Minimization Assessment Center  
Colorado State University  
Department of Mechanical Engineering  
Fort Collins, CO 80523

**Phone:** (970) 491-7709  
**Fax:** (970) 491-1055  
**E-mail:** koz@lamar.colostate.edu

The Center is funded by DOE to provide free energy conservation and pollution prevention assessments to qualified small-to-medium sized manufacturers and businesses. Undergraduate and Graduate students, along with faculty from the Department of Mechanical Engineering, perform the one-day visits to the sites. They gather data and generate a confidential report outlining specific recommendations for that site. Implementation surveys are conducted 6-9 months later. For more information on people involved with the Waste Minimization Assessment Center, see record number 120 (Edwards).

**124 MS. DEBRA KRAMER**

Printing Waste Reduction Specialist, Printers National Environmental Assistance Center  
University of Illinois  
Hazardous Waste Research and  
Information Center  
3333 West Arthington  
Chicago, IL 60624

**Phone:** (312) 265-2036  
**Fax:** (312) 265-8336  
**E-mail:** kramer@cmcusa.org

Printers National Environmental Assistance Center (PNEAC) is a U.S. EPA funded project designed to electronically link technical experts and regulatory experts regarding printing pollution prevention information and compliance information. PNEAC has been set up through the Hazardous Waste Research and Information Center (HWRIC), which is affiliated with the University of Illinois. PNEAC has partnered with various printing industry trade associations, such as GATF, PIA, SGIA, FTA, and GAA to provide assistance to printers, regulators, technical assistance program representatives, small business ombudsman, technical assistance center representatives, and various other groups which work with the printing industry. For more information, visit WWW site at <http://denr1.igis.uiuc.edu/pneac/pneac.html>. For more information on people involved with HWRIC, see record numbers 113 (Thomas) and 128 (Miller).

**125 DR. JACK LUSKIN**

The Massachusetts Toxics Use Reduction Institute  
University of Massachusetts—Lowell  
One University Avenue  
Lowell, MA 01854

**Phone:** (508) 934-3275  
**E-mail:** jluskin@woods.uml.edu

The Toxics Use Reduction Institute (TURI) was established by the Massachusetts Toxics Use Reduction Act of 1989, and works in conjunction with the State Department of Environmental Protection and the State Office of Technical Assistance. It is a multidisciplinary research, education, and technical support center located at the University of Massachusetts—Lowell. The Institute sponsors and conducts research on a variety of policy initiatives and on technical problems such as examining the technical feasibility of safer alternatives to solvent-based inks. The Institute offers conferences and workshops on pollution prevention, Design for Environment (DfE), toxics use reduction, and other environmental topics. The Institute trains individuals who wish to become state certified Toxics Use Reduction Planners. The Institute also develops grade school and higher education curricula and delivers educational programs for teachers. For more information on people involved with TURI, see record numbers 116 (Becker), 121 (Hensley) and 156 (Kennedy).

**126 MS. CINDY McCOMAS**

Director, Minnesota Technical Assistance Program  
University of Minnesota  
1313 5th Street, SE #207  
Minneapolis, MN 55414

**Phone:** (612) 627-4556  
**Fax:** (612) 627-4769  
**E-mail:** mcom003@maroon.tc.umn.edu

The Minnesota Technical Assistance Program provides technical assistance to businesses. Ms. McComas also lectures in various classes at the University of Minnesota. She works with faculty on development of P2 courses and oversees grants on P2 in higher education.

**127 DR. GENE MEYER**

Director, Pollution Prevention Institute  
Kansas State University  
133 Ward Hall  
Manhattan, KS 66506-2508

**Phone:** (913) 532-6501  
**Fax:** (913) 532-6952  
**E-mail:** gmeyer@ksu.edu

The Kansas State University Pollution Prevention Institute was established in response to increased demand for KSU expertise in the area of pollution prevention and other environmental issues. The Pollution Prevention Institute brings recognition to the KSU College of Engineering as well as a direct link to Kansas businesses. This provides opportunities for applied research, technology transfer, student internships, and employment opportunities for KSU graduates. The main function of the Pollution Prevention Institute is to provide technical assistance and training in pollution prevention. The Institute serves businesses, regulatory agencies, technical assistance groups, trade associations, and private citizens throughout the Midwest. Services include free non-regulatory assistance including confidential on-site assessments, training seminars, workshops, and presentations to industry groups and regulators, and information dissemination, including fact sheets, publications, and reports. For more information on people involved with the Pollution Prevention Institute, see record number 174 (Davis).

**128 DR. GARY D. MILLER**

Assistant Director, Illinois Hazardous Waste Research and Information Center  
 University of Illinois at Urbana—Champaign      **Phone:** (217) 333-8942  
 One East Hazelwood Drive      **Fax:** (217) 333-8944  
 Champaign, IL 61820      **E-mail:** gmiller@hwric.hazard.uiuc.edu

Lectures to various classes and presents workshops on pollution prevention assessment methods, technical assistance approaches and resources available, and case studies including economic evaluation methods. These lectures have been given at the University of Illinois in Chicago, Springfield and Urbana—Champaign plus the Illinois Institute of Technology and at several workshops, intraining for US EPA and businesses. Serves as the Assistant Director of the Illinois Hazardous Waste Research and Information Center (HWRIC). HWRIC has a mission to help solve Illinois waste management and environmental contaminant problems through technical assistance to industry, agriculture and communities; research and education; and information collection, analysis and dissemination. In 1990, HWRIC began operation of a modern research facility with several environmental and pollution prevention technology development and testing laboratories supported by extensive analytical capabilities plus an extensive library and clearinghouse. The Great Lakes Pollution Prevention Clearinghouse, a joint effort with Wisconsin's Solid Waste Education Center, is administered by HWRIC, as is the Great Lakes Regional Pollution Prevention Roundtable. HWRIC's total staff is over 50, with 6 of these located in our Chicago office. HWRIC is a division of the Illinois Department of Natural Resources and is affiliated with the University of Illinois at Urbana—Champaign. For more information on people involved with HWRIC, see record numbers 113 (Thomas) and 124 (Kramer).

**129 DR. JOHN W. SHEFFIELD**

Assistant Director, Industrial Assessment Center  
 University of Missouri—Rolla      **Phone:** (573) 341-4690  
 MAEM Department      **Fax:** (573) 341-4607  
 Rolla, MO 65409-0055      **E-mail:** sheffld@umr.edu

Assistant Director of U.S. Department of Energy funded Industrial Assessment Center at the University of Missouri—Rolla. The Center conducts energy audits and recommends waste minimization opportunities.

**130 MS. JANET VAIL**

Waste Reduction & Management Program  
 Grand Valley State University      **Phone:** (616) 895-3749  
 Water Resources Institute      **Fax:** (616) 895-3864  
 One Campus Drive  
 Allendale, MI 49401

The Waste Reduction and Management Program is a P2 outreach program for business and industry. It sponsors conferences and workshops, facilitates business coalitions, and provides P2 information. The Program frequently works with the Michigan Office of Waste Reduction Services. The Water Resources Institute has an education program on its research vessel for water quality and it is preparing a manual on Michigan air quality regulations. Also teaches an extension class in Waste Minimization for Wayne State University.