

1992 North American Conference on Industrial Recycling and Waste Exchange

Conference Proceedings

September 9-10, 1992
Sheraton Inn
Syracuse, NY

Government Institutes, Inc.
and the Northeast Industrial Waste Exchange, Inc.



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Published September 1992.

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ISBN: 0-86587-319-4

Printed in the United States of America

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A Fact Sheet



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NORTHEAST INDUSTRIAL WASTE EXCHANGE, INC.

WHAT IS THE NORTHEAST INDUSTRIAL WASTE EXCHANGE, INC.?

The Northeast Industrial Waste Exchange, Inc. (NIWE), matches waste generators with waste users. NIWE's goal is to recycle valuable waste resources back into the manufacturing process. NIWE clients minimize waste disposal expenses, reduce the need for landfilling, and increase the value of wastes, by-products, surplus and off-spec resources.

NIWE incorporated in 1989 as a not-for-profit corporation in the state of New York and is tax exempt under Internal Revenue Service code Section 501(c)(3).

WHAT SERVICES ARE AVAILABLE?

CATALOG: NIWE publishes a quarterly *Listings Catalog* (each February, May, August, and November) in which wanted and available resources are listed as coded, classified advertisements. The *Listings Catalog*, with a circulation of over 19,200, is distributed primarily in Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, and Vermont.

ON-LINE LISTINGS CATALOG: NIWE's "computerized catalog" enables companies to get up-to-the-minute information about resources wanted or resources available. New classified listings are immediately added to the service and are accessible 24 hours a day to any company having a computer, modem, and NIWE password and login. Users can focus their search for information by utilizing a simple menu system. The *On-line Listings Catalog* also contains listings from the Southeast Waste Exchange and the Southern Waste Information Exchange. Call or write for information on receiving this service.

HOW DOES THE WASTE EXCHANGE WORK?

Classified listings are accepted by NIWE through the Listing Form located on page 21. Companies or municipalities wishing to place a

listing in the new Post-Consumer Plastic section can use the special listing form on pages 44-45. All listings are carried for four consecutive issues of the *Listings Catalog* (one year) or until the company requests that it be withdrawn. Companies in sponsoring states (DE, MD, NH, OH, PA, RI), can place listings in the available and wanted section of the catalog for a \$75 fee. Companies in all other states are charged \$150 per listing. Companies or municipalities placing listings in the special Post-Consumer Plastic section are charged a special rate of \$50, regardless of state. Each listing must be accompanied by a check or money order in U.S. currency for the full listing charge. The fee includes not only publication but the processing of all inquiries about listings.

To ensure confidentiality, each listing is assigned a unique code number; no names, addresses, or phone numbers are ever published with the listing. NIWE forwards any inquiries about confidential listings to the company that placed the listing. That company then chooses the respondents with whom it wishes to negotiate. To expedite inquiries about non-confidential listings, the company's name is given to the inquirer, and vice versa.

NIWE does not participate in any negotiations. However, the company placing a listing has the obligation of notifying NIWE when a successful negotiation is completed. This information is crucial because NIWE's funding depends on knowing its success rate.

DISPLAY ADVERTISING

If your firm charges a fee for its services (disposal, hauling, consulting, analysis, etc.) or has a product to sell, you may place an advertisement in our catalog. Information is available upon request that explains NIWE's advertising rates, design guidelines, and circulation.

FOR ADDITIONAL INFORMATION

Contact Lewis M. Cutler, President, Northeast Industrial Waste Exchange, Inc. at (315) 422-6572 or FAX: (315) 422-9051.

ABOUT THE AUTHORS

Randall Andrews

President

Industrial & Agricultural Chemicals, Inc.

Rt. 2, Box 521-C

Red Springs, NC 28377

919-843-2121

Randall Andrews has a B.A. and M.A. from East Carolina University, Greenville, NC. He has worked in sales and marketing for several chemical companies. He started Industrial and Agricultural Chemicals, Inc., in 1975.

Arthur E. Aspengren
President
Industrial Management Council
930 East Avenue
Rochester, NY 14607-2296
(716) 244-8835 Ext. 3022

Arthur E. Aspengren is president of the Industrial Management Council. He has more than 30 years' board based management and marketing experience in manufacturing companies, primarily in the automotive and power tool industries. He has held senior management positions with General Motors, White Motors, and Cooper Industries.

He has been actively involved in civic and community affairs in three states. These include serving as president on a board of education; president and member of various boards to five universities. He currently serves on boards and committees of the following organizations in the Rochester areas: Center for Government Research, New Future Initiatives, Private Industry Council, Community Coalition for Long Term Care, Rotary, Rochester Jobs, Inc., Chamber of Commerce, and Leadership Rochester Advisory Committee. His professional association memberships include the Society of Automotive Engineers, American Production and Inventory Control Society, and Work's Managers Organization.

Art holds a bachelor's degree in science and a master's degree in human relations and psychology from Ohio University. He and his wife, Donna, are the parents of five grown daughters.

JULIE C. BECKER
PRINCIPAL
DICKSTEIN, SPAPIRO & MORIN
2101 L Street, NW
Washington, DC 20036
(202) 775-4795

JULIE C. BECKER

Julie C. Becker is a principal in the Environment and Natural Resources Section of Dickstein, Shapiro & Morin. Prior to joining the firm, Ms. Becker served as Special Assistant to the U.S. Environmental Protection Agency's Assistant Administrator for Enforcement. She has also worked as a staff attorney in EPA's RCRA and Superfund Enforcement Division. Since joining Dickstein, Ms. Becker has advised clients on a wide variety of RCRA, Superfund, Clean Air Act and Clean Water Act matters.

Ms. Becker is a graduate of the George Washington University National Law Center, where she has taught as a guest lecturer on environmental law. She is currently serving as Co-Chair of the District of Columbia Bar Section on Environment, Energy and Natural Resource.

ENVIRONMENTALLY CONSCIOUS PRODUCTS

William J. Brady

Manager, Product Safety Technology

IBM Corporation

2000 Purchase Street

Purchase, New York 10577

914-697-7414

William J. Brady is the Corporate Manager of Product Safety, Standards, and Environmentally Conscious Products on IBM's Worldwide Development Staff, located in Purchase, New York. Mr. Brady has held management positions in IBM manufacturing sites, field, marketing, personnel and finance areas of the business. He has been in the Product & Process Engineering field for six years and Safety, Chemical & Environmental field for three years.

Bill was the chairman of IBM's Worldwide Corporate Task Force on Environmental Attributes of IBM's Products, Supplies and Packaging and directed the implementation of IBM's new Engineering Center for Environmentally Conscious Products in Research Triangle Park, North Carolina.

Lewis M. Cutler
President
Northeast Industrial Waste Exchange, Inc.
90 Presidential Plaza, Suite 122
Syracuse, NY 13202
(315) 422-6572

Lewis M. Cutler is President of the Northeast Industrial Waste Exchange, Inc. The Waste Exchange is a not-for-profit corporation and is located in Syracuse, New York. His responsibilities include publication of a quarterly listings Catalog, the administration of the On-Line Listings Catalog, and the management of Recycling Markets Referral Service. Mr. Cutler has been managing the Waste Exchange since 1985.

Before joining the Waste Exchange, Mr. Cutler was the Director of Environmental Services for a heavy industrial cleaning and hazardous waste contractor. His duties included the management of an emergency response team; asbestos abatement; a medical surveillance program; a respirator protection program; and sales and marketing. Earlier environmental experience includes biological and archeological surveys for licensing of hydroelectric facilities from Maine to Alaska.

Mr. Cutler received a B.S. in Biology from the State University of New York at Albany in 1971 and a M.S. from the State University of New York College of Environmental Science and Forestry in 1975.

Mr. Cutler is environmentally active in his rural community and serves on his town's Planning Board and on his county's Environmental Management Council.

IDENTIFYING AND SECURING VENTURE CAPITAL

Richard J. Defieux

General Partner

Edison Venture Fund

997 Lenox Drive #3

Lawrenceville, NJ 08648

609-896-1900

Mr. Defieux is a General Partner of the Edison Venture Fund. Edison, which manages over \$100 million, makes equity investments in expansion-stage environmental, software, health care and communications companies, usually located in the Mid-Atlantic and Northeast states. Mr. Defieux is responsible for the fund's environmental investing activities. He currently serves on the Board of Directors of eight environmental companies.

Prior to joining Edison in 1987, Mr. Defieux was a General Partner of Princeton Montrose Partners, a venture capital firm specializing in the natural resources, energy, and food industries. From 1977 to 1982, he was a Senior Scientist and Division Manager at Environmental Research & Technology, Inc. (ERT) in Concord, Massachusetts. At ERT, Mr. Defieux provided consulting and engineering services, often relating to waste management issues. Mr. Defieux holds B.A. and M.A. degrees in Geology from Boston University and an MBA from Columbia University.

Heading For The Future - Companies Reduce, Reuse, Recycle: The
Industrial Management Council Experience

Frederick Paul De'Jean

Manager, Industrial Hygiene & Safety

Bausch & Lomb, Rochester, NY

1400 N. Goodman Street

Rochester, New York 14692

(716) 338-5699

Mr. De'Jean has been in the occupational health, safety and environmental protection field for the past seventeen years with concentrated experience in manufacturing, petrochemical, mining, and aviation industries. He currently directs Bausch & Lomb activities related to occupational health and safety worldwide.

Mr. De'Jean is active in a number of professional, scientific and trade associations. He is past president of the Acadiana Chapter of the American Society of Safety Engineers. Mr. De'Jean has co-authored two books on specialized subjects in the safety field and is frequently called upon to deliver papers and make presentations on environmental, health and safety issues. He was a primary panelist on the topic: "Recycling Is Good Business - Environmentally and Legally" at the 1990 Recycling Symposium sponsored by Rochester's Industrial Management Council. He was the contributing industry representative for the 1992 68th annual conference of the New York State Associations of Milk and Food Sanitarians in cooperation with Cornell University presenting one industry's approach to recycling.

Mr. De'Jean is certified by the boards of Certified Safety Professionals and Hazard Control Management. He is a registered environmental professional. He is a graduate of Southwestern University in Louisiana.

Speaker's Resume

Mr. Mitchell Dong, President
FulCircle Ballast Recyclers

Mr. Dong has been an entrepreneur in the energy and environmental industries for nearly 20 years. He has been involved with the following companies:

- 1972 - 1980: Co-founder of Energy Investment, Inc., a Boston-based engineering and development company specializing in utility demand side management.
- 1980 - 1985: Founder of MITEX, Inc., a developer, owner and operator of five hydroelectric facilities in Pennsylvania and Virginia. The Company was sold to Sithe Energies, an affiliate of the \$6 billion French water utility, the Compagnie Generale des Eaux (CGE).
- 1986 - 1991: Founder of Tellus, Inc., a developer of a gas-fired, combined cycle, cogeneration facility in New York. The two project was sold to the cogeneration subsidiary of General Public Utilities (GPU).

Mr. Dong received his B.A in Economics from Harvard in 1975. In 1990, the Harvard Board of Overseers elected him to serve on the Visiting Committee of the Harvard School of Public Health. Mr. Dong also serves as a special advisor to that School's Environmental Health Department.

Mitchell L. Dong * President * FulCircle Ballast Recyclers *
509 Manida Street * Bronx, NY 10474 * 212-328-4667

DUSANKA FILIPOVIC, P.Eng.
BIOGRAPHICAL SKETCH

Dusanka Filipovic is a Professional Engineer, President and Chief Executive Officer of a newly formed company, Halozone Recycling Inc., a licensee of Union Carbide's Blue Bottle™ technology developed to recapture and recycle for reuse chlorofluorocarbons (known as CFCs) and other halogenated hydrocarbons without environmental degradation. Prior to this position, Mrs. Filipovic worked for Linde Division of Union Carbide Canada Ltd. in a dynamic technology driven business environment, most as Manager of New Business Development.

She is a graduate of the University of Belgrade's Faculty of Chemical Engineering. Her diversified expertise includes technical marketing, sales, new business and technology development management and the negotiations of partnerships and licensing. Her professional expertise in the field of environmental organic contaminant control is well recognized.

Mrs. Filipovic is a co-inventor of the Blue Bottle™ technology which now has worldwide patent protection. For this development she received two prestigious awards -- the APEO Engineering Medal for Research and Development (1991) and the Green Product Award for Business. She has presented papers at various conferences.

Mrs. Filipovic is a Director of the Pollution Control Association of Ontario, a Trustee of the Ontario Section, American Water Works Association, and a member of the APEO and Licensing Executive Society for Canada and the U.S.A.

August 31, 1992

1992 North American Conf. on Indus-Recycling

Allan E. Floro, Esq.

Partner

Nixon, Hargrave, Devans & Doyle

Clinton Square, P.O. Box 1051

Rochester, New York 14603

(716) 263-1603

Mr. Floro, a member of the Environmental Practice Group, concentrates his practice on matters relating to hazardous and solid waste management, transportation and disposal including development of industrial and municipal waste management plans, siting and permitting of waste management facilities, civil and criminal enforcement related to waste management requirements, RCRA corrective action and inactive hazardous waste site remediation. He also advises clients with regard to environmental issues in business transactions and represents industrial and municipal clients in permit and enforcement proceedings before the United States Environmental Protection Agency and various state and local agencies.

Guide to the Entrepreneur: Financing New Recycling Ventures

Allen E. Galson
Chief Executive Officer
Galson Corporation
6601 Kirkville Road
East Syracuse, NY 13057
(315) 432-0506

Mr. Galson is the Chief Executive Officer of Galson Corporation, a multidisciplinary firm offering specialized consulting, field sampling, analytical laboratory and related support services in the fields of environmental science and occupational health and safety. As the administrative and technical director, he was responsible for guiding the growth of the firm from its infancy to a multi-million dollar consultancy, with offices in several states serving a diverse clientele. Mr. Galson also acts as technical advisor and consultant on major projects, and takes the lead technical role on projects that expand the scope of the consultancy. He directly oversees all work relating to engineering controls in the workplace, as well as design of pollution abatement systems. He also provides critical review of industrial hygiene projects, particularly in the areas of indoor air pollution and asbestos abatement.

Mr. Galson is an officer of Galson Engineers/Architects, P.C., a firm offering professional engineering and architectural services to industrial, institutional and architectural clients. He founded and directed the growth of GRC Environmental, Inc., which develops and commercializes chemical processes for destruction of hazardous waste. Mr. Galson began his career with General Electric in their Atomic Power Study Group, a small team that designed and sold the first commercial atomic power plant in the United States.

Mr. Galson received a B.M.E., Mechanical Engineering from Cornell University and a D.I.C., Mechanical Engineering from Imperial College, London, England, where he was a Fulbright Fellow. He is a registered Professional Engineer in New York, and many other states; he also is a Certified Industrial Hygienist.

James L. Gray
President, Chief Operating Officer
Manufacturers Association of Central New York
Syracuse, NY

James L. Gray is president and chief operating officer of the Manufacturers Association of Central New York, a regional employer association headquartered in Syracuse. A native of Wilkes-Barre, Pennsylvania, he is a graduate of Duquesne University where he earned a degree in journalism.

Mr. Gray has had a long and varied career in communications, as an entrepreneur, and in association management. He worked as a general assignment reporter for The Pittsburgh Press and as a correspondent for Time Magazine. He entered broadcasting as a documentary producer for WBRE-TV in northwestern Pennsylvania, and later worked as a field producer and reporter in the station's news department, eventually becoming news anchor.

He left broadcasting to form his own advertising and public relations agency, where he was cited frequently for his creative and innovative campaigns on behalf of his clients. Mr. Gray returned to broadcasting after eight years in business as a commercial and music video producer in Pennsylvania, New York City and Washington, D.C.

In Washington, he worked as director of communications and membership development for the American Council of Independent Laboratories; director of communications for the UJA Federation of Greater Washington; and as executive director of the national Small Business Council for Competitiveness in Public Contracting.

Prior to joining MACNY, Mr. Gray served as a White House correspondent and editor for Market News Service, a financial news wire. As a freelance writer, Mr. Gray has published scores of articles in magazines and newspapers throughout the United States. He is also the author of a book on self-directed public relations for small businesses.

As president of MACNY, Mr. Gray writes and speaks extensively on a variety of issues throughout New York and the United States. He serves on the boards of the Central New York Technology Development Organization, the Industrial Technology Extension Service, the Central New York Industrial Effectiveness Program, and the Wellness Council of Central New York.

Mr. Gray is also a member of the American Society of Association Executives and he is on the governing board of the National Industrial Council/Employer Association Group of the National Association of Manufacturers.

John L. Greenthal

Partner

Nixon, Hargrave, Devans & Doyle

Albany, NY

Mr. Greenthal is a partner in the Albany office of Nixon, Hargrave, Devans & Doyle. Mr. Greenthal, who joined the firm in 1987, is a member of the Environmental Practice Group, concentrating in environmental enforcement, hazardous waste, and state and federal Superfund matters.

Mr. Greenthal served as Director of the New York State Department of Environmental Conservation's Division of Environmental Enforcement prior to joining the firm. He started his career with DEC in 1976 when he became Regional Counsel in DEC's Region 3 (New Paltz) office, working on permitting issues, SEQRA questions, and enforcement matters. He later served as Compliance Counsel in DEC's Office of General Counsel in Albany, and then became head of the newly-formed hazardous waste enforcement group. By 1984, this group had become the Division of Environmental Enforcement, responsible for the enforcement of the state's inactive hazardous waste site remediation program (state Superfund) and all other hazardous waste enforcement activities in the state. In addition, the Division has responsibility for coordinating and overseeing the enforcement activities of the DEC regional offices in the areas of air and water pollution, solid waste, and all natural resource conservation programs. While Director, Mr. Greenthal supervised some 30 professionals (lawyers and scientists) located in Albany, Buffalo, and White Plains.

Since joining the firm, Mr. Greenthal has been involved in a variety of environmental matters, including serving on steering committees at federal Superfund sites, negotiating with federal environmental regulatory agencies over waste disposal issues, and representing a governmental authority in SEQRA litigation.

Mr. Greenthal, a graduate of Amherst College and Harvard Law School, served, while at DEC, as Chairman of the Northeast Hazardous Waste Project, an association of hazardous waste officials from 14 states. He is co-chair of the Legislation Committee of the New York State Bar Association Environmental Law Section and lectures and writes articles frequently.

Innovative New Technologies for Recycling

Vicki G. Hart

Manager, Internal Operations/Sales

Mercury Refining Company, Inc.

790 Watervliet-Shaker Rd.

Latham, NY 12110

518-785-1703

Ms. Hart is a cum laude graduate of Jacksonville University, Jacksonville, Florida where she majored in Chemistry. She has four years of laboratory R&D experience, and holds a U.S. Patent in the area of phosphorus chemistry. She left the laboratory for technical sales and held positions in sub-micron filtration and industrial adhesives before joining Mercury Refining Company in 1988. Promoted to her current position in 1990, she has responsibility for the company's customer service, sales, and material approval functions. She is working on her MBA at the State University of New York.

Outside of work, she and her husband enjoy working on their two vintage Triumph sports cars, and she is the navigator for a Northeastern championship road rallye team.

RECLAIMING CELLULOSE: OVERCOMING THE OBSTACLES

Dave Hillman

President

Dave Hillman Consultants

4024 State Street

Erie, PA 16508

(814) 866-1136 FAX: 864-4739

Dave Hillman is an engineering graduate of Georgia Tech with over 30 years experience in the pulp and paper industry....the first 23 with Westvaco in various production, technical and market pulp sales positions, 5 years as Director of Pulp Sales at Hammermill, and the last five as a prominent consultant. Dave has conducted one, two and three day comprehensive pulp seminars in Brazil, South Africa, a number of European countries, and all across Canada and the U.S. He is a frequent conference speaker at major pulp & paper conferences as well as working closely with producers such as Mitsubishi, Union Camp, Georgia Pacific and Riocell-Brazil. He is acknowledged as being an authority on all the various papermaking pulps and each one's proper application.

1992 North American Conference on Industrial Recycling and Waste Exchange

Eugene B. Jones

Director

Southern Waste Information Exchange (SWIX)

Post Office Box 960

Tallahassee, Florida 32302

Phone: (800) 441-7949

Mr. Jones is the Director of the Southern Waste Information Exchange (SWIX). Mr. Jones has been with the SWIX since 1981. Mr. Jones is also the Director of the Waste Minimization Program at Florida State University. He has worked with local, state, and federal agencies, legislative and congressional committee staff, trade associations, and with industries regulated under RCRA, CERCLA, and OSHA. Mr. Jones' areas of interest are waste minimization, resource management, recycling, and occupational health and safety. He has worked extensively with both the regulated community, as well as industries that provide services and equipment to firms that are regulated under the RCRA. Mr. Jones serves on the Editorial Advisory Board for the Waste Minimization & Recycling Report published by Governments Institutes, and the Environmental Studies Program Advisory Group for Florida A&M University, College of Engineering.

Trends in Corporate and Regulatory Industrial Recycling Policy

Robert L. Kerr
President
Kerr and Associates
3624 Wild Cherry Place
Reston, VA 22091
(703) 476-0710

Robert Kerr, President of Kerr & Associates, Inc., has worked extensively on the analysis and development of environmental regulation policy during 18 years of work in the environmental field. Mr. Kerr worked for eight years on House and Senate Congressional staff involved in legislative analysis, and development and negotiation on environmental issues. He also spent a year working with EPA's Regulatory Reform staff developing alternative flexible approaches to a range of environmental regulations. During the last nine years, Mr. Kerr has managed a consulting firm providing a wide range of technical and regulatory analyses to government agencies.

He has worked with the National Roundtable of State Pollution Prevention programs since it was founded. He is currently managing a study evaluating some of the results of the early phases of the state pollution prevention facility planning programs, and the extent to which firms have identified or implemented some of the financial benefits of pollution prevention alternatives.

The Role of Purchasing in Recycling

Roland T. Kotcamp

Director-Investment Recovery

Niagara Mohawk Power Corporation

300 Erie Boulevard West

Syracuse, New York 13202

(315) 428-6894

Mr. Roland T. Kotcamp, Director of Investment Recovery, Niagara Mohawk Power Corporation, holds a B.S. in Accounting from Syracuse University and an M.B.A. from Chapman University. Kotcamp, a Certified Purchasing Manager (C.P.M.), has 20 years of experience in Materials Management and Investment Recovery. He is affiliated with and has held leadership positions in the Purchasing Management Association of Buffalo, Purchasing Management Association of Central New York, Nuclear Materials Management Exchange, and Investment Recovery Association.

BENEFITS OF RECYCLING: HAZARDOUS WASTE RECYCLING CASE STUDIES

THOMAS J. LALLY, C.P.M.

CORPORATE CHEMICALS & MATERIALS HAZARDOUS BY-PRODUCTS MANAGER
POLAROID CORPORATION

103 FOURTH AVENUE
WALTHAM, MA 02154-7598
(617) 684-5062

I HAVE WORKED AT POLAROID FOR 32 YEARS. ALL OF THE TIME SPENT IN CHEMICAL RELATED FIELDS; RESEARCH, CHEMICAL OPERATIONS, CHEMICAL PROCESSING, AND PURCHASING.

IN MY CURRENT POSITION IN PURCHASING, I MANAGE THE TRANSPORTATION, DISPOSAL, RECYCLING, AUDITING OF TSDF'S, SOURCE VIABLE MANAGEMENT OPTIONS, AND NEGOTIATE SERVICE CONTRACTS.

AS AN ADVOCATE OF POLAROID'S "TOXIC USE AND WASTE REDUCTION" PROGRAM, I AM AN INFLUENCE IN THE RECYCLING OF CHEMICAL BY-PRODUCTS AT POLAROID.

Bill Lawrence
Program Coordinator
IMEX, Seattle-King Department of Public Health
172 20th Avenue
Seattle, WA 98115
(206) 296-4899

Mr. Lawrence has managed IMEX since 1990. Previously, he worked in the solid/hazardous waste sections of the Seattle-King County Department of Public Health.

Prior to joining the Health Department in 1987, Bill spent nearly nine years in West, Central, and Southern Africa working in public health programs with U.S.AID, Peace Corps., and UNICEF.

Mr. Lawrence holds a B.A. degree in biology from the University of Bridgeport and a masters of science in Public Health from the University of Washington.

He is interested in transfer of technology and information among both businesses and countries that will positively affect both the environment and economy.

Lawrence W. Long
Manager, Allied Products
Anheuser-Busch, Inc.
One Busch Place
St. Louis, MO 63118
(314) 577-4453

Larry Long, an 18 year employee of Anheuser-Busch, developed and coordinates the "beyond compliance" environmental programs of the companies 13 breweries. Through the setting of goals to reduce water and energy consumption and solid waste generation, the world's largest brewer is significantly reducing its impact on the environment. The program reduced the company's solid waste by nearly 8,000 tons in 1991 and made a major commitment to purchase recycled products. Anheuser-Busch also operates the world's largest grassroots aluminum can recycling network, collecting more than 17 billion cans last year.

BIOGRAPHICAL INFORMATION

THOMAS MACDONALD

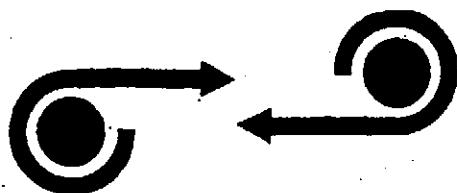
Business Development Manager, Strategic Waste Management
Digital Equipment Corporation

Thomas MacDonald is the business development manager for Digital Equipment Corporation's Strategic Waste Management organization, which addresses waste management from a total product life cycle perspective by focusing on Design for Sustainable Development. Mr. MacDonald is responsible for developing business opportunities from Digital's technical and operational expertise in waste management.

Mr. MacDonald joined Digital in 1969 and has held various senior management positions. His experience and expertise spans international acquisition and venture development, business start-up and product management, logistics/manufacturing operations, and the installation of wide-ranging business controls and systems.

Prior to joining Digital, Mr. MacDonald worked in a variety of manufacturing engineering roles for The Foxboro Company.

Mr. MacDonald holds a B.S. degree in Electrical Engineering and a M.S. degree in Engineering Management from Northeastern University where he was a member of both Tau Beta Pi and Eta Kappa Nu national engineering honor societies.



Industrial Recycling

SOUTHEAST WASTE EXCHANGE
The University of North Carolina at Charlotte
Urban Institute
Charlotte, N.C. 28223
Telephone: (704) 547-2307
FAX: (704) 547-3178

Biography

Maxie L. May

Southeast Waste Exchange
Charlotte, North Carolina

Maxie L. May is the Director of the Southeast Waste Exchange (SEWE) located in the Urban Institute at the University of North Carolina at Charlotte (UNCC). The Southeast Waste Exchange specializes in industrial industrial recycling and waste management through direct industry and business contact. Maxie has been with UNCC for ten years, working with the Exchange program for the past eight years.

She is responsible for the day-to-day operation of the SEWE program, publication of the Waste Watcher, a bimonthly publication, and supervision of the SEWE staff. Maxie is actively involved in finding markets for industrial byproducts and surplus materials for subscribers to the SEWE program.

Additionally, Maxie serves as regional coordinator and assistant instructor for 6-yearly Small Quantity Hazardous Waste Generator (SGQ) workshops, which address RCRA, OSHA, and SARA regulations pertinent to small and medium-sized industry. She also participants as a presenter in these workshops and at the request of other numerous community organizations; governmental agencies; business and industry seminars, and educators.

Maxie is a member of the National Recycling Coalition, the North Carolina Recycling Association, and the Mecklenburg County Household Hazardous Waste Committee.

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Printed on Recycled Paper

Brenda Pulley

Executive Director

Brenda Pulley, the executive director of the NACR, worked for the U.S. House of Representatives from 1980 - 1989 prior to joining the Association. As a professional staff member of the Small Business Committee, she was responsible for the drafting of "The Used Oil Recycling Act of 1989," and the "PCB Regulatory Improvements Act of 1988." During the reauthorization of Resource Conservation and Recovery Act (RCRA) (The hazardous and Solid Waste Amendments) in 1984, Ms. Pulley investigated the potential effects of the proposed small quantity generator provisions and was instrumental in developing a compromise which was included in the legislation. In addition, she initiated the Research, Development and Demonstration Permit provisions for innovative treatment technologies which was also included in the HSWA.

William M. Sloan

- Editor and publisher of *CURRENTS*, a newsmagazine on waste management and the environment published by the Maryland Environmental Service. MES is a state-owned corporation—not a regulatory office—that builds, owns and operates water, wastewater, solid waste and recycling systems.
- Since 1989 Charter member of the Board of Directors of the Northeast Industrial Waste Exchange, Inc.; currently Chairman.
- Author, *Code of Practice for Siting New Hazardous Waste Facilities*, World Health Organization, Regional Office for Europe, Copenhagen. In press.
- 1980-88 Executive director for the Maryland Hazardous Waste Facilities Siting Board. Responsible for siting procedures and for assessments of the state's facilities needs. Organized the Maryland Waste Exchange and merged it with NIWE to enlarge the market area. Commissioned via NIWE the first on-line interactive computer recycling service in North America. Commissioned independent studies of in-plant industrial waste management; active in Roundtable of State Pollution Prevention Programs. Organizing chairman of the Consortium of State Hazardous Waste Siting Authorities.
- 1974-80 Maryland Environmental Service. Water, wastewater and solid waste project planning and evaluation, various capacities.
- 1969-74 Maryland Environmental Service. Director, water quality and waste-management planning for Baltimore Harbor, tributaries and the adjacent Chesapeake Bay.
- 1965-69 Predecessor agency of the USEPA. Water quality management planning for the Chesapeake Bay-Susquehanna River Basins.
- Military service.
- Bachelor of Civil Engineering, 1959; Master of Science in Sanitary Engineering, 1965—Georgia Tech.

P. O. Box 1722, Annapolis, Maryland 21404; call 410-224-6967

The Maryland Environmental Service is located at 2020 Industrial Drive, Annapolis, MD 21401. call 410-974-7281; fax 410-974-7267

August 27, 1992

1992 North American Conference on
Industrial Recycling and Waste Exchange

Robert W. Smee

Director

Pacific Materials Exchange

1522 N. Washington, Suite 202

Spokane, WA 99201-2454

(509) 325-0551

Mr. Smee is the founder, Director, and President of the Board of Pacific Materials Exchange (PME), a non-profit corporation promoting the recycling of industrial waste. PME developed and hosted the 1991 North American Waste Exchange Conference on Industrial Recycling which assembled 65 esteemed speakers from four countries discussing issues and opportunities in the recycling of industrial materials. PME is presently working in cooperation with other waste exchanges to develop a national on-line computer network for the recycling of industrial materials.

Mr. Smee has assisted in the implementation of a county office paper recycling program and a yard waste composting program. He teaches seminars on composting and has served on a municipal Solid Waste Advisory Committee.

1992 North American Conference on Industrial Recycling and Waste Exchange

HEADING FOR THE FUTURE

FREDERICK PAUL DE'JEAN
Greater Rochester Industrial Management Council
930 East Avenue
Rochester, New York 14607-2296

It's a pleasure to be with you today.

Before I talk with you a few minutes about recycling and waste minimization, let me tell you more about the organization I represent.

Although I work for Bausch & Lomb, today I'm representing an organization that my company belongs to - the Industrial Management Council, the IMC. Bausch & Lomb is a charter member.

The IMC is an organization with more than 300 business and industry members. This year, the IMC is celebrating its 75th anniversary year and it continues to grow and develop as the Greater Rochester area grows and develops.

The IMC offers member companies a variety of services, including support and training for environmental initiatives. Let me give you three examples:

- ♦ The IMC - with the help of Monroe County, The City, and MCC, initiated the TEAM Command program, a program that trains together fire fighters, police officers, emergency medical technicians and industrial safety experts - so they all talk the same language and follow the same procedures in an emergency.
- ♦ About two years ago, the IMC ran an educational program called "Rochester Has The Right Chemistry", that gave people a chance to talk with industry about how chemicals were handled at their plants.
- ♦ This past year IMC launched a program called HazSense, a program that helps businesses be sure they are in compliance with health, safety and environmental regulations concerning hazardous chemicals.

Now, we're involved in a new environmental program - the one that brings me here with you today.

(pause slightly)

If you look in the dictionary, you'll see that the word "environment" came into existence in the 1600's, long before the words "environmentalism" and "environmentalist" were coined. In fact, it took more than 300 additional years to get people talking about "environmentalism" and "environmentalists".

It is taking us still more years to move from talking about environmentalism to doing something about it - something positive as individuals, companies and communities.

But now we're zooming through the last decade of the 20th century, Heading For The Future with a clear sense that the environment is everybody's business. Yours ... mine ... ours.

Consider what we know from the latest opinion polls.

In a *Reader's Digest* Environmental Study this year, 98% of the people who answered questionnaires said they're "personally willing to change their behavior and buying habits in order to ensure a greener world".

In a survey by Golin/Harris communications and the Angus Reid Group, 74% of the adults polled said they'd "consider environmental protection a priority, even if it means slower economic growth".

And, in a Roper Organization poll, average consumers surveyed said they "would pay 6.6% more for a green version of a product".

Consider what we know from reading the local newspaper or listening to a broadcast report.

We know, for instance, that in Monroe County, we're moving swiftly and smoothly to implement a new recycling law.

Go back just a few months to April 30, 1991. That was the date that the Monroe County Legislature unanimously approved a county-wide recycling law. The law made January 1992 the date when every town, village and city resident would be required to recycle glass, metal, plastic and aluminum containers, newspapers, magazines and catalogs, and corrugated cardboard.

At work and at school, employees and students are supposed to be recycling office paper and corrugated cardboard. Food service businesses, cafeterias and restaurants are recycling glass, metal and plastic food and beverage containers.

And, all of this dedication should mean that, by 1997, more than 40% of our waste stream will be recycled. Viva la blue box!

But to make recycling or any waste minimization strategy work, you need the right infrastructure - a system, equipment and trained people to help you reach your goals.

And, for recycling to really work, you need markets for recycled materials. If people won't or don't buy products made of recycled materials, then we won't have as large a percentage of recycling going on as we want to have.

For many businesses and industries, the circumstances were right for us to get a head start on recycling and other waste minimization strategies before the general public.

The right circumstances were these:

- ♦ There is an economic advantage to limit the total use of raw materials - industries call this source reduction - that is the reduction or elimination of materials used in manufacturing processes. It means: The fewer materials you use, the fewer you have to buy, and ultimately, the fewer you have to dispose of. If you can learn - as many of us in business and industry have - to reduce, reuse and recycle materials, you become more competitive.

So economics - hard numbers - pushed business and industry. What is good for business, can be good for the environment.

- ◆ Another circumstance that gave us a head start on waste minimization was that we had, and have, the scientific, technical and business capabilities to make it work.

It takes expertise to figure out how to recover 97-99% of a solvent you use in a manufacturing operation, and use that solvent again. It takes an understanding of physics and chemistry to recycle plastics - and many of the industries who belong to the IMC recycle plastics. And, it takes technological know-how to de-ink and repulp wastepaper and make new paper with that scrap.

Business and industry have the brain power and training to implement programs like these, special waste reduction strategies.

- ◆ We also had, and have, a powerful incentive to move forward. This incentive is our desire to be good corporate citizens. Most businesses and industries want to wear "white hate", in addition to making a profit. Employees that work for business and industry want to be proud of the companies where they work.

So, the more we have learned about what we can do to better protect the environment, the more we want to do these things. Our people are interested in playing a constructive role when it comes to the environment.

You may have seen that famous poster with the planet Earth as seen from space - a picture taken by one of our astronauts. The poster has a single word under our blue-green planet - that word is "Home". In business and industry we get the message just like you do.

- ◆ And finally, business and industry can see the future. We can see the need to take the initiative now in environmental affairs - to do what we can, and not wait until a regulation shapes a direction for us. In fact, many scientists, engineers, statisticians and others from business and industry have volunteered countless hours to offer advice and information on regulations that are designed to make this world cleaner and greener. We also stay active in professional organizations that relate to the environment, and yes, many of us; like many of you make donations and give our volunteer time to organizations like the Sierra Club, Adirondack Mountain Club and World Wildlife Fund.

The vision to see the future and do something about it continues to move us.

Now let me take just a few minutes and tell you about a couple things we are doing at my company to better protect the environment. Then I'd like to show you a brief film produced by the IMC and take your questions.

In 1991, at the New York plant for Ray-Ban sunglasses, plastic wastes were made into tools and costume jewelry and used kitchen grease was recycled into soap. At the Oakland Maryland plant, wooden pegs were turned into barbecue charcoal and their shredded confidential paper became cow bedding in Pennsylvania dairy farms. These were just a few of the innovative projects that contributed to the elimination, recycling, or reuse of over 5.5 million pounds of Bausch & Lomb waste in 1991.

Eight U.S. and five international facilities participated in the 1991 Bausch & Lomb waste reduction program, reducing waste releases to air, land and water. Together their efforts resulted in the reduction, recycling or elimination of 3.4 million pounds of paper and cardboard; 2 million pounds of other solid waste (plastic, wood, metal and oil); 199,000 pounds of hazardous wastes; and 34.9 million gallons of water. Those same efforts also provided combined cost savings and revenues of \$1.3 million.

From the elimination of 94,000 pounds of Freon and ethylene oxide at Greenville South Carolina plant, to the 600 trees saved through paper recycling at Corporate Offices, each participating facility reduced the burden on our landfills, air and water.

Well, that gives you a snapshot of some of the things happening at Bausch & Lomb. Now let's roll the film so you can see what other companies are doing.

(film rolls - about 17 minutes)

I believe we have a few minutes for your questions. I'd like to hear what's on your mind.

(Take questions, until 2 minutes before conclusion)

I think I have time for one more question - right - I know we're supposed to conclude very shortly and I want to be a considerate guest and stick to the time frame you have given me - but please feel free to call me at my company or send me a note if you have more questions. I will get back to you.

(take last question)

Thank you for having me. If you are involved in another group that would like to have a presentation like this one, please call the IMC at 716/244-8835. Let me give you that number 716/244-8835. Thank you again. I enjoyed being here with you.

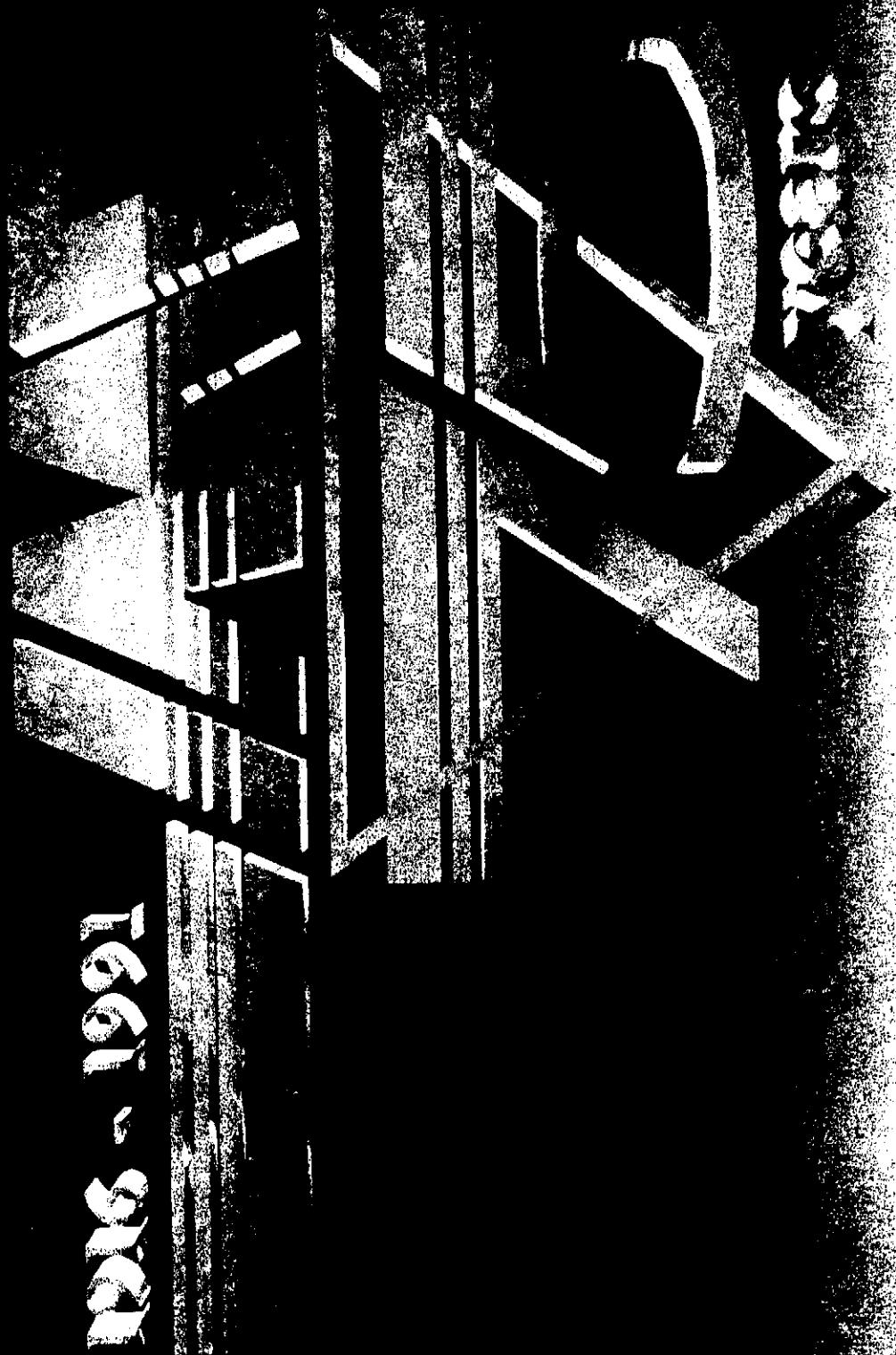
I have some brochures for you (hold up brochure) that summarizes some of the material in the film and gives you a few interesting tips on what you can do yourself to minimize waste. All nine companies, which are sponsoring our "Heading For The Future" program are featured in the brochure.

In the spirit of reduce, reuse, recycle, please pass the brochure along to a friend when you are finished with it.

Thank you again.

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Heading for the Future

Opinion Polls

reduce
reuse
recycle

- Reader's Digest:

- 98 % Favor Behavior and Buying Habits that Ensure a "Greener World"

- Angus Reid Group:

- 74 % Favor Environmental Protection over Economic Growth

- Roper Organization

- 50 % Favor Paying 6.6 % More for a "Green Version"

of a "Lifestyle"

Strategy

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- By 1991 40 % of our Waste Stream will be Recycled

- Infrastructure - System, Equipment Training
- Markets - Buy Products Made of Recycled Materials

Circumstances

reduce
reuse
recycle

- Economic Advantage
- Scientific, Technical and Business Capabilities
- Good Corporate Citizen
- Vision to See the Future

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Bausch & Lomb Results in 1991

- 5.5 Million Pounds Recycled,
Reused, Reduced
- 1.3 Million Cost Savings and
Revenues

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To Arrange for a Presentation
on how IMC Companies Reduce,
Reuse and Recycle, Call The IMC,
(716) 244-1800.

(Presented by Julie Becker)

REGULATORY FOCUS

"REUSE AND RECYCLING" A WALK THROUGH THE RCRA LABYRINTH

Julie C. Becker
Dickstein, Shapiro & Morin

In 1976, faced with the growing problem of uncontrolled hazardous waste disposal, Congress passed the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901 *et seq.*, declaring that "the problems of waste disposal...have become a matter national in scope and in concern and necessitate federal action through financial and technical assistance and leadership in development, demonstration and application of new and improved methods and processes to reduce the amount of waste and unsalvageable materials and to provide proper and economical solid waste disposal practices."

In the 15 years since the passage of RCRA, the U.S. Environmental Protection Agency ("EPA") has issued regulations imposing permitting, reporting, financial responsibility, and a myriad of other requirements on those who handle hazardous wastes. Although these regulations are aimed primarily at controlling the treatment, storage and disposal of hazardous wastes, they can have enormous impact on the cost of operating a hazardous materials recycling facility.

The question of whether, and to what extent, the RCRA regulations apply to recycling remains something of a mystery. Some recycling operations fall squarely within the ambit of RCRA, while others do not. Some are required to comply with the full panoply of permitting and financial responsibility regulations, while others need only report on the type and quantity of wastes entering or leaving the facility. To add to the confusion, the degree to which this federal statute applies depends not only on the activities conducted, but also on the state in which the facility is located.

Materials Designated for Reuse and Recycling

In passing RCRA, Congress authorized EPA to develop "cradle to grave" regulations for "solid wastes," a broad category which includes discarded materials and "secondary materials" which are being "reused or recycled" in specific ways. Here begins the labyrinth of regulations which may -- or may not -- govern activities at a recycling facility. The answer is facility specific and depends on both the nature of the materials being recycled and the method of recycling.

Not all "secondary materials" fall within the scope of the RCRA regulations. Materials which are intended for reuse or recycling are considered RCRA-regulated "solid wastes" only if they fall into one of the following six categories:

- spent materials which are no longer usable without regeneration;
- by-products incidentally produced in industrial, commercial, mining, or agricultural operations;
- sludges from pollution control equipment; off-specification commercial chemical products and residues which are burned or applied to land (so long as burning or land application is not the intended use);
- scrap metal
- certain designated wastes which are determined by EPA to be inherently "waste-like" and are specifically listed in the RCRA regulations.

Even if a material intended for reuse or recycling falls within one of the above categories, the RCRA regulations still may not apply. The next step in this analysis is to determine whether the waste will undergo one of the following methods of recycling:

- use constituting disposal (placement of the waste or waste-derived product on land);
- burning for energy recovery (e.g., use of secondary materials to produce a fuel);
- reclamation (e.g., recovering usable materials from the waste);
- speculative accumulation (long-term storage of materials for later recycling).

If the recycling method falls within any one of these four categories, the operation will be regulated pursuant to RCRA. Even so, the degree to which the regulations apply will vary from facility to facility, so read on...

Requirements for Recyclers

Although regulated under RCRA, a recycler of hazardous materials may not be required to implement all of the provisions which would normally apply to a RCRA treatment, storage and disposal facility. Recyclers that immediately recycle the materials are subject to the notification and manifesting requirements, but are under no obligation to obtain a permit or meet other requirements, including permitting and financial responsibility. 40 C.F.R. § 261.6(c)(2).

The plot thickens when we consider "storage" versus "immediate" recycling. The regulations define "storage" as "a holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere." 40 C.F.R. § 260.10.¹ Unfortunately, EPA has never determined what constitutes a "temporary holding period." The current EPA policy is to direct the EPA Regions and delegated states to make case-by-case determinations of whether the activities of particular recyclers constitute "storage" or "immediate" recycling.

Even if it does not "store" hazardous wastes, a recycler may be forced to run the full gauntlet of RCRA requirements, including permitting and financial responsibility, based on a determination that it is "treating" such wastes. The regulations define "treatment" as:

"any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous

waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such wastes non-hazardous, or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume." 40 C.F.R. § 260.10.

Rather than providing specific examples of recycling which does or does not qualify as "treatment," EPA once again leaves it to the Regional offices or delegated states to make case-by-case determinations. In essence, the only sure way to determine whether the proposed recycling arrangement constitutes "treatment" or "storage" triggering extensive (and expensive) permitting and financial responsibility requirements is to obtain a written opinion of the EPA Regional office or the state regulatory authority responsible for implementing RCRA.

Conclusion

RCRA is currently up for reauthorization, which is expected to be completed during the next session of Congress. The reauthorization is likely to significantly change the regulation of recycling facility operations. Hopefully, Congress will focus more directly on recycling and on providing more useful federal guidance on which of the numerous RCRA requirements should apply. In the meantime, much will depend on case-by-case determinations and, ultimately, on the strength of the arguments an individual recycler can make in dealing with the EPA Regions and state regulatory agencies.

¹Note that the 90-day threshold for determining whether a generator has stored hazardous wastes does not apply to a recycling facility operator. 40 C.F.R. § 262.34.

Ms. Becker is a principal at Dickstein, Shapiro & Morin, Washington, D.C., where her practice includes representing clients dealing with RCRA issues. Ms. Becker previously served in the U.S. EPA's Office of Enforcement, where she specialized in Superfund and RCRA matters.

REAUTHORIZING RCRA:
"CRADLE-TO-GRAVE" BECOMES "CRADLE-TO-CRADLE"¹

Julie C. Becker
Dickstein, Shapiro & Morin

Although 3500 communities now have recycling programs, many communities and businesses still do not. And although some companies use recycled materials, others are still reluctant to do so. Is recycling a passing fad, or is it here to stay? How do we make it a permanent part of our efforts to protect the environment? One answer may be found in reauthorization of the Resource Conservation and Recovery Act, or RCRA.

When RCRA was first enacted in 1976, it was hailed as a "cradle to grave" program -- a means of controlling wastes from generation to disposal. The 1976 bill prohibited indiscriminate dumping of hazardous wastes and directed EPA to regulate their generation, transportation and disposal. Eight years later, recognizing that there were gaps in this "cradle to grave" scheme, Congress returned to the drawing board. The Hazardous and Solid Waste Amendments of 1984 added new programs to the RCRA agenda: underground storage tanks, "corrective action" to clean up RCRA-regulated facilities, tighter control of small quantity generators and a ban on land disposal of certain wastes, to name a few.

Now RCRA is due to be reauthorized, giving Congress yet another bite at the apple. This time recycling is high on the agenda, as Congress strives to shift the focus of RCRA from disposal to recycling and waste reduction. On the floor of the House and Senate, recycling has been discussed over 600 times since the beginning of 1991. The issues are simple, yet challenging.

MAKING SPACE IN LOCAL LANDFILLS

Currently, only 13 percent of household wastes are recycled. Most of the remaining waste is sent to landfills. However, landfills in many communities are closing down because they cannot meet Federal or State environmental standards. In most cases this means sending wastes to a larger regional landfill at another location, often in the face of opposition from the receiving community (recall the "garbage barge" fiasco and the more recent story of the "poo poo choo choo").

Sanitation costs rise as local governments strive to pay for shipping municipal wastes to these regional disposal facilities.

¹ This article is scheduled to appear in an upcoming edition of the EPA Journal which will focus on recycling.

Industry, which represents a much larger share of the waste generated, is also paying more for disposal.

Beverage containers make up about four percent of household waste. One proposal aimed at preserving landfill space is a nationwide "bottle bill" requiring bottlers to establish deposit and refund systems for bottles and cans, similar to the deposit and refund programs now in effect in New Hampshire, Vermont and eight other states. Also up for discussion is a bill that would put states, rather than bottlers, in charge: each state would be required to assure, through any means it selected, that a set percentage of its beverage containers were recycled. States that failed to meet the recycling goal would then be required to impose a 10 cents per bottle deposit.

Bottle bill proponents, including the National Association of Counties and the National League of Cities, argue that a bottle bill would substantially reduce the cost of waste management to municipalities. Opponents, led by the bottling industry, claim that a national bottle bill would harm local curbside recycling programs while addressing only a small fraction of the problem.

Whatever the case, recycling can reduce the amount of waste being shipped for disposal and, at the same time, extend the lives of the existing landfills (while saving energy and other natural resources).

CREATING MARKETS FOR RECYCLED GOODS

It doesn't do any good to collect newspapers, glass, plastic and aluminum for recycling unless someone is willing to purchase these materials. Today's lack of demand for recycled products is clearly a problem.

In Congressional hearings, recycling industry representatives have warned that the market for recycled products will hit a "brick wall" unless demand improves and prices rise. They have urged Congress to close the loop by taking action to boost the market for these products. Proposals include:

- Requiring the manufacturers of paper, glass, plastic and aluminum to replace a portion of the virgin materials they use with recycled materials.

The concept here is to shift some of the burden of recycling from the municipalities, which claim to have been saddled with the cost and burden of recycling, back "upstream" to the manufacturing sector.

One popular idea among packaging manufacturers is to provide several options to what is traditionally considered

recycling. For instance, rather than setting up a recycling program, the manufacturer could make reusable or refillable containers or redesign its containers to reduce their volume and weight. Another approach supported by packaging manufacturers is to create a system of marketable recycling and waste reduction "credits." Under the "credit" scheme, a company that does more than is required by law would receive marketable "credits." Companies that do not meet Federal recycling and waste minimization standards would be required to purchase enough "credits" from their competitors to make up the difference.

-- **Changing Federal procurement standards.**

With 7,000 buildings under its jurisdiction, the General Accounting Office is one of the country's largest consumers of paper. However, current Federal government specifications favor the use of virgin materials. Proposed RCRA amendments would direct EPA to work with other Federal agencies, including the General Accounting Office, to draft new procurement standards for paper and other office products, plastic products and rubber products (including asphalt pavement containing rubber derived from waste tires) which favor recycled products. These new standards would assure that the Federal government becomes a major consumer of recycled goods.

-- **Establishing a national recycling clearinghouse.**

The clearinghouse would provide information on recycling technologies and regulations. It would also maintain a database designed to match those who generate recycled materials with manufacturers who can use these materials.

Already, private industry throughout the United States and Canada has established regional networks for exchanging industrial wastes such as scrap metals and spent solvents. These waste exchanges could serve as a model for EPA in designing a national waste exchange database or network which would also include municipal waste.

"GREEN" ADVERTISING

A trip to the grocery store will tell you why advertising has become such a hot issue in the RCRA debate. The labels may claim that the plastic, cardboard or other packaging on the products we buy, as well as the products themselves, are "recyclable," "environmentally friendly," "ozone safe" or "biodegradable." Until recently there were no Federal guidelines for this type of

ENVIRONMENTALLY CONSCIOUS PRODUCTS

William J. Brady
Manager, Product Safety Technology
IBM Corporation
2000 Purchase Street
Purchase, New York 10577

Co-Author
Barbara S. Hill
Program Manager, Product Safety Technology
IBM Corporation
2000 Purchase Street
Purchase, New York 10577

Traditionally, marketplace decisions have been based upon a product's performance, quality and price. Industry is now seeing the environment added to the decision. Legislation and the customer are beginning to apply requirements not just on traditional consumer products, but also on high technology products. Germany has passed an ordinance specifically geared at waste avoidance in the electronics industry. This will mandate the reuse and recycling of products. Many states in the United States are passing restrictions on the design and use of products containing rechargeable batteries, such as portable computers. In addition to labelling requirements, the batteries must be easily removable by the customer and product manufacturers may have to establish a battery return program in some states. Historically, environmental restrictions effected the "end-of-the-pipe" or waste production conditions. Today, environmental restrictions are moving into the heart of product development and design. Environmental questions have to be considered at the very initial stages of product development:

- What components and materials can be reused or recycled?
- Can the rechargeable battery pack be easily removed by the consumer?
- How can the product packaging be recycled or disposed of?
- Will any components or materials be considered as hazardous waste at the end of the product's life?
- How can waste be minimized during manufacturing?

This requires a change to environmentally conscious product and process design.

In 1990, the IBM Company reaffirmed its longstanding commitment to the management of environmental affairs. Mr. John F. Akers, IBM Chairman of the Board, stated that IBM will

"Develop, manufacture and market products that are safe for their intended use, efficient in their use of energy, protective of the environment and that can be recycled or disposed of safely".

An international team of professionals was formed to assess the potential implications across the business and the needs for success. The review included public policy issues, technical requirements, product disposal, education and communications. Their work, in part, resulted in the definition of product environmental design attributes.

Environmental aspects can be identified for a product during its design, manufacture, use and ultimate disposal - or life cycle analysis. The IBM environmental design attributes relate to all aspects of the product life cycle. They are:

- Design for ease of disassembly
- Recycle or reuse at end of product life
- Use of recycled materials and reused components
- Reduce use of energy and natural resources
- Manufacture without producing hazardous waste
- Use of clean manufacturing technologies
- Reduce product chemical emissions
- Reduce product energy consumption
- Use of recyclable plastics
- Use of nonhazardous and recyclable metals

IBM is taking a practical approach to environmentally conscious products by integrating these design considerations into product development's normal business processes. We are placing emphasis on those efforts that will improve the product lines through reuse, recycling, and reduction in energy use. The product environmental impact assessment (EIA) has been used to

provide fundamental environmental data on a product. The EIA requirements have been enhanced to document a more comprehensive environmental profile of the product, from design, through manufacture, use and disposal. The EIA will provide data on the materials contained within and used by the product; technical data on energy usage; and transportation, storage, recyclability, and disposal assessment information for the product, its consumables and packaging. This data is compiled prior to the announcement of a new product. Reutilization plans for components are routinely developed and are also being enhanced to take advantage of environmental considerations.

The potential for reuse or recycling of IBM computers requires a change in the thought process of our development community. Programs were instituted years ago to handle components such as precious metals, where a known market existed. Today, for computers as well as almost any durable good, the markets have to expand to include common materials and components. Education is key to make this change happen. In 1991, IBM established the Engineering Center for Environmentally Conscious Products, at our Research Triangle Park, North Carolina facility. The Center is dedicated to providing necessary research that will promote the use of environmental design attributes. Much of their current effort has been in the areas of component reuse and material recycling. The research activity is shared with product development worldwide. In one recent study, the Center reground and remolded polymers from existing IBM products, and then tested for structural integrity. Tests have shown that for some applications, up to 100 percent recycled-content may be acceptable. Several major hurdles will have to be overcome to move this from research to practical application. Those hurdles include the availability of recycled-content materials; reuse and recycling infrastructures - both internal and external to IBM; certification agency and test house approvals for these components and materials; and realistic life cycle analysis tools. IBM is working to find solutions to these obstacles by conducting research; communicating needs to our suppliers; and participating in international technical discussions with both industry and government.

IBM recently issued a corporate standard that will facilitate recycling of polymers from our products. We want to maximize the capability of our products being reused or recycled. The standard, "Coding and Recycling of Thermoplastic Parts", uses a coding system that provides a distinction between durable goods and packaging materials, based upon the German automotive industry. The coding is to be molded into the thermoplastic part, so that at the end of the product's life, that part can be easily identified for recycling. The symbol is '> <', with the resin's identity noted in-between. There are three possible levels of resin identification: (1) generic name; (2) IBM material code; and (3) manufacturer's and material's commercial name.

> Generic <
IBM Material Code
Manufacturer and Material Names

The approved acronyms that can be used are based on International Standards Organization ISO 1043, Plastics - Symbols; ASTM D 4000, Classification System for Specifying Plastic Materials; and ASTM D 1600, Terminology Relating to Abbreviations, Acronyms and Codes for Terms Relating to Plastics. Polyvinyl chloride, for example, could be identified as:

> PVC <
IBM 23-712B(1)
BFGoodrich Geon ® 87371 Resin

There is a life cycle cost incentive to providing this identification. If the material is simply scrapped at the end of the product's life, it could bring in revenue of 2 ¢ per pound. If however, the material is generically known, that value can be up to 25 percent of the raw material cost; or if the commercial name is known, up to 60 percent of the raw material cost. IBM wants to be able to introduce recycled-content materials into the product lines, however, we are not limiting ourselves to "closed-loop" recycling of IBM products. It is hoped that the available identification, along with the need for recycled-content polymers, will result in the quicker development of recycling infrastructures.

Using environmental design attributes can result in other life cycle cost incentives to product development. Last year IBM announced two new Personal Systems / 2 ® control units, models 40SX and 57SX. These designs used several of the environmental attributes, resulting in significant cost savings for the products, in comparison to previously used techniques. A single, identified polymer was used in the control unit, with a molded-in finish to eliminate decorative paints and finishes. The ease of disassembly techniques or "snap-technology" reduced the number of screws and fasteners, and eliminated the need for metal inserts, hinges or brackets. Electromagnetic compatibility (EMC) shielding had been provided by a spray-on metal finish, which limited the capability of the polymer to be recycled. The replacement was a snap-in metal liner.

Similar savings were also seen with the Personal Systems / 2 monitor models 8515 and 8518. The monitors used "snap technology"; a single polymer with molded-in finish and color; and the elimination of a sprayed-on conductive metal layer for EMC shielding. The polymer also allowed the designers to use less material to produce the monitor covers than in previous designs, without losing any of the product's integrity.

Product packaging has made great strides in the last several years. IBM has developed a set of environmental packaging design guidelines that have been distributed worldwide within IBM and have also been made available to others as an external publication. IBM has successfully implemented several product packaging environmental initiatives including, the elimination of CFC blowing agents in foams; control or elimination of problem heavy metals; conversion from white to kraft corrugate; and the elimination of poly bromine biphenyls and biphenyloxides as fire retardant additives from plastic packaging materials. Also, recycling symbols have been added to corrugate, Society of Plastics Institute resin codes added to most plastic packaging, and a minimum of 20 percent postconsumer recycled content required for all corrugate packaging materials. Additional packaging requirements are planned to be established annually.

IBM is continuing to expand upon these initiatives in product development. Our product development teams are becoming more sensitive to the marketplace's environmental demands. In addition, we are sharing our knowledge in the information technology industry. It is essential that industry work to establish international voluntary standards for "green product" issues, including labeling. And work together with government to promote the establishment of the necessary infrastructures needed for successful product recycling and reuse. As we move through the 1990's, it is clear that environmental considerations in product development will enhance competitiveness, marketability and environmental leadership.



CORPORATION

**DESIGN FOR
ENVIRONMENTAL ATTRIBUTES
IN PRODUCTS**

ENVIRONMENTAL CONCERNs

- LEGISLATION
- WASTE DISPOSAL
- LEAD
- BATTERIES
- ENERGY CONSUMPTION
- RECYCLING/REUTILIZATION



CORPORATE POLICY

DEVELOP, MANUFACTURE AND MARKET PRODUCTS

- SAFE FOR INTENDED USE
- ENERGY EFFICIENT
- PROTECTIVE OF THE ENVIRONMENT
- RECYCLED OR DISPOSED OF SAFELY



INTERNATIONAL TASK FORCE

- PUBLIC POLICY
- TECHNICAL REQUIREMENTS FOR PRODUCTS,
SUPPLIES AND PACKAGING
- END OF LIFE DISPOSAL
- EDUCATION
- COMMUNICATIONS
- IMPLEMENTATION OF RECOMMENDATIONS



ENVIRONMENTAL DESIGN CRITERIA

- DESIGN FOR EASY DISASSEMBLY
- RECYCLABILITY OF NEW PRODUCTS
- USE OF RECYCLED MATERIALS IN NEW PRODUCTS
- REDUCTION IN USE OF NATURAL AND ENERGY RESOURCES
- SOURCE REDUCTION

CONTINUED...



ENVIRONMENTAL DESIGN CRITERIA

CONTINUED

- USE OF CLEAN MANUFACTURING TECHNOLOGIES
- REDUCTION IN PRODUCT CHEMICAL EMISSIONS
- REDUCTION IN PRODUCT ENERGY CONSUMPTION
- USE OF IDENTIFIABLE/RECYCLABLE PLASTICS
- USE OF NONHAZARDOUS/RECYCLABLE METALS



PRODUCT ENVIRONMENTAL IMPACT ASSESSMENT

- COMPREHENSIVE DESCRIPTION OF ALL MATERIALS
CONTAINED IN AND USED BY THE PRODUCT
- ENERGY CONSUMPTION
- PHYSICAL AND CHEMICAL EMISSIONS
- TRANSPORTATION, STORAGE AND DISPOSAL
INFORMATION



REUTILIZATION

- EXPANDING ROLE
 - INCREASE LIFE SPAN
 - DESIGN FOR DISASSEMBLY

REUSE

RECYCLE

COMPONENTS
SUBCOMPONENTS
HOUSINGS

PLASTICS
METALS
PACKAGING



IBM CODING METHOD

- **SYMBOL TO SIGNIFY RECYCLABILITY**

> <

- **RESIN GENERIC IDENTIFICATION**

> PVC <

- **RESIN MANUFACTURER IDENTIFICATION**

> PVC <
IBM 23-712B(1)
AND/OR

**MANUFACTURER'S NAME AND
MATERIAL'S COMMERCIAL NAME**

EXAMPLE FOR POLYVINYL CHLORIDE

> PVC <
IBM 23-712B(1)

or

> PVC <
IBM 23-712B (1)
BFGoodrich Geon® 87371 Resin

or

> PVC <
BFGoodrich Geon® 87371 Resin

PS/2 MODELS 40SX, 57SX

- DESIGN FOR EASY DISASSEMBLY
- SINGLE PLASTIC
- MOLDED-IN FINISH
- EMC SNAP IN LINER

IBM

PS/2 DISPLAYS 8515, 8518

- DESIGN FOR EASY DISASSEMBLY
- ADVANCED PLASTIC
- MOLDED-IN FINISH
- CONDUCTIVE METAL SPRAY COATING
ELIMINATED



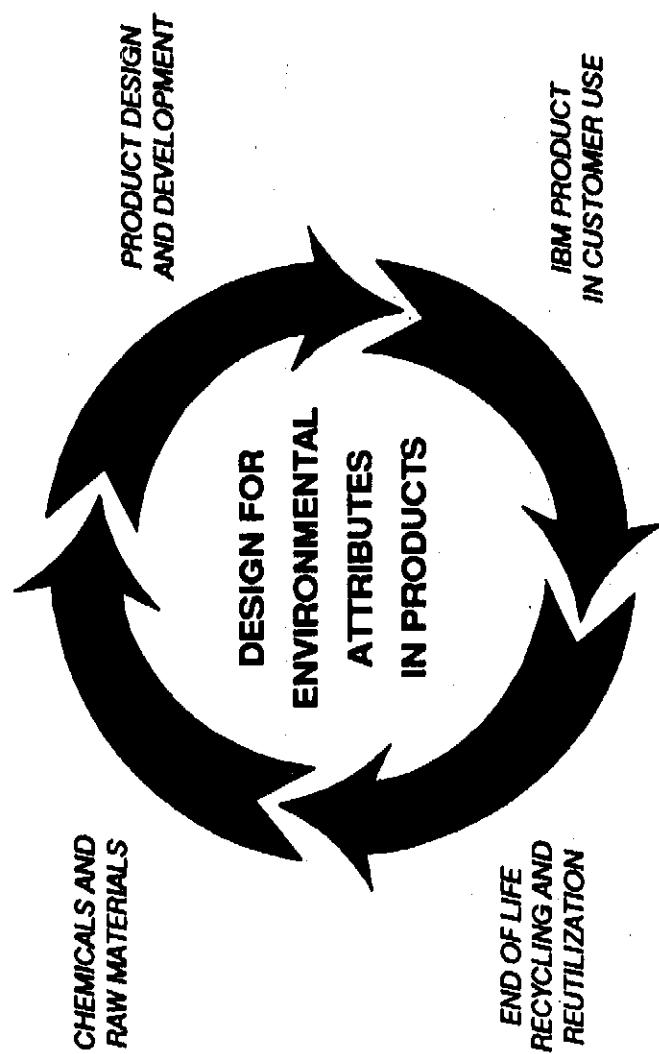
PACKAGING

ENVIRONMENTAL PACKAGING DESIGN GUIDE

- ELIMINATE PROHIBITED EXPANSION AGENTS
- ELIMINATE HEAVY METALS
- MINIMIZE TOXIC ELEMENTS
- IDENTIFY AND PROMOTE USE OF RECYCLED MATERIALS
- IDENTIFY METHODS TO REDUCE SOLID WASTE VOLUMES
- PROMOTE MATERIALS THAT ARE RECYCLABLE

PACKAGING AND HANDLING SUPPLIER & INTERPLANT REQUIREMENTS





**MANAGEMENT OF THE COMPLETE CYCLE
WITH A CONCERN FOR THE ENVIRONMENT**



EPA FACT SHEETS

• •

INDUSTRIAL NONHAZARDOUS WASTE

Outline

- I. Facts and Figures on the Industrial Nonhazardous Waste Universe**
- II. State Programs**

I. Facts and Figures

I. Facts and Figures

In 1991, EPA's administrator set three goals in Senate testimony:

1. Characterize the universe of industrial wastes under Subtitle D of the Resource Conservation and Recovery Act (RCRA).
2. Identify risks, if any, and target priorities.
3. Tailor requirements which appropriately address risk, using traditional and nontraditional approaches.

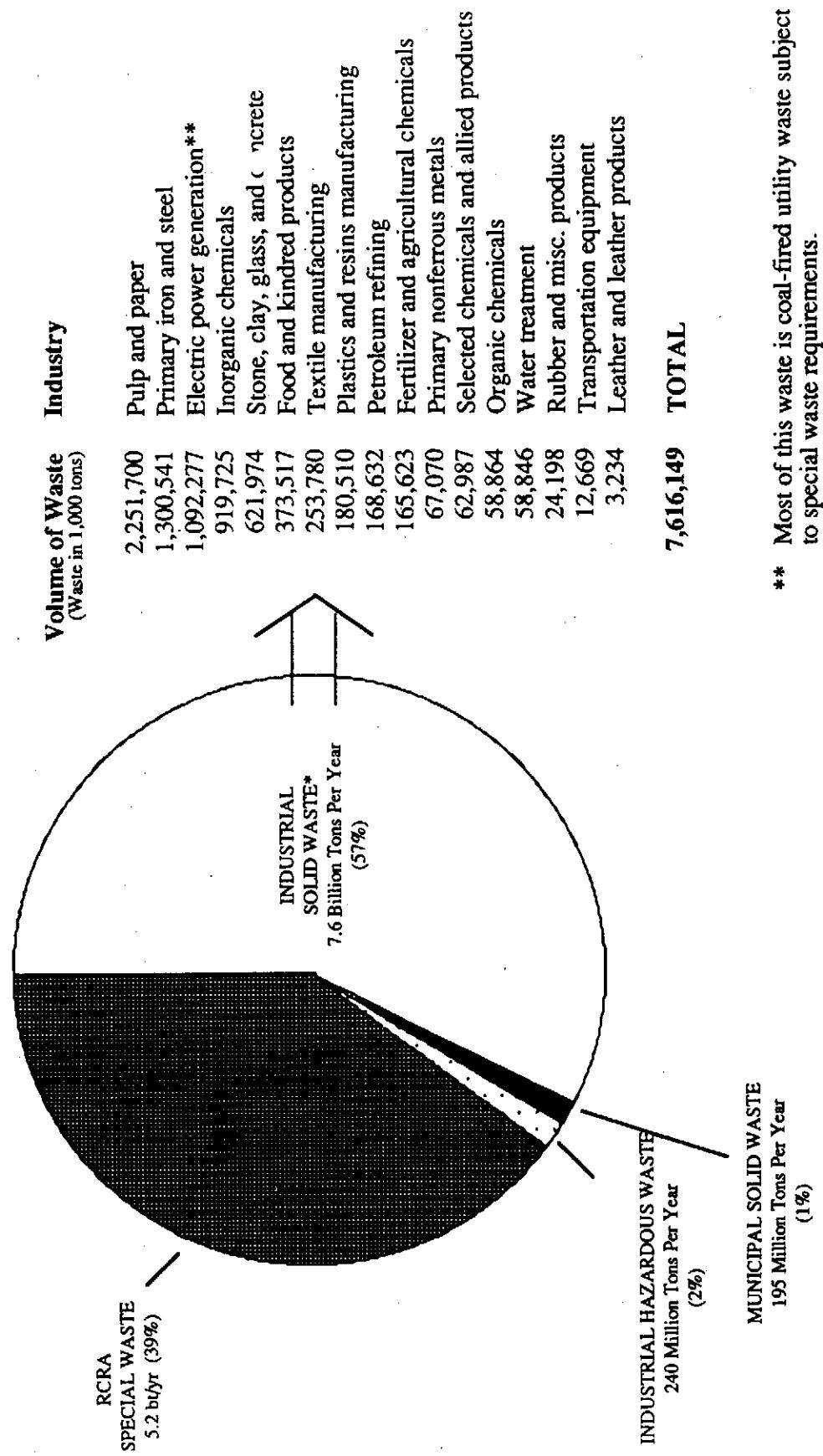
I. Facts and Figures (*continued*)

Nonhazardous waste from manufacturing industries is the largest part of the solid waste universe EPA has examined.

In its 1988 Report to Congress*, EPA estimated that 7.6 billion tons/year (57% of all solid waste) are generated by 72,000 manufacturing facilities (4 times the number of facilities that generate hazardous waste.)

* Report to Congress: Solid Waste Disposal in the United States,
EPA 530-SW-88-011, October 1988

I. Facts and Figures (continued)



I. Facts and Figures (continued)

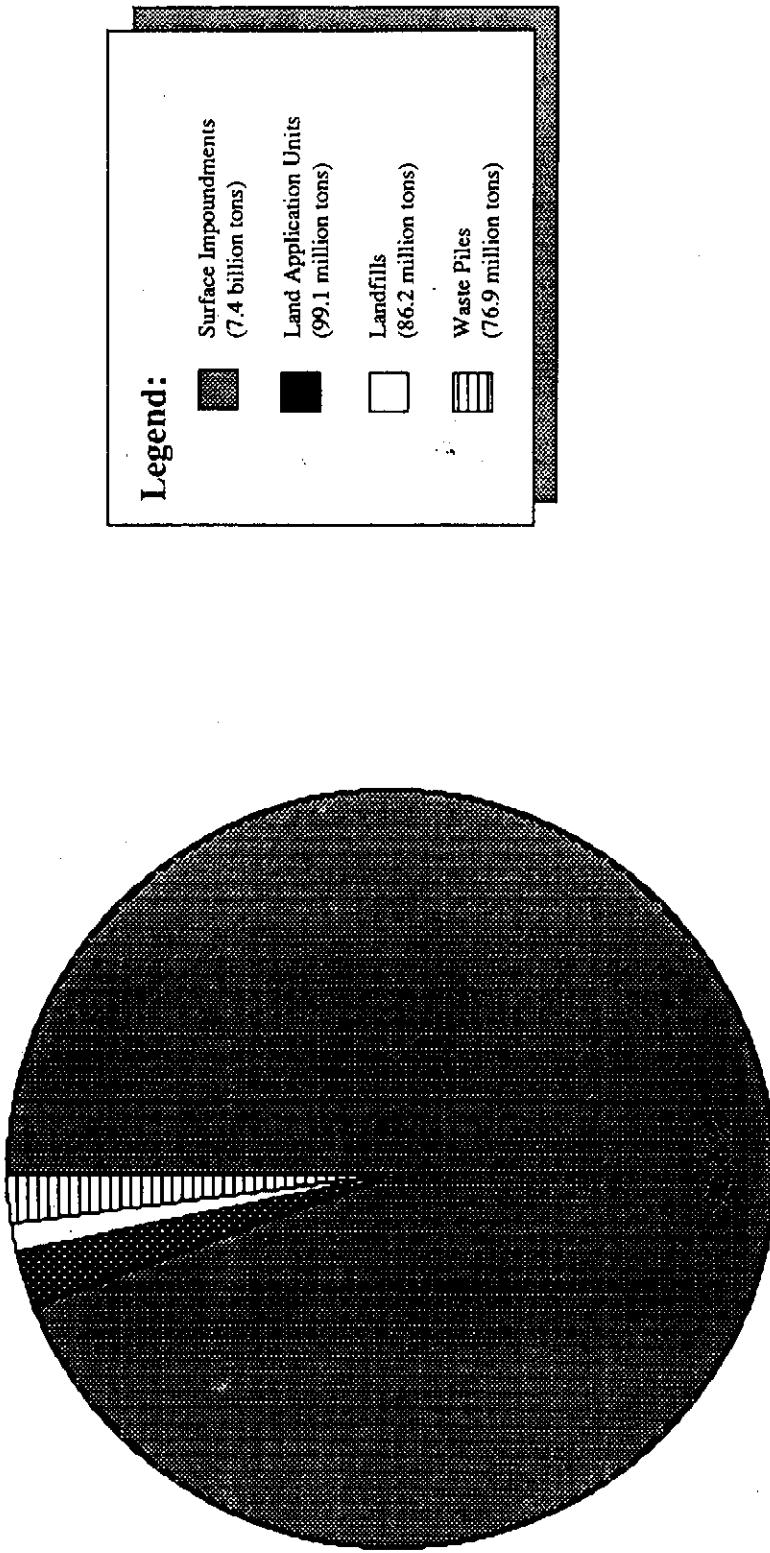
EPA has limited information about industrial nonhazardous (D) waste which is generated and managed on-site.

In 1985:

- 12,000 manufacturers generated and managed waste on-site in 27,000 land-based units.
- About 97% of this waste was managed in surface impoundments.
- The remainder was managed in landfills, waste piles, and land application units.

I. Facts and Figures (continued)

Disposal Methods Used to Manage Industrial D Wastes On-site

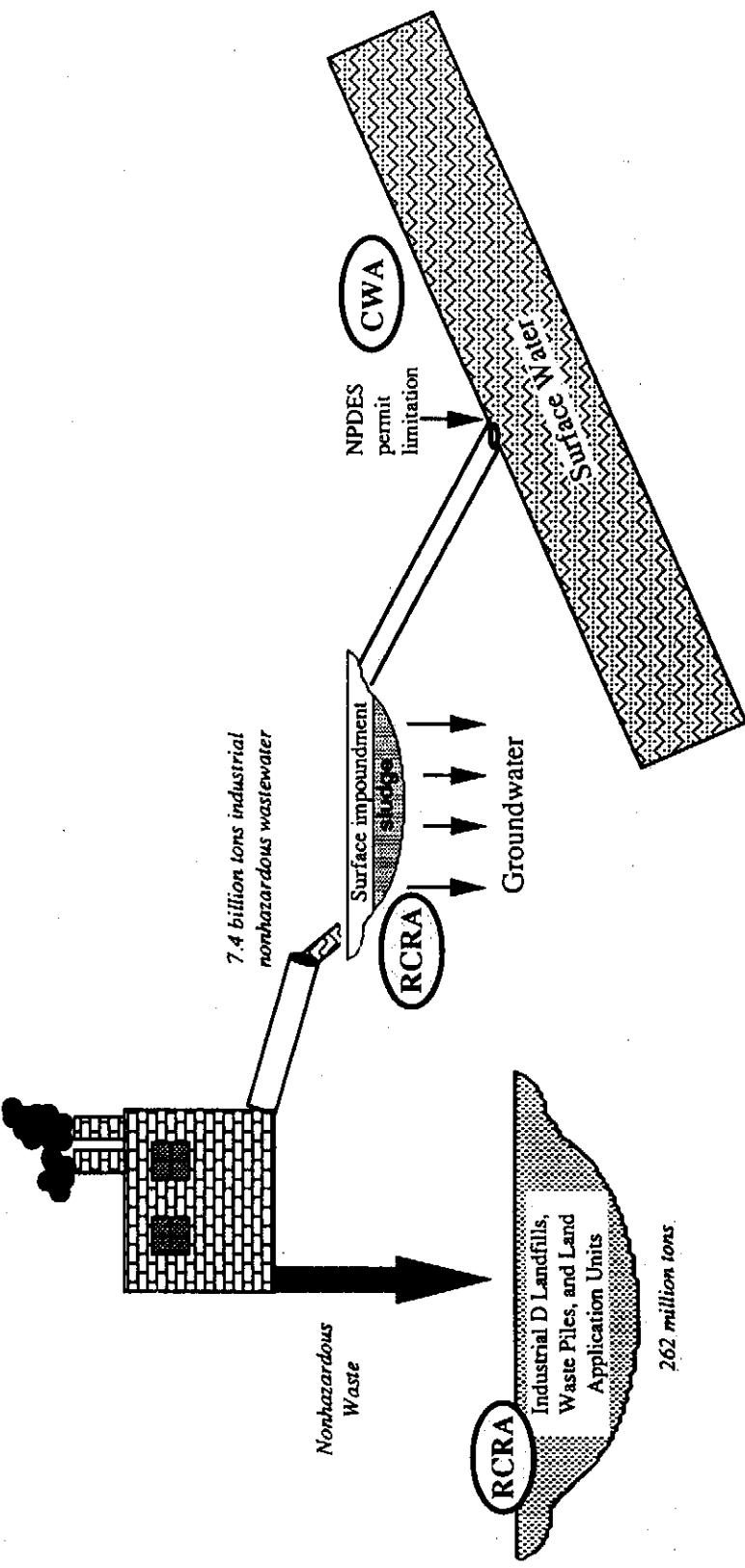


Source: EPA Screening Survey of Industrial Subtitle D Establishments (1985 data), RCRA Docket #CMLP-50030, Dec. 29, 1987

I. Facts and Figures (continued)

All of these management methods come under RCRA Subtitle D jurisdiction.

- Surface impoundments are unique:
 - Clean Water Act regulates industrial wastewater from surface impoundments at the point of discharge to surface waters.
 - RCRA covers impacts to land (and groundwater) from surface impoundments before discharge to surface waters.



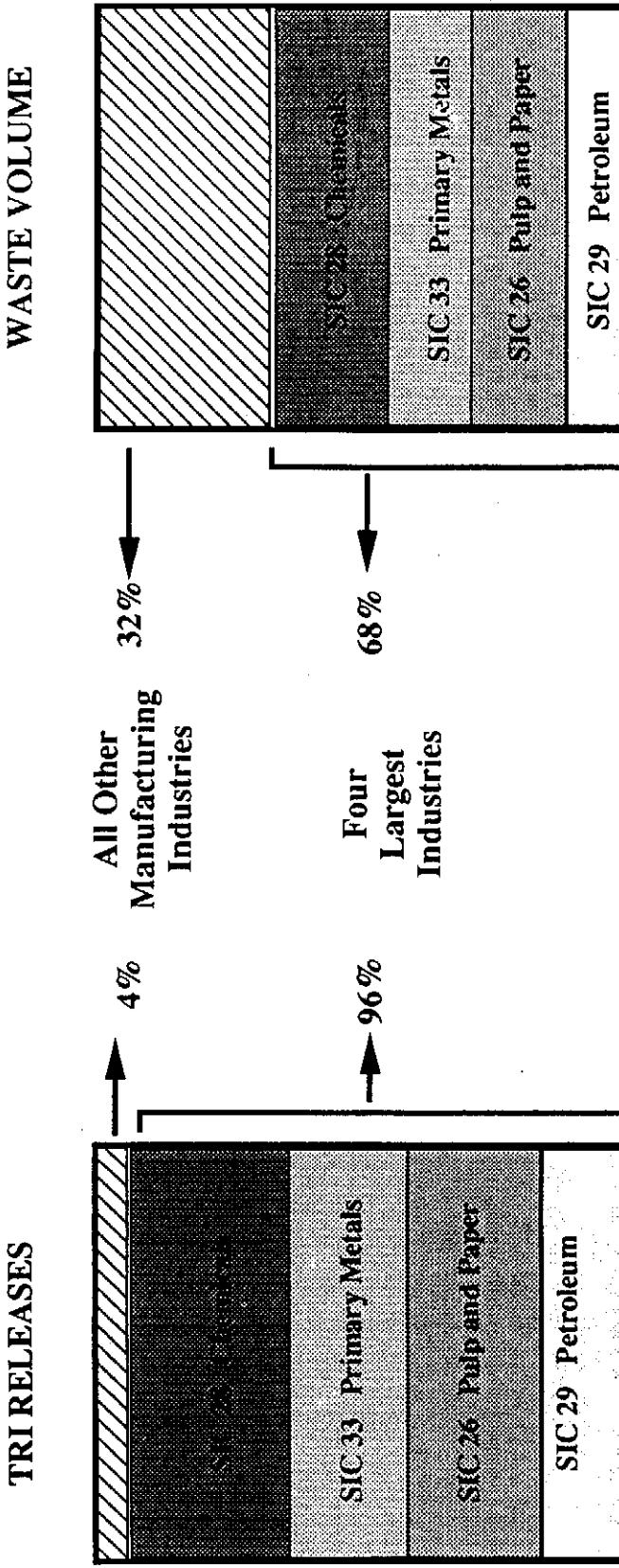
I. Facts and Figures (*continued*)

EPA has relatively little information about industrial D waste shipped off-site.

- About 54,000 manufacturing facilities ship waste off site to:
 - MSWLFs, and
 - a very small number of commercial industrial D facilities.
- Many of these manufacturers are Conditionally Exempt Small Quantity Generators (CESQG's).

I. Facts and Figures (continued)

Four industries generate most of the nonhazardous waste volume. These four industries also account for most of the toxic release inventory (TRI) releases.



- 96% of the TRI releases to land and water (assumes TRI releases to water include releases to surface impoundments).*
- Over 68% of the industrial nonhazardous waste volume of 7.6 billion tons.*

* Source: 1989 TRI Data. Does not distinguish between hazardous and nonhazardous wastes.

* Source: EPA Screening Survey (1985 Data)

III. State Programs

- EPA developed program snapshots for 11 states which manage large volumes of industrial nonhazardous waste:

California	Ohio
Illinois	Pennsylvania
Indiana	Texas
Maryland	Washington
Minnesota	Wisconsin
North Carolina	
- These states have gathered important information in 4 areas:
 - waste characteristics
 - pollution prevention
 - waste management approaches
 - groundwater monitoring

WASHINGTON PERSPECTIVE ON INDUSTRIAL RECYCLING

Several new initiatives in federal environmental laws and regulations affect the future of waste recycling in industries throughout the United States. The following excerpts and summaries are designed to give the reader a flavor of these actions.

Among them are:

Promotion of Recycling Opportunities

Pages III-2 through III-16

(New Title III of the proposed Resource Conservation and Recovery Act Amendments of 1992)

Recycling and Federal Responsibilities

Pages III-17 through III-30

(Changes in Existing Law: Subtitle F of the proposed Resource Conservation and Recovery Act Amendments of 1992)

National Waste Reduction, Recycling and Management Act

Pages III-31 through III-72

(House Report on Amendment to the Solid Waste Disposal Act)

FTC Chairman Steiger Announces National Guidelines to Prevent Misleading Environmental Marketing Claims

Pages III-73 through III-77

(Press release from the Federal Trade Commission, 7/28/92)

Guides for the Use of Environmental Marketing Claims

Pages III-78 through III-106

(Application of Section 5 of the Federal Trade Commission Act to Environmental Advertising and Marketing Practices, Federal Trade Commission, July 1992)

Calendar No. 495

102d Congress
2d Session

SENATE

REPORT
102-301

RESOURCE CONSERVATION AND RECOVERY
ACT AMENDMENTS OF 1992

R E P O R T
OF THE
COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

together with

ADDITIONAL VIEWS

TO ACCOMPANY

S. 976



JUNE 19 (legislative day, JUNE 16), 1992.—Ordered to be printed

U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON : 1992

56-947

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NATIONAL RECYCLING OPPORTUNITIES (SECTION 301)

SUMMARY

This section of the bill establishes national goals of recycling 25 percent of municipal waste by 1995 and 50 percent by 2000. This goal applies to municipal waste and specifically exempts certain types of solid wastes which are not covered by the definition of municipal waste in section 104 of this bill. It establishes requirements for industries to meet an annual recovery and utilization requirement for a percentage of the newsprint, printing and writing paper, packaging composed of glass, steel, and aluminum, and rigid plastic containers. The percentage requirements are summarized in Table 3-3 below:

TABLE 3-3—INDUSTRY WIDE RECOVERY AND UTILIZATION REQUIREMENTS

Covered material	1995-99		2000
	In percent	In percent	In percent
Newspaper, printing and writing paper, and packaging composed of paper	40	50	
Packaging composed of glass	40	50	
Packaging composed of steel	40	60	
Packaging composed of aluminum	66	60	
Rigid plastic containers	75	50	

¹ The year 2000 requirements are only mandatory if EPA fails to promulgate recovery and utilization rates for the year 2000.

The Administrator is authorized to expand existing categories or add new categories of covered materials and to increase any recovery and utilization rate at the Administrator's own initiative or in response to a petition by any person, if the Administrator determines that doing so would be technically and economically feasible. This section requires EPA to develop a methodology for determining the aggregate recovery and utilization rate for each category of covered materials within 12 months of enactment. The methodology will also be used to estimate recovery and utilization rates to determine whether the required rates have been achieved. In estimating the recovery and utilization rates, the Administrator may include "pre-consumer" material, (that material that is generated during the production of products). The Administrator is also directed to use existing data bases and methodologies (such as those developed by various trade groups) to the extent that such data bases and methodologies accurately measure or can be adjusted to accurately measure recovery and utilization of covered materials. If annual aggregate recovery and utilization rates have not been met for a specific covered material, responsible entities must meet a company-wide annual utilization requirement. Responsible entities can meet the utilization requirement in any combination of four ways: (1) by utilizing recovered materials in their own products; (2) by reusing packaging for its original purpose (such as refilling a container); (3) by arranging with another person to use or recycle the material; or (4) by reducing the weight of covered materials in packaging. In addition, responsible entities may meet their utilization requirements by recovering and utilizing pre-consumer materials and by using materials to generate motor vehicle fuels.

TABLE 3-2

MATERIAL/ GRADE	NET ENERGY SAVINGS PER TON		ENERGY SAVINGS CALCULATED FOR FUEL MIX OF SELECTED MANUFACTURING INDUSTRIES PER TON OF RECYCLED MATERIAL								CO2 (TONS)
	EQUIV- VALENCE MILLION BTUS	EQUIV- VALENCE IN BARRLS OIL	OIL (BRRLS)	ELEC- TRICITY (TONS)	NTRL GAS (THSND CUB.FT)	WDWSTS (LQRS)	FEED- STOCKS (TONS)	ENERGY REDUCTION BENEFIT(%)	PROCTN FRW VIRGN MAT. (MIL. BTU)		
ALUM- (Cans)	190(A)	37.2	6.47	1.54	4537	79.9	NA	NA	96	228	13.8
(Num/ (Nw scrp)	191(A)	36.3	6.55	1.54	4206	73.8	NA	NA	94	226	13.4
PAPER/ (Newsprint)	159(B)	30.21	3.27	NA	9928	31.4	NA	NA	86	165	10.3
(Print/Wrt)	238(C)	45.22	ND	ND	ND	NA	NA	NA	85	251	NO
(Linbrd)	12.3(A)	2.33	0.304	0.152	131.4	3.01	.11/.19	-.08	28.5	49.3	1.32
(Dextrd)	22.4(A)	4.26	0.099	0.05	42.6	0.982	.45/.97	1	42.2	59.7	0.864
GLASS	12.97(A)	2.46	-0.129	-0.063	-55.3	-1.26	.42/.91	0.77	25.5	50.8	1.21
(5.2(C)	13.42(A)	2.55	-0.114	-0.056	-48.9	-1.13	.42/.91	0.77	26.1	51.3	1.27
STEEL	5.2(C)	0.988	ND	ND	ND	ND	ND	ND	22	25	NO
(4.4(A)	4.4(A)	0.836	NA	0.0353	39.9	3.079	NA	NA	25	17.4	0.295
(1.2(B)	1.2(B)	0.228	NA	NA	NA	1.187	NA	NA	ND	ND	0.071
PLASTIC	3.6(C)	0.684	ND	ND	ND	ND	ND	ND	17.9	19.8	NO
(14(A)	14(A)	2.66	0.532	0.312	126.9	2.721	NA	NA	30	45.6	1.202
(14.2(B)	14.2(B)	2.71	0.16	0.7038	-199	-0.173	NA	NA	61	23.33	1.528
(ND	ND	ND	ND	ND	ND	ND	ND	ND	61(C)	ND	ND
(71(A)	71(A)	13.6	4.39	NA	833	37.512	NA	NA	97.3	73.4	4.79
(ND	ND	ND	ND	NA	NA	NA	NA	NA	88(C)	ND	ND

(A) Estimates derived from data supplied by Argonne Nat. Labs (1981), OECD (1979)

(B) Estimates derived from data supplied by Al. Assn., API, GPI, AISI (1990) and Japan Borties Assn. (1986)

(C) "Federal Disincentives to Recycling," (Draft), U.S. E.P.A. Office of Policy Analysis, Nov. 16, 1989

* A significant portion of these energy savings is self generated from wastes that would not be available without virgin paper production.

NA = Not Applicable
ND = No DataDVR
DC

Responsible entities can meet the annual utilization requirement if they use covered materials with specified minimum recycled content, or if the EPA Administrator determines that the supply of recyclable materials is not available.

Responsible entities are defined as persons or companies with annual revenues of at least \$50 million who (1) own brand names, and (2) make available for retail sale covered materials or products packaged in covered materials.

This section requires reporting to EPA by responsible entities and persons who use material on their behalf. It permits EPA to establish a credit trading system to facilitate the transfer of credits to responsible entities from users of the covered materials. Finally, the section establishes civil and criminal penalties for non-compliance.

DISCUSSION

Background

There are two components to successful recycling: (1) collection of recyclable materials, and (2) reuse of such materials. Currently, one of the largest impediments to successful recycling programs is an insufficient number of vendors who want to purchase recyclable materials and incorporate them into products. This section seeks to ensure that there are markets for recyclable materials. The section focuses on packaging because in 1988 containers and packaging were the largest single product category generated in municipal waste, accounting for roughly 32 percent of the total by weight. Together with newsprint and printing and writing paper, the materials covered by this section account for about half of all municipal waste.

Local governments already have responded aggressively to public demand for recycling by developing collection programs for recyclable paper and packaging materials. By the end of 1991, more than 3,900 curbside recycling programs serving more than 70 million Americans were being operated by municipalities (up from about 1,000 curbside programs operating in 1988). Only Alaska and Delaware did not have at least one curbside recycling program. Almost 59 percent of the recycling programs operating at the end of 1990 were voluntary. In addition to curbside programs, many communities have implemented drop-off recycling programs. It is important that these growing quantities of collected materials are actually recycled and are not separated and collected only to be landfilled or incinerated.

Recycling Costs

As a result of the rapid increase in collection programs, recycling markets were glutted with an oversupply of materials causing prices paid for such commodities to decrease. An analysis conducted by Recycling Times between January 1990 and June 1991 indicated that the prices paid for recyclable materials declined steadily and dramatically. Figures 3-4 through 3-7 show the trend of average prices paid for aluminum, glass, plastic, and paper. Aluminum prices plummeted 42 percent over that time period. Prices paid for clear glass declined more than 80 percent, while prices for plastics

decreased from 29 to 51 percent. In many areas, processors now charge a fee for taking old newspapers (ONP). The average price for newsprint has fallen from approximately \$6 per ton in January 1990 to a negative price of approximately \$2 per ton in June 1991, a price decrease of 133 percent.

Figure 35-4

CLEAR GLASS PRICES
NATIONAL AVERAGE — JAN. 1980 TO JUNE 1989
STATED IN MILLIGRS PER TON

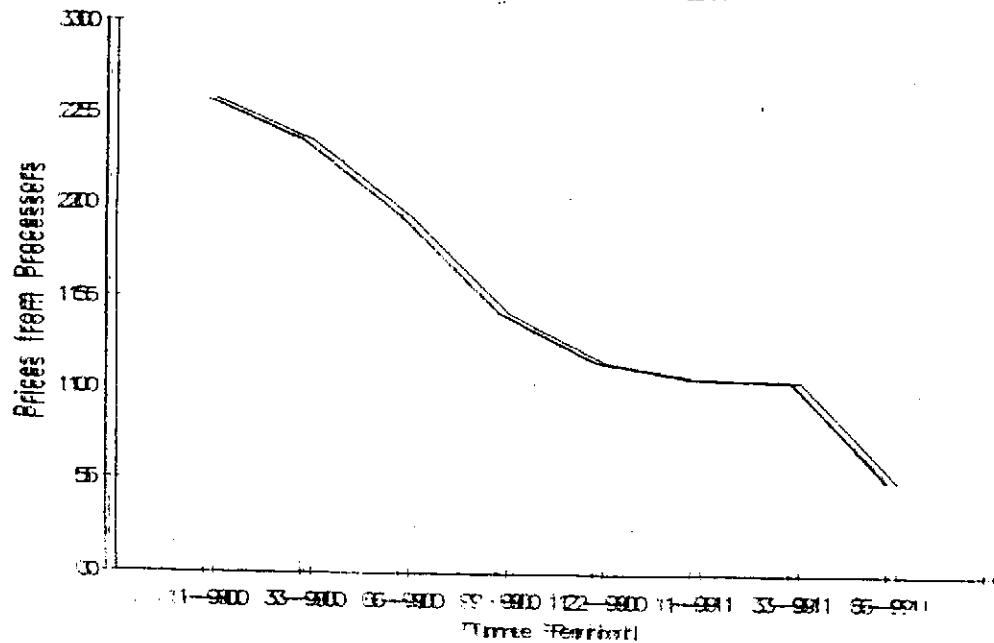


Figure 35-5

RECONCILED PRICES — FROST/HYDRO PRICES
NATIONAL AVERAGE — JAN. 1980 TO JUNE 1989
STATED IN CENTS PER POUND

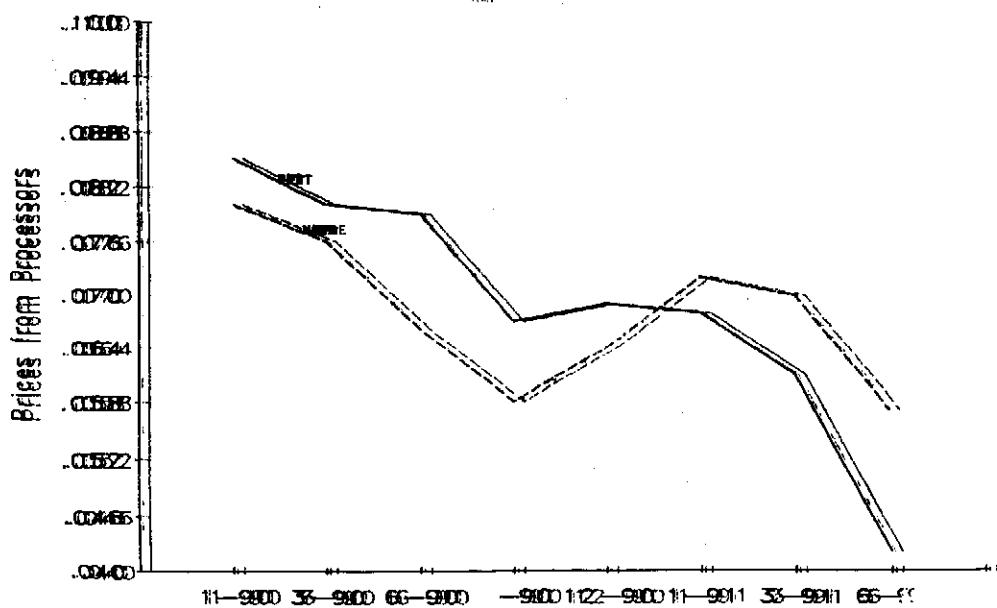


FIGURE 3-6

ALUMINUM USED BEVERAGE CAN PRICES
NATIONAL AVERAGES - JAN. 1990 TO JUNE 1991
STATED IN CENTS PER POUND

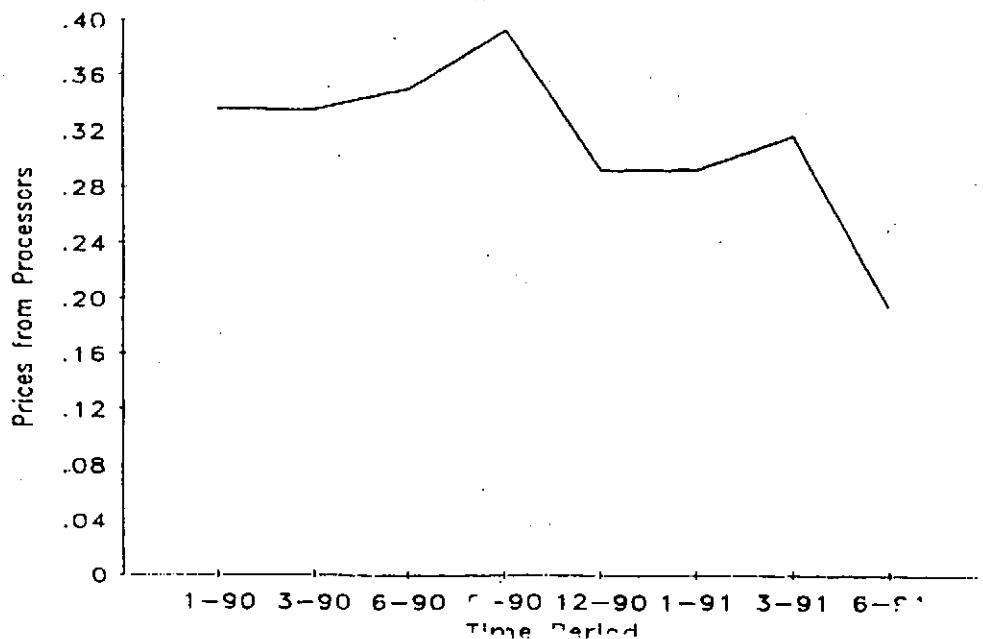
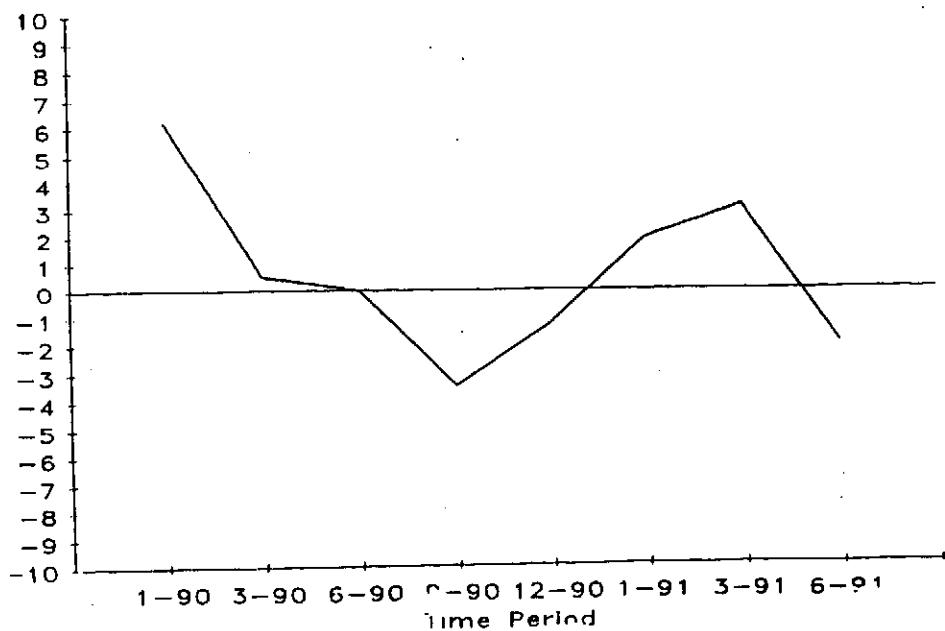


Figure 3-7

OLD NEWSPAPER PRICES - BALED AND LOOSE
NATIONAL AVERAGES - JAN. 1990 TO JUNE 1991
STATED IN DOLLARS PER TON



Although these special arrangements only apply to newsprint and some users of printing and writing paper, because of the special characteristics of books such as their durability and their extended shelf lives, a further investigation may be warranted to determine if the bill should provide special arrangements to book publishers that reflect their unique circumstances.

The recovery and utilization rates included in this bill are less stringent than provisions imposed in other countries. In Canada, for example, the target is 35 percent reduction in packaging sent for disposal by 1996, and 50 percent by 2000. In Germany, the targets are 64 to 72 percent recycling by 1995; an additional German requirement specifies the use of refillable bottles for 80 percent of most beverages. In the Netherlands, the target is 60 percent recycling by 2000. In France, the target is 75 percent recovery by the year 2002 (the French allow energy recovery as well as recycling to meet the target). In the European Community, the packaging directive has not been formally adopted, but the final European Commission staff draft would require 60 percent by 2000.

NATIONAL RECYCLING CLEARINGHOUSE (SECTION 303)

SUMMARY

This section expands the function of the existing Source Reduction Clearinghouse established in Section 6606 of the Pollution Prevention Act of 1990 to include recycling technologies and activities. The bill would require the Clearinghouse to provide information on the availability and cost of recycling technologies, including technologies for the collection, sorting, and processing of recyclable materials that can be used in urban and rural areas. The Clearinghouse would also be required to provide information on the effectiveness of existing recycling, composting, and source reduction programs (including volume-based pricing of municipal waste disposal). Finally, the Clearinghouse is to provide information on education and training programs that are being used to promote recycling and source reduction.

DISCUSSION

Although the amount of recycling has increased in recent years, in some regional markets and for some recyclable materials, collection and recycling are not occurring. The reasons may include collection costs, disposal costs, transportation costs, or processing costs. The Clearinghouse will provide information that communities can use to develop cost-effective recycling programs. Most communities do not have the resources to conduct experimental recycling programs themselves, yet could benefit greatly from the types of information that will be supplied by the Clearinghouse. The information provided might assist communities in collecting specified commodities, even if they already have operational recycling programs. The programs could also be useful for identifying emerging or innovative recycling options.

Rural and Urban Recycling

Rural areas have different needs for recycling programs than urban areas. In rural areas, curb side pick-up is less cost effective and is frequently impractical because there is typically a longer distance to markets for recyclable goods than in urban areas. Even the waste itself differs in rural communities. For example, waste from rural areas is likely to have a higher organic content than waste from cities.

Urban areas have their own unique recycling problems. It is often difficult to devise adequate collection strategies for multi-family and low income buildings. It is also more difficult to enforce mandatory recycling programs in multi-family buildings. Many large cities are currently facing financial stress making it difficult to spend limited funds on recycling programs at the expense of other needed services. Information on recycling technologies accounting for the specific needs of rural and urban communities will increase the effectiveness of existing programs and assist in the development of new recycling programs.

FEDERAL PROCUREMENT OF RECYCLED MATERIALS (SECTION 302)

SUMMARY

This section of the bill amends Section 6002 of the SWDA. It requires each Federal agency to procure items made of the highest percentage of recovered materials practicable, whether or not EPA has issued procurement guidelines applicable to such items. It establishes a 10 percent price preference for procurement of items meeting EPA procurement guidelines. The EPA is required to prepare final guidelines for procurement of items made from seven additional recovered materials: not later than December 31, 1993, EPA shall prepare final guidelines for rubber products (including asphalt pavement containing recycled rubber derived from waste tires). The EPA shall also prepare final guidelines for compost, plastic products, and lead-acid batteries within 12 months of enactment; and for products made from glass, ferrous metals, nonferrous metals and coal combustion wastes within 24 months. The Office of Procurement Policy in the Executive Office of the President is required to enforce compliance with the requirements of this section. The Secretary of Defense, in cooperation with EPA, is required to review all specifications for items procured by DOD to eliminate requirements that discriminate against the use or acquisition of items containing recovered materials. The section requires that 40 percent of such items be reviewed within 2 years after enactment, and that the review of all items be complete within 5 years. Finally, the section requires each Federal procuring agency to report annually to EPA and to the Office of Procurement Policy concerning compliance with the requirements of this section.

DISCUSSION

Background

The Federal Government can play an important role in recycling for several reasons.

First, Federal agencies can set an example for the communities in which they are located that recycling is an important and valuable activity.

Second, the Federal Government is a major consumer of products that can be made of recycled material. According to the National Institute of Government Purchasing, State and Federal Government procurement represents more than 20 percent of the United States Gross National Product (GNP). Federal procurement alone represents more than 7 percent of GNP. In 1990, the Federal government purchased 2.2 percent of the total U.S. paper industry's domestic production of printing and writing paper.

In fiscal year 1991, GSA purchased 406.3 thousand tons of paper and paper products. GPO purchased 43.7 thousand tons of paper in fiscal year 1991 for in-house production and sales to other Federal agencies. Besides direct purchases of paper, the Federal Government is also a large indirect purchaser of paper through commercial printers who perform under GPO contracts. In fiscal year 1991, these commercial printers used an estimated 276.7 thousand tons of paper. In total, in fiscal year 1991, the Federal Government directly or indirectly purchased an estimated 727 thousand tons of paper. Of the paper used by the Federal Government in the last quarter of 1991, 62 percent met EPA recommended minimum content standards for recycled fiber. Approximately 97 percent of the envelopes and 100 percent of the cartons purchased by the Federal Government contained some recycled content. Sixty-nine percent of the total amount spent on purchasing paper, envelopes, and cartons was spent on products with some recycled content. More than 95 percent of the printing and writing paper purchased by GPO in 1991 met the minimum recycled content recommended by EPA. Late in 1991, GPO signed a contract for 4.7 thousand tons of recycled newsprint.

Although the above example illustrates that the Federal Government has made progress in procuring recycled products, this bill will strengthen the current requirements and should result in even greater use of recycled products.

Through the procurement of recycled goods, the Federal Government can help strengthen and stabilize markets for these products. Therefore, the objective of section 303 is to strengthen the Federal Government's role by creating greater demand for recycled materials and stabilizing recycling markets through its own purchases and through any other purchases it might influence.

Many States have already begun to use procurement purchasing power as a market development tool. By the end of 1990, 38 States had passed procurement legislation and in another four States, executive orders or resolutions were issued to implement procurement programs. (See Table 3-9.) Of these 42 procurement programs, 28 targeted a variety of products made from recycled materials including paper and building and construction materials.

TABLE 3-9
STATES WITH RECYCLED PRODUCTS PROCUREMENT PROGRAMS

State	Basis of Program		
	Law	Exec. Order	Resolution
Alaska	X		
Arizona	X		
California	X		
Colorado	X	X	
Connecticut	X		
District of Columbia	X		
Florida	X		
Georgia	X		
Hawaii	X		
Illinois	X	X	
Indiana	X		
Iowa	X	X	
Kansas	X		
Kentucky	X		
Louisiana	X		
Maine	X		
Maryland	X		
Massachusetts	X		
Michigan	X	X	
Minnesota	X		
Mississippi	X		
Missouri	X		
Nebraska	X		
New Hampshire	X		
New Jersey	X		
New Mexico	X		
New York	X		
North Carolina	X		
North Dakota	X		
Ohio	X	X	
Oklahoma	X		
Oregon	X		
Pennsylvania	X		
Rhode Island	X		
Tennessee	X		
Texas	X		
Utah	X		
Vermont	X		
Virginia	X		
Washington	X		
West Virginia	X		
Wisconsin	X		

Source: U.S. Environmental Protection Agency

Existing SWDA Provisions

As amended in 1976, Section 6002 of the SWDA required EPA to establish affirmative procurement programs to ensure that items composed of recovered materials were purchased by all Federal agencies and departments to the maximum extent possible. Specifically, this section requires EPA to issue procurement guidelines for a variety of materials.

Unfortunately to date, EPA has only published procurement guidelines for the following five items: paper and paper products, lubricating oils, retreaded tires, building insulation products, and cement and concrete containing fly ash. EPA has also established recommended minimum content standards for the procurement of paper and paper products. EPA recommends that procurement agencies adopt these standards or set a more stringent minimum content standard for paper and paper products.

All Federal agencies that purchase items having a procurement guideline must comply with section 6002 where the purchase price of the item exceeds \$10,000 or when the quantity of such items or of functionally equivalent items purchased or acquired in the course of the preceding fiscal year exceeds \$10,000. In addition, Federal agencies are not required to purchase items having a procurement guideline if it is available only at an unreasonable cost. The criteria for determining an unreasonable cost is often interpreted to mean that the product containing recovered material must be available at a price comparable to the price of a competing product made of virgin material. Historically, because recycled materials cost more than their virgin counterparts, few recycled goods were purchased by the Federal Government.

LEGISLATIVE AND JUDICIAL BRANCH RECYCLING PROGRAMS (SECTION 304)

SUMMARY

This section establishes requirements identical to those described in the previous section for products procured by each agency and instrumentality of the Legislative and Judicial branches of the government.

It also requires annual reports by the Clerk of the House and the Secretary of the Senate, in consultation with the Public Printer, on the progress and problems associated with implementing this section, together with recommendations.

DISCUSSION

This section broadens the impact of the new Federal procurement provisions in section 303 by making the requirements applicable to the Legislative and Judicial branches of government. These government entities are also responsible for the purchase of large amounts of paper. It is important that Congress set an example for other branches of the Federal, State and local governments, and individuals, to purchase recycled products.

Congress has also made progress toward increased use of recycled materials. According to the Office of the Senate Sergeant at Arms, Services Department, all paper used for U.S. Senate newsletters

contains 50 percent recycled fiber. In addition, according to the Senate Office of Printing Services, all stationery used in the Senate contains some recycled fiber. Similar efforts are being made in the U.S. House of Representatives where between 65 and 75 percent of House members requested that their newsletters be printed on recycled paper, and over 50 percent of the Members ordered their personal stationery to be printed on recycled paper.

REDUCTION OF METALS IN PACKAGING (SECTION 305)

SUMMARY

As reported, S. 976 adds a new section 6009 to subtitle E of the SWDA. Section 6009 prohibits the intentional introduction of four heavy metals—lead, mercury, cadmium, and hexavalent chromium—into packaging or packaging components. This section establishes limits on the total amount of these metals that may be present in a package or packaging component. Those limits are as follows: 600 parts per million (ppm), effective 24 months after enactment; 250 ppm 36 months after enactment; and 100 ppm 48 months after enactment. Exceptions are provided for: (a) packaging manufactured before the effective date of the statute; (b) packaging to which any of the four metals has been added in order to comply with health and safety requirements of Federal law, and for which there is no feasible alternative, provided the Administrator grants an exemption; and (c) packaging or components that would not exceed the limits but for the addition of recycled materials.

In addition, manufacturers and suppliers of packaging and packaging components are required to furnish to purchasers a Certificate of Compliance. A copy of the Certificate must be furnished to the Administrator upon request, and must be available (with some restrictions) to the public. Civil penalties are established for non-compliance. In addition, States are authorized to enact and enforce more stringent requirements.

EPA is to provide a report to Congress within 42 months of the date of enactment in which the results of implementation of this section are described. Substitutes used in lieu of the four metals must be described and recommendations must be given with respect to other toxic substances used in packaging which should be added to the list of prohibited metals and the advisability of retaining the exemption for packaging and packaging components that include recycled material.

DISCUSSION

This section is intended to prevent the release of four very toxic heavy metals into the environment: cadmium, hexavalent chromium, lead, and mercury. It is also intended to remove obstacles to recycling that are posed by metal contaminants, such as mercury and cadmium, which damage recycling equipment or prevent recycling altogether. The use of these substances in product packaging, which represents approximately 30 percent of all municipal waste, generally is unnecessary, conveying a benefit—for example, pigmentation—that is disproportionately small relative to the problems created during waste treatment and disposal.

Eleven states have acted on their own to prevent pollution from toxic heavy metals in product packaging. Packaging in these States cannot be sold if it contains more than 600 ppm by weight of lead, cadmium, mercury or hexavalent chromium. Permissible concentration levels decline to 100 ppm by weight by the mid-1990s. After 1992, these metals cannot be intentionally added to a product or packaging.

The Coalition of Northeastern Governors (CONEG) has been working since 1988 to develop and implement a coordinated regional strategy on source reduction focusing specifically on packaging waste. One result of their efforts was model legislation for reducing the toxicity of packaging by requiring manufacturers and distributors to eliminate the use of lead, cadmium, mercury, and hexavalent chromium from packaging materials. The CONEG model legislation also served as the basis for S. 730 which was introduced during the first session of the 102d Congress and, in a slightly amended form, as the basis for this section of S. 976.

A coalition of environmental groups presented a consensus position on environmental packaging and labelling at a hearing held June 6, 1991 by this Committee. The groups proposed, in part, that Congress

Adopt as Federal law the Coalition of Northeastern Governors model toxics reduction bill that bans the addition of lead, cadmium, mercury and hexavalent chromium to all consumer goods packaging.

At the same hearing, a representative of the Can Manufacturers Institute expressed concern about the amount of toxic, heavy metals contained in packaging. He testified that the Institute supported the enactment of uniform national legislation by the Federal Government tailored after the CONEG model legislation. Testimony received by this Committee on July 31, 1991 from a representative of the Food Services and Packaging Institute, also supported adoption of this legislation. The witness noted that there have been no significant problems in finding and using substitutes for lead, cadmium, mercury, and hexavalent chromium in food packaging.

The four heavy metals targeted by this section of the bill are highly toxic elements that are heavily used in industrialized countries and commonly found in municipal waste streams. All four metals are regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), SWDA, the Superfund Amendments and Reauthorization Act (SARA) Title III, and the Safe Drinking Water Act. In addition, all are included in the list of 17 chemicals targeted by the EPA for special enforcement and incentive programs for reduction of toxic emissions. For example, the Industrial Toxics Program has a goal of reducing emissions of these chemicals by 33 to 50 percent within the next few years.

Because they are naturally-occurring elements, lead, mercury, chromium, and cadmium cannot be destroyed, but they are highly mobile in the environment under certain conditions and readily change form to become bioavailable. When present at certain levels these metals can threaten the environment and human health in addition to food chain

Mercury

Mercury is a highly volatile metal which, in its elemental form, exists as a silver liquid at room temperature. Although the amount of mercury used in household batteries and paint is declining as safer substitutes are being developed these items still are responsible for significant amounts of materials entering the municipal waste stream. Other sources of mercury include: fluorescent lights, electrical devices and some plastics products.

The acute toxicity of mercury to humans has long been recognized. The most tragic known outbreak of community poisoning occurred in Japan where "Minimata disease" produced birth defects, and brain damage in adults. The effects, due to consumption of mercury-contaminated fish over a period of several months, were first observed in cats and were later documented in human populations through epidemiological studies of symptomatic individuals.

The risks to health and the environment posed by mercury depend on the route of exposure (i.e., by air, including long-range transport, food, water, or dermal contact) and the form in which it is released: elemental mercury, alkylated (organic) mercury compounds (e.g., methyl mercury), or inorganic mercury compounds (e.g., mercury chloride). For example, release of elemental mercury into the air is particularly hazardous because mercury vapors can easily cross human lung membranes to damage red blood cells and the central nervous system. Inhalation of mercury can lead to tremors, memory loss, and kidney disease. Organic mercury that is ingested has resulted in brain damage to adults and developing fetuses. Inorganic mercury salts which are ingested can damage the kidneys.

Lead

Lead like mercury is naturally occurring and is widely dispersed in the environment. Generally, lead enters the municipal waste stream through the disposal of batteries (automobile), plastics, and consumer electronics (e.g., TVs, VCRs, and radios). Other sources of lead in the municipal waste stream include packaging where lead is used in solder, in paint pigment, ceramic glazes and inks, bottle caps, plastics and steel cans. Although the American Newspaper Publishers Association banned the use of the lead in approved newspaper inks in the mid-1970s, printing inks that are not lead-based still contain up to 600 parts per million of (ppm) of lead as a contaminant.

Lead is a human and animal neurotoxicant. The acute toxicity of lead has been recognized for centuries, but the effects of very low lead levels on human health is still being studied. Recent evidence has convinced most scientists that the developing nervous systems of small children and fetuses can be damaged, possibly irreversibly, by levels of lead that are commonly found in the dust and air of buildings containing lead-based paint, urban neighborhoods where lead deposition from automobile exhaust has contaminated soil, and in the vicinity of stationary sources of lead emissions such as smelters. Exposure to soluble lead salts and lead phosphate increase cancer rates in laboratory rats. Lead is classified as a probable human carcinogen. In addition, lead affects human reproduc-

tion, kidney function, hypertension, and blood cells. In aquatic environments, lead persists and bioaccumulates in the food chain. It is toxic to aquatic organisms.

Cadmium

Cadmium is a volatile metallic chemical naturally-occurring as a sulfide or carbonate compound in zinc ore. In municipal waste cadmium is found as a metal plating or coating on white goods, in household batteries, in plastics, paints, and some special inks as a pigment, and in PVC plastic as a heat stabilizer. In packaging, cadmium sources include coating and plating on metals and pigments in some plastics. After recycling, batteries account for about 52 percent and plastics for about 28 percent of the cadmium.

Inhalation of very high levels of cadmium leads to severe lung damage and death. Chronic exposure through inhalation may lead to chronic pulmonary disease, emphysema, or fibrosis of the lower airways, kidney damage, and fragile bones. Chronic ingestion of low levels of cadmium also may damage the kidneys. EPA has classified cadmium as a probable human carcinogen. EPA also has noted that cadmium is a potent neurotoxicant and immunosuppressive in laboratory animals. It has adverse reproductive and developmental effects on rats. Like lead, chronic exposure to cadmium is harmful to aquatic organisms. Cadmium bioaccumulates in fish and higher organisms in the food chain.

Hexavalent Chromium

Hexavalent chromium is a particularly dangerous chemical form of the metal chromium, a hard, white element that resists corrosion. The more common trivalent form of chromium is much less toxic, but not innocuous. Nevertheless, minute amounts of chromium in the diet are essential for good health. Chromium is the most widespread of the four chemical contaminants in the environment, and is the third most common pollutant found at Superfund sites on the National Priority List.

There is little data available on sources of chromium in municipal waste. However, chromium is emitted from municipal waste combustors and is commonly used in packaging material. Major uses of chromium include leather tanning, wood preservative, photographic chemicals, metal finishing and plating, magnetic tape, textile mordants and dyes, some artists' paints, and other pigments.

Hexavalent chromium is a known human carcinogen that has caused lung cancer in chronically exposed workers. In addition, exposure through inhalation can damage the nasal passages or irritate asthma. Ingestion of large amounts of chromium can cause ulcers, convulsions, kidney and liver damage, and death. Handling of liquids or solids that contain hexavalent chromium may cause dermatitis or skin ulcers. Some people have allergic reactions following dermal exposure. Chromium also produces acute and chronic health problems in aquatic organisms and persists in aquatic environments, but it does not bioaccumulate significantly.

WHITE GOODS AND AUTOMOBILE RECYCLING STUDY (SECTION 306)

SUMMARY

This section requires EPA, in consultation with the Departments of Transportation and Commerce, to conduct a study of recycling opportunities for white goods and automobile components, the steps needed to increase such recycling, and any adverse environmental impacts resulting from the recycling of white goods and automobiles, and to report findings and recommendations to Congress not later than 18 months after enactment.

DISCUSSION

Recovery

Recycling of discarded appliances and automobiles usually begins with shredding, which helps separate recyclable metallic materials. Scrap dealers typically shred large appliances using the same equipment used for automobiles. Shredders can separate the scrap into ferrous metals, nonferrous metals, and nonmetallic waste. Once shredded, the scrap is sent to processors where stainless steel and nonferrous metals are recovered, to steel mills where it is melted into new steel or steel alloy products, or to foundries where it is melted into new castings products.

White Goods

Major appliances in municipal waste, often called white goods, include refrigerators, washing machines, dryers, and stoves. They generally contain large amounts of steel and are a source of ferrous scrap. Some ferrous metals are recovered from shredded appliances, although this quantity is not well documented. In addition to ferrous metals, white goods contain other metals, plastics, glass, and other materials.

The major environmental problem associated with recycling white goods is that polychlorinated biphenyls (PCBs) are present in the electrical capacitors of some appliances produced or repaired prior to 1979. When these appliances are shredded, the capacitors are crushed and leak PCB-contaminated oil over the remaining nonmetallic materials. Many scrap handlers are unwilling to accept white goods unless they are certain that no PCBs are present. The presence of chlorofluorocarbons (CFCs) in refrigeration systems creates a similar fear for scrap processors. CFC recycling regulations mandated by the Clean Air Act Amendments of 1990 are expected to be promulgated soon. These regulations are likely to affect the ability or willingness of scrap dealers to accept white goods containing CFCs (i.e., refrigerators and air conditioners). By the end of 1990, 8 States passed white good disposal bans.

Automobiles

An average of 10 million vehicles are scrapped each year in the United States. Approximately 75 percent of automobiles is steel and other metals that may be easily recovered and recycled. The remaining 25 percent consists of plastics, fabric, fluid, glass, and

rubber. Currently the remaining material that is not recovered is landfilled.

The problems associated with recycling automobiles will grow as the percentage of plastic in new cars increases. In 1991, plastic accounted for about 8 percent of total car composition, up from about 6 percent in 1986. The amount of plastic used in automobiles is expected to rise to 12 percent or more by 1996.

The use of toxic materials in automobiles also presents recycling problems and challenges. For example the use of sodium azide, a toxic chemical used to inflate automobile air bags makes recycling more difficult and dangerous. During automobile shredding sodium azide, a known carcinogen, can be released into the environment, possibly through an explosion with the potential to cause injury or illness. Under this section, the Administrator would be required to identify possible substitutes for toxic materials such as sodium azide that are used in automobiles and white goods.

Several European car manufacturers recently announced that they would take back all new cars for recycling when they are ready to be removed from service. This move has prompted research by automobile manufacturers to develop methods for recycling the nonmetallic parts of automobiles. Much of this research is taking place in Europe and Japan. The studies required by this section would increase the recycling of automobiles and white goods in the United States.

ENVIRONMENTAL LABELING (SECTION 307)

SUMMARY

A new section is added to the SWDA to direct the Administrator, in consultation with the Federal Trade Commission, to set standards and criteria for the use of common environmental marketing claims. After promulgation of regulations, use of such claims by manufacturers and distributors of consumer products is prohibited except in accord with the regulations.

In promulgating regulations, the Administrator shall require any person making a claim to ensure that claims are worded so that the FTC may determine whether they are false, misleading, or deceptive. Regulations concerning recycled content of products or packaging must require that such claims differentiate pre- and post-consumer content.

At the point of purchase, display signs may be used to make environmental marketing claims with respect to a product or packaging that would otherwise be prohibited if the community in which the retail outlet is located has a program for the recycling, reuse, composting, or other activity with respect to which the claim is made, and if the program is identified in the display sign.

Any violations of the provisions of this section are defined to be violations of the Federal Trade Commission Act, to be enforced by the FTC.

The Administrator shall conduct a public information and education campaign concerning environmental marketing claims. This section does not repeal, invalidate, or supersede any provision of Federal law or common law, and does not prohibit States

from enacting and enforcing more stringent standards or requirements.

DISCUSSION

In recent years, many Americans have been demonstrating their environmental concern by preferentially purchasing products they believe to be environmentally benign, at least compared to the available alternatives. Market strategists have responded to this trend by advertising environmentally relevant attributes of their products and packaging. To the extent that these marketing claims provide information about beneficial changes in products or manufacturing processes or distinguish among competitive products that actually differ in their impacts on the environment, the rise in environmental marketing is welcome: the new information should allow consumers to reward environmentally responsible behavior, providing an incentive for progress toward environmental goals. Often however, the marketing claims are ambiguous or confusing because terms like "recyclable," mean different things to different people. Other claims are irrelevant or misleading. Products ranging from gasoline additives to toilet tissue to light bulbs bear labels claiming that they are "environmentally friendly", "made with recycled materials", or even "nuclear free". Use of such terms has prompted numerous complaints from consumers who find their power of choice undermined by the prevalence of useless or deceptive information. Moreover, merchants and advertisers who do not make environmental claims fear they will lose business due to advertisements by less scrupulous competitors.

In response to these concerns, some State governments have enacted legislation or promulgated regulations to control the use of environmental marketing claims. Eleven States now regulate the types of environmental claims that can be used on product labels. The proliferation of diverse State laws are of concern to manufacturers and distributors who serve more than one State, however. Many other groups have expressed support for Federal legislation on environmental labeling. For example, in the spring of 1990, the National Association of Attorneys General adopted a resolution requesting that the Federal Trade Commission (FTC), which is responsible for protecting consumers from false or misleading advertising, and EPA work together with the States to develop uniform national guidelines for environmental marketing claims. In February 1991, the National Food Processors Association and 10 other trade and advertising groups petitioned the FTC to issue national, voluntary guidelines for environmental claims. Other trade associations also filed petitions with the FTC. On May 22, 1991, 11 State attorneys general (from California, Florida, Massachusetts, Minnesota, Missouri, New York, Tennessee, Texas, Utah, Washington, and Wisconsin) issued "Green Report II," calling for strict, national standards for environmental claims about consumer products on labels and in advertising. (The earlier "Green Report" simply identified basic principles for environmental advertising.) For their part, environmental activists conducted public information campaigns to alert consumers to the misleading nature of some claims. In addition, several groups began to develop their own "green"

labels—symbols or logos that when affixed to a product would testify to its general environmental benefits relative to other similar products. The two best known certification programs in the United States today are Green Seal and Green Cross. Finally, States and the FTC have initiated legal action against several large companies for deceptive advertising and fraud.

At congressional hearings held in 1990 and 1991, representatives of industry, environmental groups, Green Seal, Green Cross, State and Federal agencies, and others agreed that uniform, national definitions are needed for terms commonly used in environmental marketing claims. They advised that environmental marketing claims are a problem primarily when they are vague, unqualified, or irrelevant. Vague claims, for example, is "environmentally friendly", cannot be evaluated by consumers. Unqualified terms such as "safe" may be deceptive, implying that a product and its packaging in no way contribute to environmental problems, when the claim may refer only to a particular safety concern. Irrelevant claims are those which confuse rather than inform consumers and include claims that a particular brand is free of some ingredient—e.g., CFCs—which is not usually present in the product; that is, the claim would apply equally to all brands. One particular concern during the hearings was that marketing claims might impede progress toward national, State, and local solutions to the problems of solid waste management. The success of solid waste initiatives that emphasize source reduction relies heavily on the efforts of private citizens to recycle and create demand for recycled products. Labels that thwart efforts of consumers to adapt their behavior, may contribute to feelings of frustration and cynicism about the value of individual initiatives, and in the long run, may reduce their level of effort.

Groups represented at the hearings also supported vigorous enforcement by the FTC of existing statutes and regulations that prohibit deceptive advertising practices. While enforcement of existing laws to ensure truth in advertising is necessary and may eliminate blatantly fraudulent claims, witnesses testified that it is less efficient as a deterrent to ambiguous claims and inadequate as a guide for the design of legitimate advertisements highlighting attributes of products that are truly environmentally beneficial. Moreover, enforcement by the FTC and State attorneys general can only occur on a case-by-case basis after the claim has been made, where-as guidelines would in many cases avoid the need for legal action. The reported bill responds to all of these concerns by requiring the Administrator to develop standard definitions for commonly used terms including claims that a product or package "has recycled content" or is "reduced by weight or volume, refillable, reusable, recyclable, compostable, ozone friendly, safe, or neutral, non-toxic, or otherwise beneficial to the environment. The bill also requires the Administrator to establish procedures for substantiating claims related to environmental impacts. Claims must be worded in precise and verifiable terms and clearly referenced to the product and/or its packaging. Labels referring to recycled content must indicate whether it is pre- or post-consumer material. Labels referring to the recyclability or compostability of products or packages must include the actual rate at which the product or package for

which the claim is made is recycled or composted. In anticipation of newly emerging environmental marketing claims and complaints, citizens are allowed to petition the Administrator for additional regulations. The Administrator is required to initiate rule-making or explain why regulation is unnecessary within 90 days of receiving any petition.

The responsibility for developing definitions for environmental marketing terms is given to EPA in recognition of its expertise in environmental issues and of its overall responsibility for policies related to solid waste management. Some groups at the hearings in 1991 before the Environmental Protection Subcommittee, testified that they preferred leaving this task entirely to the FTC. Although FTC has published guidelines on some advertising issues, no new guidelines have been issued in the last 10 years. Moreover, the FTC may not have the expertise to develop environmental labeling regulations. Witnesses at this hearing also testified that States took action on environmental marketing claims on their own, in part, because they were frustrated by the pace of activity at the FTC. Since the FTC held a hearing on the issue July 17-18, 1991, no new initiatives have been announced by the FTC with regard to environmental advertising claims. In contrast, EPA announced its intent to develop recommendations for FTC and published its views on use of the terms "recycled" and "recyclable" and the recycling emblem in environmental marketing claims in the Federal Register on October 2, 1991 (56 FR 49991).

The bill makes the FTC responsible for enforcing the environmental marketing standards to be developed by EPA. This arrangement is consistent with the on-going working relationship established between the agencies several years ago.

Several groups oppose the concept of mandatory Federal standards as opposed to voluntary guidelines. Others favor development of a more comprehensive Federal program that would test and certify all products for which marketers make environmental claims and preempt State and local power to regulate labels. The approach taken in the reported bill is less extreme than either of these alternatives. Its intent is to provide only the necessary assurance that common terms and any symbols used in environmental claims have a single meaning that permits comparisons among the national standards by discerning consumers. Minimum State standards are needed because proliferation of diverse State standards may further confuse consumers and may burden manufacturers who distribute their products regionally or nationally. However, only a minimum, national, uniform standard is established; States remain free to set more stringent standards.

To encourage product and packaging design innovations, provisions are made for the advertising of environmental claims at the point of purchase. Signs may be displayed at the point of purchase to inform consumers that the product or package has an attribute that is locally appropriate and of the availability and location of local facilities.

A public information and education campaign shall be conducted by the Administrator to ensure that consumers become familiar with the national, uniform standards for environmental claims and to increase understanding of the potential impact of consumer

choices on the environment. This provision is meant to ensure that consumers notice and credit the information that is provided.

For purposes of this section, the term "environmental claim" is defined to include any symbols or terms that are on a label, packaging, product, or collateral materials that are used in promotion or advertising to inform consumers about the environmental impact or environmental attributes of a product or package during any part of its life cycle. The term "label" means any written, printed, or graphic material affixed to or appearing on a product or packaging or appearing on a shelf or display area that refers to a product or packaging.

SCRAP PROCESSING AND RECYCLING (SECTION 308)

SUMMARY

This section requires EPA to establish specific requirements under subtitle D, for diverting, collecting, storing, sorting, shredding, bailing and recycling scrap metal, paper, plastics, glass or textiles. EPA would be required to establish a three-tiered system for evaluating and regulating activities associated with the recycling of these items. First, EPA would have the authority to identify recycling activities which it finds to have minimal impacts, such as the collection of used beverage containers, paper, or glass. Any person conducting these types of activities would be required to notify the EPA of their activities.

Anyone conducting any other activities associated with the recycling of these items would be required to obtain a class permit to operate. The permit would establish storage, residual disposal, and record-keeping requirements, and allow on-site inspections by EPA. EPA could require an individual permit for certain recycling activities.

DISCUSSION

Because markets for recyclable materials are difficult to encourage and maintain, unnecessary regulatory costs placed on legitimate forms of recycling should be avoided. Although recycling activities can be beneficial, safe recycling activities should be controlled. There are numerous examples of uncontrolled recycling operations that have created serious health and environmental damages.

To insure the viability of legitimate, safe recycling activities, wastes and materials that are recycled should be regulated at a level of control consistent with the risks posed by the recycling activities. This section directs the EPA to establish tailored regulations for certain recycling activities involving specified wastes and materials and to ensure that the standards are fully protective of human health and the environment.

RECYCLING BUILDING CODES (SECTION 309)

SUMMARY

This section requires the EPA to develop model construction guidelines for the purpose of providing space for the separation, collection, and recycling of recyclable materials in new

multi-unit and multi-family office and residential buildings. The section requires EPA to make the final model construction guidelines available to the public not later than 2 years after the date of enactment of this section.

DISCUSSION

Recycling programs have enormous potential in multi-unit buildings because residents in such buildings generate large amounts of recyclable materials in a small amount of space. Unfortunately, many obstacles confront recycling in multi-unit buildings. Because the collection of recyclables requires more space than normal trash collection, many efforts to implement recycling programs are hindered by a lack of space in the building.

Many multi-unit buildings were not designed to accommodate either the collection or storage of recyclable materials. Instead they were designed with a trash chute that was accessible on each floor of the building. With the emergence of community recycling programs, building residents must either take their recyclables to an external storage area, or the garbage chute must be modified to handle both trash and recyclables.

In many cases, without some basic building design characteristics, recycling in multi-unit buildings may prove unworkable. This section will require the establishment of guidelines for new buildings so that collection and storage areas will be incorporated into the design of new buildings.

NATIONAL CENTERS FOR PLASTICS RECYCLING (SECTION 310)

SUMMARY

This section requires EPA to establish three National Plastics Recycling Research and Development Centers. Each of these Centers will conduct research on methods to promote the increased recycling of plastic materials, methods to improve collection, sorting and reclaiming of plastics, and evaluate new commercial applications and markets for recycled plastics products.

DISCUSSION

Plastics are a rapidly growing segment of municipal waste. In 1988, 14.4 million tons of plastics entered the municipal waste stream, accounting for 9 percent of all municipal waste. This is up from 0.4 million tons in 1960 or 0.5 percent of the waste. Moreover, EPA expect plastics discards to grow to 25.7 million tons by 2010.

Only about 3 percent of all plastics are now recycled, in part because of a variety of technical and economic problems in collecting, sorting, reclaiming and marketing recycled plastics. This section would require EPA to establish three national plastics recycling research and development centers to conduct a variety of research on methods to increase the amount of plastics recycling.

CHANGES IN EXISTING LAW

In compliance with section 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill as reported are shown as follows: Existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman:

AN ACT To provide technical and financial assistance for the development of management plans and facilities for the recovery of energy and other resources from discarded materials and for the safe disposal of discarded materials, and to regulate the management of hazardous waste.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

* * * * *

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Attached

FEDERAL PROCUREMENT

SEC. 6002. (a) APPLICATION OF SECTION.—Except as provided in subsection (b), a procuring agency shall comply with the under requirements set forth in this section and any regulations issued this section, with respect to any purchase or acquisition of a procurement item where the purchase price of the item exceeds \$10,000 or where the quantity of such items or of functionally equivalent items purchased or acquired in the course of the preceding fiscal year was \$10,000 or more. *As a general matter, each procuring agency (including any person performing work under a contract with such agency) shall give preference in procurement to items produced with the greatest percentage of recovered materials practicable, regardless of whether there are procurement guidelines applicable to such items.*

- • •
- (c) REQUIREMENTS.—(1) After the date specified in applicable guidelines prepared pursuant to subsection (e) of this section, each procuring agency which procures any items designated in such guidelines shall procure such items composed of the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition (and in the case of paper, the highest percentage of the postconsumer recovered materials referred to in subsection (h)(1) practicable), considering such guidelines. *The decision not to procure such items shall be based on a determination that such procurement items—*
 - *[(A)]* are not reasonably available within a reasonable period of time;
 - *[(B)]* fail to meet the performance standards set forth in the applicable specifications or fail to meet the reasonable performance standards of the procuring agencies; or
 - *[(C)]* are only available at an unreasonable price. Any determination under subparagraph (B) shall be made on the basis of the guidelines of the Bureau of Standards in any case in which such material is covered by such guidelines. *Any determination under subparagraph (B) shall be made on the basis of the guidelines of the National Institute of Standards and Technology. As used in this paragraph, the term "unreasonable price" means a price that exceeds by an amount greater than 10 percent the amount of the price of similar items that do not meet the guidelines established under subsection (e). In the case of items that have a difference expected useful life than the expected life of items that do not meet the guidelines, such comparisons may be made by using the annualized cost of the competing items.*
- • •

- (e) GUIDELINES.—The Administrator, after consultation with the Administrator of General Services, the Secretary of Commerce (acting through the Bureau of Standards), and the Public Printer, shall prepare, and from time to time revise, guidelines for the use of procuring agencies in complying with the requirements of this section. Some guidelines shall—
 - (1) designate those items which are or can be produced with recovered materials and whose procurement by procuring

agencies will carry out the objectives of this section, and in the case of paper, provide the maximizing the use of postconsumer recovered materials referred to in subsection (h)(1); and (2) set forth recommended practices with respect to the procurement of recovered materials and items containing such materials and with respect to certification by vendors of the percentage of recovered materials used, and shall provide information as to the availability, relative price and performance of such materials and items and where appropriate shall recommend the level of recovered material to be contained in the procured product. The Administrator shall prepare final guidelines for paper within one hundred and eighty days after the enactment of the Hazardous and Solid Waste Amendments of 1984, and for three additional product categories (including tires) by October 1, 1985. Not later than December 31, 1993, the Administrator shall prepare final guidelines for rubber products (including asphalt pavement containing recycle rubber) containing scrap lumber rubber derived by processing waste tires. The Administrator shall also prepare final guidelines for compost to be used for plant nutrition, mulch or fill, plastic products (including containers, and lead-acid batteries within twelve months after the date of enactment of the Resource Conservation and Recovery Act Amendments of 1992, for products made from glass ferrous metals, nonferrous metals, and coal combustion waste within twenty-four months after the date of enactment of the Resource Conservation and Recovery Act Amendments of 1992. In making the designation under paragraph (1), the Administrator shall consider, but is not limited in his consideration

(A) the availability of such items;
(B) the impact of the procurement of such items by procuring agencies on the volume of solid waste which must be treated, stored or disposed of;
(C) the economic and technological feasibility of producing and using such items; and
(D) other uses for such recovered materials.

NATIONAL RECYCLING GOAL

Sec. 6005. *It shall be a national goal that not less than 25 percent of the municipal waste generated annually (excluding domestic sewage sludge, white goods and automobiles, yard wastes, and construction and demolition wastes) be recycled by 1995 and not less than 50 percent of such municipal waste generated annually should be recycled by 2000, and every year thereafter.*

INTRODUCTION AND INFORMATION ON TECHNIQUE AND MATERIALS

SEC. 6006. (a) **APPLICABILITY.**—This section shall apply to the following categories of covered materials:

(1) Newsprint, printing and writing paper, and packaging composed in whole or in part of paper or bleached and unbleached paper board (Category I).

(2) Packaging composed in whole or in part of glass (Category II).

(3) Packaging composed in whole or in part of steel (Category III).

(4) Packaging composed in whole or in part of aluminum (Category IV).

(2) Rigid plastic containers that retain their shape when unsupported (Category V).

(b) ANNUAL RECOVERY AND UTILIZATION REQUIREMENTS.—(1) For each of calendar years 1995 through 1999, the recovery and utilization rate of covered materials by all users considered in the aggregate shall be not less than the following:

(A) Category I: 40 percent.
 (B) Categories II and III: 40 percent.
 (C) Category IV: 66 percent.
 (D) Category V: 25 percent.

(2)(A) Not later than December 31, 1995, and Administrator shall promulgate recovery and utilization rates for each category of covered materials for the calendar years beginning with the year 2000.
 (B) In establishing such rates, the Administrator shall choose the highest rate technically and economically achievable, consistent with the national goal established in section 6005. In no case shall such rates be established at rates below those established for the calendar years 1995 through 1999 in paragraph (1).
 (C) If the Administrator fails to establish such rates by December 31, 1995, the recovery and utilization rate for Categories III and IV shall be no less than 66 percent, and for all other categories of covered materials listed in this section such rate shall be no less than 50 percent.

(3)(A) Not later than twenty-four months after the date of enactment of the Resource Conservation and Recovery Act Amendments of 1992, the Administrator shall promulgate recovery and utilization rates for a category or categories that includes all plastic packaging not included in Category V.
 (B) The Administrator shall establish rates for such categories at the highest level technically and economically feasible for the calendar years 1997 and thereafter.

(C) If the Administrator fails to establish such rates within twenty-four months of the date of enactment of the Resources Conservation and Recovery Act Amendments of 1992, the recovery and utilization rate for all plastic packaging not included in Category V shall be the same as the established for Category V.

(4)(A) The Administrator is authorized to expand existing categories or add new categories of covered materials and increase any recovery and utilization rates set forth in this section, at the initiative of the Administrator, or in response to a petition by any person.
 (B) The Administrator may take such action upon a demonstration that expanding categories or adding new categories of covered materials or increasing the recovery and utilization rate for any covered material is technically and economically feasible.
 (C) Within one hundred and eighty days of receipt of a petition, the Administrator shall—

- initiate a rulemaking to expand existing categories or add new categories of covered materials or increase the utilization rates for covered materials; or
- notify the petitioner in writing of the reasons for denial of the petition.

(5) The Administrator shall publish in the Federal Register an annual summary of the actions taken under paragraph (4), including—

- a list of the petitions received and the disposition thereof;
- the reasons for the denial of any petition; and
- the status of any rulemaking initiated on the Administrator's own initiative or in response to a petition.

(c) INDUSTRY-WIDE COMPLIANCE.—(1) The Administrator shall establish a methodology for determining the aggregate recovery and

utilization rate for each category of covered materials and shall promulgate a methodology in the Federal Register within twelve months after the date of enactment of the Resource Conservation and Recovery Act Amendments of 1992. The methodology shall utilize existing data bases and methodologies to the extent that the Administrator determines that such data bases and methodologies accurately measure, or can be adjusted to accurately measure, recovery and utilization of covered materials.
 (2) At a minimum, the methodology developed by the Administrator shall—

- identify major subcategories of each category of covered materials;
- identify all major methods of reuse and recycling for each category or subcategory of covered materials;
- measure the amount of material in each category and subcategory generated as municipal waste annually;
- measure the amount of material in each category and subcategory recovered and utilized annually; and
- not count as recovered and utilized any covered material that is—

- utilized for energy recovery; or
- converted to a non-motor vehicle fuel or fuel substitute.

(3) Beginning on March 31, 1994, and no later than March 31 of each year thereafter, the Administrator shall publish in the Federal Register the recovery and utilization rate achieved in the preceding calendar year for each category and subcategory of covered materials, as estimated using the methodology promulgated pursuant to this subsection, and shall indicate whether the recovery and utilization rates established in subsection (b) has been achieved.
 (4)(A) For the purposes of developing the methodology required by this subsection and obtaining information concerning recovery and utilization rates, any person who is subject to the utilization requirements of this section and any person who utilizes or exports covered materials shall, upon request of any officer, employee, or representative of the Environmental Protection Agency, duly designated by the Administrator, furnish such information as may be necessary to develop the methodology to determine industry-wide compliance or to establish actual utilization rates and to determine whether industry-wide compliance has been achieved.
 (B)(i) Such officers, employees, or representatives are authorized to enter at reasonable times any establishment or other place where covered materials are being utilized, reused, or exported by or on behalf of a responsible entity.
 (ii) Such officers, employees, or representatives are authorized to inspect and obtain records or samples from any person of any such covered materials and evidence concerning the amounts used, reused, or exported by or on behalf of a responsible entity.

(5) Any inspection conducted under this paragraph shall be commenced promptly and completed with reasonable promptness.
 (III) If the officer, employee, or representative obtains any samples, prior to leaving the premises, he shall give to the owner, operator, or agent in charge a receipt describing the sample obtained and if requested a portion of each such sample equal in volume or

weight to the portion retained. If any analysis is made of such samples, a copy of the results of such analysis shall be furnished promptly to the owner, operator, or agent in charge.

(5)(A) Subject to subparagraph (B), any records, reports, or information obtained from any person under this section shall be available to the public.

(B) Upon a showing satisfactory to the Administrator by any person that specified records, reports, or information, or a particular part thereof, to which the Administrator or any officer, employee, or representative thereof has access under this section would, if made public, divulge information entitled to protection under section 1905 of title 18 of the United States Code, such information or particular portion thereof shall be considered confidential in accordance with the purposes of such section. Notwithstanding the preceding sentence, such records, reports, documents, or information may be disclosed to other officers, employees, or authorized representatives of the United States concerned with carrying out this Act, or when relevant in any proceeding under this Act.

(6) Any person who is not subject to the provisions of section 1905 of title 18, United States Code, and who knowingly and willfully divulges or discloses any information entitled to protection under this section shall, upon conviction, be subject to a fine of not more than \$5,000 or to imprisonment not to exceed one year, or both.

(d) COMPANY-WIDE COMPLIANCE.—(1) Each responsible entity shall meet an annual utilization requirement for each category of covered materials, except in the following cases:

(A) If the Administrator determines—

(i) pursuant to subsection (c)(3), that the annual recovery and utilization rate of a category of covered materials by all users of such materials in the aggregate is equal to or greater than the recovery and utilization rate established in or pursuant to subsection (b) by the dates specified in or established pursuant to subsection (b), or

(ii) pursuant to subsection (c)(2), that a supply of recycled materials is not available for recovery and utilization. In the case of Category I, the recovery and utilization rate shall include the recovery of all paper grades, including but not limited to specialty papers, tissue, kraft and semicanical paperboard, construction paper and board, box board, corrugated containers, and paper packaging.

(B) In the case of newsprint, either of the following:

(i) If the Administrator determines that the annual re-

covery and utilization rate by all users of such material in

(1) 25 percent for each of calendar years 1995 through 1999; or
(2) 30 percent in the year 2000 and in each calendar year thereafter.

(C) In the case of printing and writing paper, if the annual average percentage of recycled fiber contained in printing and writing paper utilized by the responsible entity is no less than the following percentages:

(i) 10 percent for coated printing and writing paper in each of calendar years 1995 through 1999.

(ii) 15 percent for uncoated printing and writing paper in each of calendar years 1995 through 1999.

(iii) Such rates as the Administrator may establish for the year 2000 and each year thereafter. The Administrator shall establish any such rates not later than December 31, 1995. In establishing such rates, the Administrator shall choose the highest rate technically and economically achievable, consistent with the national goal established in section 6005. If the Administrator fails to establish such rates by December 31, 1995, the rates shall be 15 percent for coated printing and writing paper and 20 percent for uncoated printing and writing paper.

(2)(A) Unless exempted under paragraph (1), a responsible entity shall meet an annual utilization requirement for each category of covered materials. For the purpose of compliance with this subsection, a responsible entity may—

(i) utilize covered materials as recycled content in its own products or packaging.

(ii) ensure that covered materials are utilized in a product or packaging by another person;

(iii) reuse packaging for a purpose that is identical to its original purpose; or

(iv) reduce the amount (by weight) of covered materials used in packaging per unit of product sold from the amount used per unit sold in 1992 or, for responsible entities that began to use a covered material after December 31, 1992, the alternate baseline established pursuant to paragraph (6).

(B) A responsible entity shall not be deemed to have met the requirements of this subsection by—

(i) using covered materials for energy recovery; or
(ii) selling or distributing covered materials as non-motor vehicle fuels or fuel substitutes.

(3)(A) Each responsible entity and each person utilizing covered materials on behalf of a responsible entity, shall, not later than June 30, 1996, and by June 30 of each year thereafter, provide to the Administrator such information as the Administrator determines is necessary to demonstrate compliance.

(B) Not later than twenty-four months after the date of enactment of the Resource Conservation and Recovery Act Amendments of 1992, the Administrator shall—

(i) promulgate regulations establishing reporting requirements necessary to evaluate compliance with this subsection; and
(ii) publish in the Federal Register the forms for reporting under this subsection.

(ii) If the annual average percentage of recycled fiber contained in newsprint utilized by the responsible entity is no less than—

(C) If the Administrator fails to promulgate reporting requirements by the date that is twenty-four months after the date of enactment of the Resource Conservation and Recovery Act Amendments of 1992, each responsible entity shall provide to the Administrator not later than June 30, 1996, and by June 30 of each year thereafter—

- (i) the total amount of covered materials in each category it distributed in the base year;
- (ii) the methods by which the responsible entity ensured compliance with the requirements specified in paragraphs (1) and (2), including—
 - (I) the amount (by weight) of covered materials that was utilized in its own products or packages in the base year;
 - (II) the amount (by weight) of packaging distributed in the base year that was reused for a purpose that is identical to its original purpose;
 - (III) the amount (by weight) of covered materials that was utilized by another entity on behalf of the responsible entity during the base year, along with the name and address of each such entity and a description of the use of covered materials;
 - (IV) the amount (by weight) of covered materials that was reported for recycling in the base year on behalf of the responsible entity, the name and address of the person utilizing such materials in the receiving country, and a description of the use of covered materials; and
 - (V) the reduction (by weight) of covered materials the responsible entity achieved in its packaging in the base year as compared to the amount used during 1992 (or, for responsible entities that began to use a covered material after December 31, 1992, the alternate baseline established pursuant to paragraph (6)), calculated by multiplying the per unit reduction in packaging times the number of units distributed during the base year; and
- (iii) a certification to the Administrator by the chief executive officer of the responsible entity, or the designee of the officer, as to whether or not the responsible entity is in compliance with the annual utilization requirements established in subsection (b).

(D) If the Administrator fails to promulgate reporting requirements by the date that is twenty-four months after the date of enactment of the Resource Conservation and Recovery Act Amendments of 1992, each person utilizing covered materials on behalf of a responsible entity not exempted under paragraph (1) shall provide to the Administrator not later than June 30, 1996, and by June 30 of each year thereafter—

- (i) the name of each responsible entity on behalf of which the person utilized covered materials during the base year;
- (ii) the amount and type of covered materials the person utilized on behalf of each responsible entity and a description of the use of covered materials; and
- (iii) a certification by the person who utilized covered materials on behalf of a responsible entity that the information is accurate.

(4) Each responsible entity and each person that utilized covered materials on behalf of a responsible entity shall maintain the information required under this subsection at its corporate headquarters. A responsible entity shall make records available for inspection by the Administrator upon request.

(5) If the Administrator determines that the purposes of this section would be served by the establishment of a credit trading system, under which persons utilizing covered materials in amounts greater than required under this section could sell credits to responsible entities not recovering and utilizing covered materials in the amounts required, the Administrator is authorized to promulgate such regulations as may be necessary to establish such credits and to assist in the creation of a market for the credits.

(6)(A) The Administrator shall establish a methodology to be used by responsible entities to determine the percentage by which a responsible entity has reduced the amount of covered materials used in packaging and shall publish the methodology in the Federal Register not later than January 1, 1994.

(B) The methodology shall allow a credit toward a utilization requirement of a responsible entity for source reduction measures that reduce the weight of a package by—

- (i) using less of the same material;
- (ii) offering concentrated products for sale;
- (iii) selling refill packages that are designed to allow reuse of other packaging; or
- (iv) through other measures.

(C) In establishing the methodology, the Administrator may establish a method of determining an alternate baseline to be used in measuring source reduction by responsible entities that began utilizing a covered material after December 31, 1992.

(D) The Administrator shall publish in the Federal Register an analysis of the likely impact of establishing this methodology on such factors as—

- (i) the cost of compliance with this section;
- (ii) the amount of material diverted from landfill and incineration facilities; and
- (iii) the projected recycling rates for each covered material in 1995 and 2000.

(E) ENFORCEMENT.—(1)(A) The Administrator shall conduct such reviews as are necessary to ensure compliance with the requirements set forth in subsection (d). At a minimum, the Administrator shall—

- (i) annual compliance reviews of reports submitted pursuant to subsection (d) by responsible entities; and
- (ii) random and selective audits (including field audits and review and evaluation of supporting documentation) of responsible entities and persons utilizing covered materials for responsible entities.

(2) Any responsible entity that is not in compliance with the requirements set forth in subsection (d) shall be subject to the following penalties:

- (A) Upon the first violation of subsection (d) and for any subsequent violation, the responsible entity shall be liable for an administrative penalty in an amount not to exceed \$50 per ton

for each ton below the annual utilization requirement established in subsection (d).

(B)(i) Upon each violation of subsection (d), the responsible entity shall place a label on each of the products or packaging containing the applicable category of covered materials for which the responsible entity has failed to meet the applicable annual utilization requirement under subsection (d), so that the following language is clearly visible to the consumer:

"[INSERT NAME OF RESPONSIBLE ENTITY] HAS NOT MET FEDERAL RECYCLING REQUIREMENTS FOR [INSERT APPLICABLE CATEGORY OF COVERED MATERIAL]."

(ii) The label shall be affixed to each such product or packaging offered for retail sale until the responsible entity demonstrates to the Administrator that it has achieved compliance with the utilization requirement established in subsection (d) for the most recent calendar year.

(iii) The label shall be affixed in a conspicuous location on the product or packaging. All the letters in the label shall appear in conspicuous and legible type in contrast by typography, layout, or color with all other printed material on the product or packaging.

(3) Any responsible entity, or person who utilizes covered materials on behalf of a responsible entity, who knowingly misrepresents of subsection (d)(3) shall be subject to an administrative penalty in an amount not to exceed \$10,000 for each day during which the violation continues.

(4) Any responsible entity, or person who utilizes covered materials on behalf of a responsible entity, who knowingly misrepresents of subsection (d)(4) shall, upon conviction, be subject to a fine of not more than \$25,000 per day of violation, or imprisonment not to exceed one year, or both.

(5) In determining the amount of any penalty assessed under this section, shall take into consideration, with respect to a responsible entity or a person who utilizes materials on behalf of a responsible entity—

- (A) the size of the business of the responsible entity or person;
- (B) the economic impact on the business;
- (C) the full compliance history of such entity or person and good faith efforts to comply;
- (D) the duration of the violation;
- (E) any payments for penalties assessed for previous violations of the same provision;
- (F) any economic benefit from noncompliance;
- (G) the seriousness of the violation; and
- (H) such other factors as justice may require.

(6) Before issuing an order assessing an administrative penalty under this subsection, the Administrator shall provide notice and an opportunity for a hearing to any person alleged to be in violation of this section.

(f) **TECHNICAL ASSISTANCE FUND.**—Any penalties collected under this section shall be deposited in a special fund in the United States Treasury. The amounts in such fund shall be available for appropriation, and shall remain available until expended. Such funds

shall be used by the Administrator, subject to appropriation, to support the recycling program established in this subtitle.

(g) **DEFINITIONS.**—As used in this section:

(1) The term "annual utilization requirement" means the utilization rate for each applicable category multiplied by the total annual amount, by weight, of that category of covered materials that the responsible entity distributed during the base year.

(2) The term "base year" means the calendar year in which a utilization rate applies.

(3) The term "brand name" means a trade mark or trade name that identifies a product as being that of a particular person, and that distinguishes it from other like or similar products.

(4) The term "covered materials" means those categories of materials described in subsection (a) and any expansion of or additional to such categories by the Administrator under paragraphs (3) and (4) of subsection (b).

(5) The term "distribute" or "distribution" means to make available for retail sale in the United States.

(6) The term "packaging" means a container or wrapping providing a means of marketing, protecting, or handling a product, including such materials as corrugated containers or other materials used to protect, handle, or transport covered products and packages, regardless of whether the material or package itself is identified by the brand name.

(7) The term "product" means any article or component part thereof offered for sale.

(8) The term "recycled fiber" means fiber obtained from recovered material.

(9)(A) The term "responsible entity" means any person who—

- (i) owns the brand name of a product manufactured in the United States, or in the case of a product imported into the United States, any person in the United States to whom a product is first imported;
- (ii) distributes or arranges for the distribution of products packaged in covered materials, or, in the case of newsprint and printing and writing paper, distributes or arranges for the distribution of such covered materials; and
- (iii) has total annual receipts in an amount greater than or equal to \$0,000,000.

(B) In the case of an affiliated group of companies, such companies shall be deemed a single responsible entity if the affiliated group of companies, as defined in section 1504(a) of the Internal Revenue Code of 1986, has total annual receipts in an amount greater than or equal to \$50,000,000.

(10) The term "utilization rate" means—

- (A) the percentages set forth in subparagraphs (A), (B), (C), and (D) of subsection (b)(1); or
- (B) any increase of the utilization rate by the Administrator or any rate established for an additional category of covered materials under paragraphs (3) and (4) of subsection (b).

LEGISLATIVE AND JUDICIAL BRANCH RECYCLING PROGRAMS

SEC. 6007. (a) RECYCLED MATERIALS PURCHASED BY THE LEGISLATIVE AND JUDICIAL BRANCHES.—Each instrumentality or agency of the legislative and judicial branches of the Government shall be subject to the requirements of section 6002(c)(3) to the same extent as other Federal agencies.

(b) ANNUAL REPORTS.—The Clerk of the House of Representatives and the Secretary of the Senate, in consultation with the Public Printer, shall each submit an annual report to the Speaker of the House of Representatives and the President of the Senate, respectively, on the implementation of this section. Each report shall include information on the progress of such implementation and the problems associated with such implementation, and findings and recommendations with respect to such implementation.

REDUCTION OF METALS IN PACKAGING

SEC. 6008. (a) PROHIBITION ON ADDITION OF CERTAIN HEAVY METALS IN PACKAGING.—(1) Except as provided in subsection (b), effective 24 months after the date of enactment of the Resource Conservation and Recovery Act Amendments of 1992, the intentional introduction of lead, cadmium, mercury, or hexavalent chromium to packaging or any component thereof during manufacturing or distribution by any person shall be prohibited.

(2) The sum of the concentration levels of lead, cadmium, mercury, and hexavalent chromium present in packaging or any component thereof may not exceed—

(A) 600 parts per million by weight (0.06 percent) on or after the date that is twenty-four months after the date of enactment of this section and before the date specified in subparagraph (C); and

(B) 250 parts per million by weight (0.025 percent) on or after

the date that is thirty-six months after the date of enactment of this section and before the date specified in subparagraph (C); and

(C) 100 parts per million by weight (0.01 percent) on or after the date that is forty-eight months after the date of enactment of this section.

(b) EXCEPTIONS.—(1) The requirements of subsection (a) shall not apply to packaging and any components thereof with a code indicating a date of manufacture, or date of bottling or manufacturing of distilled spirits and wines, prior to the effective date of the Resource Conservation and Recovery Act Amendments of 1992 if alternative evidence of date of manufacture or bottling prior to the effective date of the Resource Conservation and Recovery Act Amendments of 1992 is provided to the satisfaction of the Administrator.

(2)(A) The requirements of subsection (a) shall not apply to packaging and any components thereof to which lead, cadmium, mercury, or hexavalent chromium have been added in the manufacturing, forming, printing, or distribution process—

(i) in order to comply with health or safety requirements of

Federal law, or

(ii) because the addition of one or more of these substances is essential for the protection, safe handling, or functioning of the contents of the packaging, if the Administrator grants an exemption from the requirements of this section to the manufacturer of the package or packaging component based upon either criterion.

(B) If the Administrator determines that circumstances warrant an exemption from the requirements of this section, the Administrator may grant an exemption for a period of two years.

(C) Such an exemption may, upon meeting either criterion of this subsection, be renewed every two years.

(3) The requirements of subsection (a) shall not apply to packaging and any components thereof that would not exceed the concentration levels in subsection (a)(2) but for the addition of recycled materials.

(c) CERTIFICATE OF COMPLIANCE.—(1) Not later than two years after the date of enactment of the Resource Conservation and Recovery Act Amendments of 1992, the manufacturer or supplier of packaging or components thereof shall furnish to each purchaser a certificate of compliance stating that the packaging or packaging component is in compliance with the requirements of this section. If the manufacturer or supplier claims an exemption under subsection (b), the manufacturer or supplier shall state the specific basis upon which the exemption is claimed on the certificate of compliance. The certificate of compliance shall be signed by an authorized official of the manufacturing or supplying company. The purchaser shall retain the certificate of compliance for as long as the packaging is in use. A copy of the certificate of compliance shall be kept on file by the manufacturer or supplier of the packaging or packaging component. A copy of the certificate of compliance shall be furnished to the Administrator upon request, and to members of the public in accordance with subsection (f).

(2) If the manufacturer or supplier of packaging or packaging components reformulates or creates a new package or packaging component, the manufacturer or supplier shall provide an amended or new certificate of compliance for the reformulated or new package or packaging component.

(d) FEDERAL ENFORCEMENT.—In any case where, on the basis of any information, the Administrator determines that any person has violated or is in violation of this section, the Administrator may assess a civil penalty in an amount not to exceed \$25,000.

(e) ENVIRONMENTAL PROTECTION AGENCY ACTIONS.—(1) Not later than 18 months after the date of enactment of the Resource Conservation and Recovery Act Amendments of 1992, the Administrator shall promulgate regulations to carry out this section.

(2) Not later than forty-two months after the date of enactment of the Resource Conservation and Recovery Act Amendments of 1992, the Resource Conservation and Recovery Act Amendments of 1992, the Administrator shall submit a report to the Congress on the results of the implementation of this section. The report may contain recommendations concerning the addition of toxic substances contained in packaging to the substances identified in subsection (a) in order to further reduce the toxicity of packaging waste, and shall contain—

(A) a recommendation as to whether to continue the recycling exemption as provided in subsection (b); and
 (B) a description of the nature of the substitutes used in lieu of lead, mercury, cadmium, and hexavalent chromium.

(f) PUBLIC ACCESS.—(1) Any request from a member of the public for a copy of any certificate of compliance from the manufacturer or supplier of packaging or components thereof shall be—

(A) in writing, with a copy provided to the Administrator; and
 (B) specific as to package or packaging component information requested.

(2) A manufacturer shall respond to a request that meets the requirements of paragraph (1) not later than sixty days after receipt of the request.

(g) STATE AUTHORITY.—Nothing in this Act shall be construed so as to prohibit a State from establishing and enforcing a standard or requirement with respect to toxic metals in packaging that is more stringent than a standard or requirement relating to toxic metals in packaging established or promulgated under this section.

(h) DEFINITIONS.—As used in this section:

(1) The term “distributor” means any person who purchases goods from a manufacturer for sale or promotional use.

(2) The term “incidental presence” means the presence of lead, cadmium, mercury, or hexavalent chromium in a package or packaging component if the substance was not purposefully introduced into the package or packaging component for its own properties or characteristics.

(3)(A) The term “intentionally introduced” means the purposeful introduction of lead, cadmium, mercury, or hexavalent chromium into a package or packaging component with the intent that one or more of such substances be present in the package or packaging component.

(B) The term does not include—

(i) the background levels of such substances that naturally occur in raw materials or are present as postconsumer additions, and that are not purposefully added to perform as part of a package or packaging component; and

(ii) any trace amounts of a processing aid or similar material used to produce a product from which a package or packaging component is manufactured, if the processing aid or similar material is reasonably expected to be consumed or transformed into a nonregulated material during the process.

(4) The term “manufacturer” means any person in the chain of production who makes a package or packaging component for sale or promotional purposes, including an importer of packages or packaging components.

(5) The term “packaging” has the meaning given such term in section 6006(g)(6).

(6) The term “packaging component” means any individual assembled part of packaging, including any interior or exterior blocking, bracing, cushioning, weatherproofing, exterior strapping, coatings, closures, inks, labels, adhesives, and stabilizers.

WHITE GOODS AND AUTOMOBILE RECYCLING

SEC. 6009. (a) STUDY REQUIREMENT.—The Administrator, in consultation with the Secretary of Transportation, the Secretary of Energy, the Secretary of Commerce, and interested and affected members of the public, shall conduct a study of the opportunities for recycling white goods and automobile components in the United States and the steps needed to increase such recycling.

(b) MATTERS TO BE STUDIED.—In carrying out the study, the Administrator shall—

(1) identify the amounts of white goods and automobiles collected for recycling and the percentage of such collected amounts that is recycled; and

(2) consider, at a minimum, the following:

(A) The major obstacles to increased recycling of white goods and automobile components and how those obstacles can be overcome.

(B) Methods of incorporating recyclability into the planning, design, and manufacturing of white goods and new automobiles.

(C) The use of toxic and nonrecyclable materials in white goods and automobiles and possible substitutes for those materials.

(D) The feasibility of establishing design guidelines for white goods and automobiles that would result in a gradual phase-out of hazardous and nonrecyclable materials used in white goods and automobiles.

(E) Methods of engineering new and more easily recyclable plastics for use in white goods and automobiles.

(F) Any environmental impact from the recycling of white goods and automobile components.

(G) Reasonably available economic or market incentives to promote, as appropriate, recycling or environmentally sound alternatives for minimizing the landfilling of white goods, taking into account—

(i) population densities;

(ii) local markets;

(iii) transportation distances and costs; and
 (iv) such other factors as the Administrator determines are relevant and appropriate.

(c) REPORT.—Not later than eighteen months after the date of enactment of the Resource Conservation and Recovery Act Amendments of 1992, the Administrator shall submit to the Congress a report on the study required by subsection (a). The report shall contain a discussion of each matter described in subsection (b), and the findings and recommendations of the Administrator.

(d) GUIDELINES FOR WHITE GOODS RECYCLING.—Not later than one year after the submission to the Congress of the report required under subsection (c), and after consultation with other interested Federal agencies, appropriate State and local officials, and interested and affected members of the public, the Administrator shall promulgate guidelines identifying appropriate economic and regulatory incentives to encourage recycling and other environmentally sound alternatives for minimizing the landfilling of white goods. In pre-

paring the guidelines, the Administrator shall consider, at a minimum—

- (1) deposits;
- (2) disposal fees and rebates;
- (3) loans and loan guarantees;
- (4) tax incentives, and
- (5) regulatory restrictions on disposal in landfills.

(e) **DEFINITIONS.**—As used in this section, the term "white goods" means major appliances such as refrigerators, washing machines, water heaters, stoves, clothes dryers, and air conditioners.

ENVIRONMENTAL LABELING

SEC. 6010. (a) REGULATIONS.—The Administrator, in consultation with the Federal Trade Commission, shall promulgate regulations containing standards and criteria for environmental marketing claims. Such regulations shall be proposed not later than 18 months after the date of enactment of the Resource Conservation and Recovery Act Amendments of 1992, and shall be promulgated not later than 24 months after such date of enactment.

(b) **PROHIBITION.**—On and after the effective date of the regulations promulgated under subsection (a), no person shall make an environmental marketing claim covered by this section or by regulations promulgated under this section that cannot be substantiated in accordance with the standards and criteria established under this section or under regulations promulgated pursuant to this section.

(c) **REQUIREMENTS FOR ENVIRONMENTAL LABELING REGULATIONS.**—(1) The regulations required under subsection (a) shall include standards and criteria for commonly used environmental marketing claims, including claims that a product or packaging—

- (A) is reduced by weight or volume;
- (B) is refillable;
- (C) is reusable;
- (D) is recyclable;
- (E) has recycled content;
- (F) is compostable;
- (G) is ozone friendly, safe, or neutral;
- (H) is nontoxic; or
- (I) is otherwise beneficial to the environment.

(2) The Administrator shall include standards and criteria for substantiating such other environmental marketing claims concerning a product or packaging as the Administrator considers appropriate.

(3) In promulgating regulations under subsection (a), the Administrator shall ensure, at a minimum, that such regulations require any person making an environmental marketing claim to ensure that such a claim—

- (A) is specific and substantive and is sufficient to allow the Federal Trade Commission to determine whether the claim is false, misleading, or deceptive;
- (B) provides a quantitative statement concerning the product or packaging, using terms identified in subparagraphs (A), (B),

(C), and (E) of paragraph (1), and such other terms as the Administrator determines to be appropriate;

(C) if the claim uses a term identified in subparagraph (D) or (F) of paragraph (1), clearly identifies the national rate at which the product or packaging is recycled or composted;

(D) has been substantiated on the basis of the best available scientific information;

(E) makes a clear distinction between the product and any accompanying packaging, unless the claim applies to both;

(F) does not compare any environmental aspects of the life cycle of products (or different versions of the same product), unless the basis for the comparison is stated in the claim; and unless the Administrator, by regulation, allows for such a statement on the basis of a finding that such a statement would—

(i) assist consumers to make value comparisons with respect to environmental claims among products and packaging;

(G) does not state the absence of an environmental claim, unless the Administrator, by regulation, allows for such a statement on the basis of a finding that such a statement would—

(i) assist consumers to make value comparisons with respect to environmental claims among products and packaging;

(ii) not mislead consumers in light of another environmental characteristic of the product or packaging; and

(iii) disclose that the environmental claim is not an unusual characteristic of the product or packaging.

(4) In promulgating regulations with respect to the use of the term "has recycled content" as identified in subparagraph (E) of paragraph (1), the Administrator shall require that the claim clearly identify the percentage of materials used in the product or packaging that is generated after the distribution of such product or packaging.

(5) The Administrator shall, in promulgating regulations under subsection (a), and in revising or promulgating additional regulations, as authorized in paragraph (6), determine whether the regulations—

(A) reflect the best available use and the best available technology that will encourage high performance levels in products and packaging in meeting the objectives of reducing negative environmental impacts and improving environmental claims; and

(B) reflect the most recent scientific and practical knowledge of technological advances and improvements in manufacturing techniques and waste management.

(6)(A) The Administrator may, at any time after the date of promulgation of the regulations required under subsection (a), promulgate such additional regulations or revise such existing regulations as the Administrator determines to be necessary to carry out the purposes of this section. In promulgating additional regulations or revising existing regulations, the Administrator shall consult with the Federal Trade Commission, as is necessary and appropriate.

(B) The Administrator is authorized to initiate rulemaking to establish standards and criteria for new environmental claims in response to a petition by any person. Within ninety days after receipt of a petition, the Administrator shall—

- (i) deny the petition and notify the petitioner in writing of the reasons for such determination; or
- (ii) initiate a proposed rulemaking.

(C) *The Administrator shall publish in the Federal Register an annual summary of the actions taken under subparagraph (B). Such summary shall include a list of petitions received, the disposition thereof, the reasons for which any petition was denied, and the status of any rulemaking initiated under this section.*

(7) *Notwithstanding the prohibition under subsection (b), an environmental marketing claim of a type covered by such subsection may be made with respect to a product or packaging, or material that does not qualify under such paragraph for the claim, if—*

(A) *the claim is made at a retail outlet by use of a point-of-purchase display sign for the product, packaging, or material, and does not appear on the product, packaging, or material;*

(B) *the community in which the retail outlet is located has a program for the recycling, reuse, composting, or other activity with respect to which the claim is made; and*

(C) *the program is identified in the display sign.*

(d) *ENFORCEMENT BY THE FEDERAL TRADE COMMISSION.—Any violation of a provision of this section, or of any regulation promulgated by the Administrator under this section, shall constitute an unfair or deceptive act or practice in or affecting commerce in violation of section 5(a) of the Federal Trade Commission Act (15 U.S.C. 45(a)) and shall be subject to enforcement by the Federal Trade Commission under such Act. In enforcing this section, the Federal Trade Commission shall use the regulations promulgated under subsection (a) to determine what constitutes an unfair or deceptive act or practice in or affecting commerce.*

(e) *PUBLIC INFORMATION CAMPAIGN.—The Administrator shall conduct a public information and education campaign, including public service advertising, in order to enable consumers to—*

(1) *recognize environmental marketing claims regulated under this Act;*

(2) *be informed of the criteria used by the Administrator in establishing standards and definitions for environmental marketing claims, and*

(3) *better understand the effects that products and packages may have on the environment.*

(f) *STATUTORY CONSTRUCTION.—Nothing in this section shall—*

(1) *restrict any right which any person (or class of persons) may have under any other provision of law or under common law to seek enforcement of any regulation promulgated under subsection (c);*

(2) *be construed so as to alter the right under any other provision of law or under common law of any person (including any government) to commence an action against an advertiser related to the use of false or misleading environmental marketing claims;*

(3) *be construed so as to prohibit a State from establishing and enforcing a standard or requirement with respect to the use of an environmental marketing claim that is more stringent than a standard or requirement relating to an environmental marketing claim established or promulgated under this section; or*

(4) *be construed to repeal, invalidate or supersede any provision of Federal law relating to the use of environmental marketing claims.*

(g) *DEFINITIONS.—As used in this section:*

(1) *The term "environmental claim" means any symbol or term that is on a label, packaging, product, or collateral materials that are use in promotion or advertising to inform consumers about the environmental impact or environmental attributes of a product or packaging during any part of its life cycle.*

(2) *The term "label" means any written, printed, or graphic material affixed to or appearing on a product or packaging or appearing on a shelf or display area that refers to a product or packaging.*

(3) *The term "packaging" has the same meaning as given such term under section 6006(g)(6).*

(4) *The term "product" has the same meaning as given such term under section 6006(g)(7).*

FUNCTIONS

SAC. [5001.] 6011. The Secretary of Commerce shall encourage greater commercialization of proven resource recovery technology by providing—

(1) accurate specifications for recovered materials;

(2) stimulation of development of markets for recovered materials;

(3) promotion of proven technology; and

(4) a forum for the exchange of technical and economic data relating to resource recovery facilities.

DEVELOPMENT OF SPECIFICATIONS FOR SECONDARY MATERIALS

SAC. [5002.] 6012. The Secretary of Commerce, acting through the National Bureau of Standards, and in conjunction with national standards-setting organizations in resource recovery, shall, after public hearings, and not later than two years after September 1, 1979 publish guidelines for the development of specifications for the classification of materials recovered from waste which were destined for disposal. The specifications shall pertain to the physical and chemical properties and characteristics of such materials with regard to their use in replacing virgin materials in various industrial, commercial, and governmental uses. In establishing such guidelines the Secretary shall also, to the extent feasible, provide such information as may be necessary to assist Federal agencies with procurement of items containing recovered materials. The Secretary shall continue to cooperate with national standards-setting organizations, as may be necessary, to encourage the publication, promulgation and updating of standards for recovered materials and for the use of recovered materials in various industrial, commercial, and governmental uses.

DEVELOPMENT OF MARKETS FOR RECOVERED MATERIALS

SAC. [5003.] 6013. The Secretary of Commerce shall within two years after September 1, 1979 take such actions as may be necessary to—

- (1) identify the geographical location of existing or potential markets for recovered materials;
- (2) identify the economic and technical barriers to the use of recovered materials; and
- (3) encourage the development of new uses for recovered materials.

TECHNOLOGY PROMOTION

Sec. 5004.】 6014. The Secretary of Commerce is authorized to evaluate the commercial feasibility of resource recovery facilities and to publish the results of such evaluation, and to develop a data base for purposes of assisting persons in choosing such a system.

NONDISCRIMINATION REQUIREMENTS

Sec. 5005.】 6015. In establishing any policies which may affect the development of new markets for recovered materials and in making any determination concerning whether or not to impose monitoring or other controls on any marketing or transfer of recovered materials, the Secretary of Commerce may consider whether to establish the same or similar policies or impose the same or similar monitoring or other controls on virgin materials.

RECYCLING BUILDING CODE

Sec. 6016 (a) IN GENERAL. — The Administrator, in consultation with the Secretary of Housing and Urban Development, shall develop model construction guidelines that provide suitable space for the separation, collection, and temporary storage of material for recycling in new multi-family or multiunit building construction and major renovation of multifamily and multiunit buildings.

(b) GUIDELINES. — The model construction guidelines shall be consistent with the safety, health, and well-being of building occupants and shall provide for recycling as an integral component of the waste management systems of the building.

(c) ASSISTANCE OF ORGANIZATIONS. — To the maximum extent possible, the model construction guidelines shall be developed with the assistance of—

- (1) organizations involved in establishing national building construction standards; and
- (2) authorities of State governments or political subdivisions thereof that regulate building construction.

(d) REVIEW OF DRAFT GUIDELINES. — The Administrator shall make a draft of the model construction guidelines available for public review and comment. The Administrator shall make the final model construction guidelines available to the public not later than two years after the date of enactment of this section.

(e) OUTREACH. — (1) The Administrator shall conduct outreach activities to encourage the organizations and authorities described in paragraphs (1) and (2) of subsection (c) to adopt the final model construction guidelines.

(2) The Administrator shall conduct additional outreach activities to disseminate information regarding recycling building programs of States and political subdivisions of States (in existence at the time of the outreach activities) and the implementation of the final model construction guidelines.

the time of the outreach activities) and the implementation of the final model construction guidelines.

NATIONAL CENTERS FOR PLASTICS RECYCLING

Sec. 6017. (a) ESTABLISHMENT OF CENTERS. — The Administrator shall establish three National Plastics Recycling Research and Development Centers (hereafter in this section referred to as "Centers") at institutions of higher education.

(b) TOPICS OR RESEARCH. — The research activities conducted by the Centers shall include research concerning—

- (1) methods of promoting the increased recycling of plastic products and materials present in large quantities in the solid waste stream that are not currently recycled in significant quantities;
- (2) the development of improved methods for collecting, sorting, and reclaiming plastic; and
- (3) new commercial applications for recycled plastic products and methods of expanding commercial markets for recycled plastic products.

(c) GRANTS. — The Administrator shall make a grant to each Center. The amount of the grant shall be equal to 50 percent of the cost to the Center of carrying out the research activities described in subsection (b). The grant shall be made on the condition that the institution match the amount of the grant with funds provided from non-Federal sources (including funds provided by the State in which the Center is located, the institution of higher education associated with the Center, and the private sector).

(d) AUTHORIZATION OF APPROPRIATIONS. — There are authorized to be appropriated to the Environmental Protection Agency to carry out the purposes of this section, \$5,000,000 for each of the fiscal years 1993, 1994, 1995, and 1996.

AUTHORIZATION OF APPROPRIATIONS

SEC. 5006.】 6018. There are authorized to be appropriated to the Secretary of Commerce \$5,000,000 for each of fiscal years 1980, 1981, and 1982 and \$1,500,000 for each of the fiscal years 1985 through 1988 to carry out the purposes of this subtitle.

Subtitle H—Research, Development, Demonstration, and Information

SEC. 8001. * * *

【GRANTS FOR RESOURCE RECOVERY SYSTEMS AND IMPROVED SOLID WASTE DISPOSAL FACILITIES

【SEC. 8006. (a) AUTHORITY. — The Administrator is authorized to make grants pursuant to this section to any State, municipal, or interstate or intermunicipal agency for the demonstration of resource recovery systems or for the construction of new or improved solid waste disposal facilities.

(b) CONDITIONS. — (1) Any grant under this section for the demonstration of a resource recovery system may be made only if (A)

is consistent with any plans which meet the requirements of subtitle D of this Act; (B) is consistent with the guidelines recommended pursuant to section 1008 of this Act; (C) is designed to provide areawide resource recovery systems consistent with the purposes of this Act, as determined by the Administrator, pursuant to regulations promulgated under subsection (d) of this section; and (D) provides an equitable system for distributing the costs associated with construction, operation, and maintenance of any resource recovery system among the users of such system.

¶(2) The Federal share for any project to which paragraph (1) applies shall not be more than 75 percent.

¶(c) LIMITATIONS.—(1) A grant under this section for the construction of a new or improved solid waste disposal facility may be made only if—

¶(A) a State or interstate plan for solid waste disposal has been adopted which applies to the area involved, and the facility to be constructed (i) is consistent with such plan, (ii) is included in a comprehensive plan for the area involved which is satisfactory to the Administrator for the purposes of this Act, and (iii) is consistent with the guidelines recommended under section 1008, and

¶(B) the project advances the state of the art by applying new and improved techniques in reducing the environmental impact of solid waste disposal, in achieving recovery of energy or resources, or in recycling useful materials.

¶(2) The Federal share for any project to which paragraph (1) applies shall not be more than 50 percent in the case of a project serving an area which includes only one municipality, and not more than 75 percent in any other case.

¶(d) REGULATION.—(1) The Administrator shall promulgate regulations establishing a procedure for awarding grants under this section which—

¶(A) provides that projects will be carried out in communities of varying sizes, under such conditions as will assist in solving the community waste problems of urban-industrial centers, metropolitan regions, and rural areas, under representative geographic and environmental conditions; and

¶(B) provides deadlines for submission of, and action on, grant requests.

¶(2) In taking action on applications for grants under this section, consideration shall be given by the Administrator (A) to the public benefits to be derived by the construction and the propriety of Federal aid in making such grant; (B) to the extent applicable, to the economic and commercial viability of the project, (including contractual arrangements with the private sector to market any resources recovered); (C) to the potential of such project for general application to community solid waste disposal problems; and (D) to the use by the applicant of comprehensive regional or metropolitan area planning.

¶(e) ADDITIONAL LIMITATIONS.—A grant under this section—

¶(1) may be made only in the amount of the Federal share of (A) the estimated total design and construction costs, plus (B) in the case of a grant to which subsection (b)(1) applies, the first-year operation and maintenance costs;

¶(2) may not be provided for land acquisition or (except as otherwise provided in paragraph (1)(B) for operating or maintenance costs);

¶(3) may not be made until the applicant has made provision satisfactory to the Administrator for proper and efficient operation and maintenance of the project (subject to paragraph (1)(B)); and

¶(4) may be made subject to such conditions and requirements, in addition to those provided in this section, as the Administrator may require to properly carry out his functions pursuant to this Act.

For purposes of paragraph (1), the non-Federal share may be in any form, including, but not limited to, lands or interests therein needed for the project or personal property or services, the values of which shall be determined by the Administrator.

¶(f) SINGLE STATE.—(1) Not more than 15 percent of the total of funds authorized to be appropriated for any fiscal year to carry out this section shall be granted under this section for projects in any one State.

¶(2) The Administrator shall prescribe by regulation the manner

in which the subsection shall apply to a grant under this section

for a project in an area which includes all or part of more than one State.】

MUNICIPAL SOLID WASTE PROGRAMS

SEC. 8(N6. (a) MUNICIPAL SOLID WASTE RESEARCH, DEVELOPMENT, AND DEMONSTRATION.—(1) The Administrator may establish a comprehensive research, development, and demonstration program for the purpose of identifying and addressing, in the safest and most efficient manner, municipal solid waste generation and management problems at the local, regional, and national levels.

(2)(A) Under the program, the Administrator may conduct research in the municipal solid waste research areas described in subparagraph (B) and other research that the Administrator determines is necessary to achieve the purpose of the program.

(B) The research areas referred to in subparagraph (A) are—

(i) strategic planning for integrated waste management re-

search to develop methods to—

(D) characterize waste stream composition;

(II) assess the effectiveness of integrated waste manage-

ment; and

(III) compare the effectiveness of waste management al-

ternatives;

(ii) source reduction research to permit basic investigations into the characteristics of products, substitutes, and waste-minimizing processes, including the identification of environmentally preferable products and opportunities for reducing the quan-

titative of waste generated by all sectors of society;

(iii) recycling research, including research into—

(I) the effectiveness, costs, and impacts on the environment and human health, of recycling technologies and processes;

(II) institutional barriers to recycling;

NATIONAL WASTE REDUCTION, RECYCLING, AND
MANAGEMENT ACT

August 11, 1992.—Committed to the Committee of the Whole House on the State
of the Union and ordered to be printed

Mr. DINGELL, from the Committee on Energy and Commerce,
submitted the following

REPORT

together with

ADDITIONAL AND DISSENTING VIEWS

[To accompany H.R. 3865]

[Including cost estimate of the Congressional Budget Office]

The Committee on Energy and Commerce, to whom was referred
the bill (H.R. 3865) to amend the Solid Waste Disposal Act to au-
thorize appropriations for fiscal years 1993 through 1998, and for
other purposes, having considered the same, report favorably there-
on with an amendment and recommend that the bill as amended
do pass.

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The amendment is as follows:
 Strike out all after the enacting clause and insert in lieu thereof the following:

SECTION 1. SHORT TITLE AND TABLE OF CONTENTS.

(a) **Better Title.**—This Act may be cited as the "National Waste Reduction, Recycling, and Management Act".
 (b) **Table of Contents.**—The table of contents for this Act is as follows:

TABLE OF CONTENTS

Sec. 1. Short title and table of contents.
 Sec. 2. Amendments to Solid Waste Disposal Act.
 Sec. 3. Authorities.

TITLE I—STATE SOLID WASTE MANAGEMENT PLANNING

Sec. 101. Federal guidelines for plans.
 Sec. 102. Minimum requirements for State plans.
 Sec. 103. Submissions, approval, and implementation of State plans.
 Sec. 104. Waste inventory.
 Sec. 105. Energy use management and recovery.
 Sec. 106. Hazardous transportation and disposal of municipal solid waste.

TITLE II—FEDERAL SOLID WASTE MANAGEMENT REQUIREMENTS

Sec. 201. Authority and standard for regulations.
 Sec. 202. Solid waste storage requirements.
 Sec. 203. Waste management and recovery regulations.
 Sec. 204. Chemical regulations.
 Sec. 205. Solid waste management and recovery regulations.
 Sec. 206. Community information statement.
 Sec. 207. Limitations on construction and operation of certain landfills.
 Sec. 208. Health effects study.
 Sec. 209. Chemical waste generation facility.
 Sec. 210. Authority to deny permits to certain persons.

TITLE III—OTHER PROVISIONS

Sec. 301. Definitions.
 Sec. 302. Technical assistance.
 Sec. 303. Relation of State authority.
 Sec. 304. General provisions relating to administrative procedure.
 Sec. 305. Beneficial reuse of manufactured forestry materials.
 Sec. 306. Total quality management.
 Sec. 307. Technical assistance.

TITLE IV—RECYCLING AND RELATED PROVISIONS

Sec. 401. Creation and recovery requirements.
 Sec. 402. Large household appliances.
 Sec. 403. Environmental management systems.
 Sec. 404. Hazardous recycling units.
 Sec. 405. Recovery of scrap.
 Sec. 406. Recycling of scrap.

TITLE V—ENFORCEMENT

Sec. 501. Enforcement provisions.
 Sec. 502. AMENDMENTS TO SOLID WASTE DISPOSAL ACT.
 Except as otherwise specifically provided, whenever in this Act a section or other provision is amended or repealed, such amendment or repeal shall be considered to be made to that section or other provision of the Solid Waste Disposal Act (42 U.S.C. 6901 et seq.).

SEC. 1. AUTHORIZATION.

There are authorized to be appropriated to the Administrator such sums as may be necessary for each of fiscal years 1993 through 1998 for the purpose of carrying out the amendments made by this Act.

TITLE I—STATE SOLID WASTE MANAGEMENT PLANNING

SEC. 101. FEDERAL GUIDELINES FOR PLANS.

(a) **DEADLINE.**—(1) Section 4002(b) is amended—

(A) by striking out "eighteen months after the date of enactment of this section and after notice and hearing" and inserting in lieu thereof "6 months after the date of enactment of the National Waste Reduction, Recycling, and Management Act";
 (B) by striking out "promulgates regulations containing" and inserting in lieu thereof "publish"; and
 (C) by inserting after "section 4001" in the second sentence the following: "and the requirements of section 4003";
 (2) Section 4002(c) is amended by striking out "pronounced" and inserting in lieu thereof "published".

(b) **ADDITIONAL REQUIREMENTS.**—Section 4002 is further amended by adding at the end the following new subsection:

"(d) **ADDITIONAL REQUIREMENTS FOR STATE PLANS.**—(1) The guidelines published under subsection (b) shall include a standard methodology for States to measure (A) the amounts and types of waste (by weight, British thermal units, or volume, as appropriate) generated in or transported into a State, for purposes of carrying out the waste inventory under section 4003(a)(3); and (B) the waste management capacity, stated in terms of amounts and types of waste, of recycling and composting facilities, combustors, and landfills, for purposes of carrying out the capacity estimate under section 4003(a)(1). The guidelines shall include a list of categories and subcategories of the types of waste to be measured. Such list shall contain at least the following categories of waste: paper, glass, metals, plastics, rubber, yard waste, wood, asphalt pavement, and hazardous household waste. The Administrator shall add such other categories and subcategories of waste as he considers appropriate.

(2) The guidelines also shall include a standard methodology for measuring the cost of a waste management system over the lifetime of the system (hereinafter in this section referred to as "life-cycle cost"). In developing the methodology for measuring the life-cycle cost of a particular system of waste management, the Administrator shall take into account the following costs:
 "(A) Costs associated with the waste management system, including the following:
 "(i) Costs of collecting and hauling waste to the facility.
 "(ii) Direct capital costs.
 "(iii) Operation and maintenance costs.
 "(iv) Preconstruction costs, including permitting, siting, and regulatory compliance costs.
 "(v) Capital acquisition, amortization, and debt service costs.
 "(vi) Consulting costs.
 "(vii) Costs and potential liabilities of future environmental remediation associated with the waste management system.
 "(viii) Revenue (or other cost offsets) from material and energy sales.
 "(ix) Costs associated with emissions control and safe disposal.
 "(x) Land acquisition costs.
 "(xi) Costs of insurance.
 "(xii) Avoided or additional costs of managing the waste using an alternative waste management system.
 "(3) The guidelines also shall include a standard methodology for States to measure, through the use of statistical sampling and analysis, compliance with the source reduction, recycling, composting, and diversion provisions of State plans (as required pursuant to paragraphs (6), (7), (8), and (9) of section 4003(a)).
 "(4) In developing methodologies under this subsection, the Administrator shall consult with States that have carried out waste composition studies and inventories and take into account the work performed by such States."

SEC. 102. MINIMUM REQUIREMENTS FOR STATE PLANS.

(a) **REQUIREMENTS.**—Subsection (a) of section 4003 is amended to read as follows:

"(a) **MINIMUM REQUIREMENTS.**—In order to be approved under section 4007, each State plan shall comply with the following minimum requirements:
 "(1) **CAPACITY ESTIMATE AND PLANNING.**—(A) The plan shall—
 "(i) include an estimate of the current capacity of the State or each regional planning area to manage municipal solid waste, including an identification of each municipal solid waste management facility and a projection of its remaining useful life; and
 "(ii) include procedures by which the State shall develop, during the planning period, capacity adequate to manage the municipal solid waste identified pursuant to paragraph (3), taking into account the waste that, as a

significant, but CBO currently has no basis for estimating them. Furthermore, municipal waste facilities are generally becoming more expensive to operate as state and local governments continue to upgrade and improve existing waste facilities and create more stringent requirements for new facilities. Thus, to some extent, solid waste facilities are likely to become more costly to operate whether or not this bill is enacted.

8. Estimate comparison: In a June 16, 1992, letter to Congressman Norman Lent from the EPA Assistant Administrator for Solid Waste and Emergency Response, Don Clay, EPA estimated that H.R. 3865 would require a one-third increase in the resources needed for federal, state and local governments' solid and hazardous waste programs and would result in increased costs averaging \$120 million a year over the next 10 years. EPA emphasized that the heaviest burden would fall on state and local governments—approximately \$0.8 billion annually. H.R. 3865, as ordered reported by the Energy and Commerce Committee on July 2, 1992, differs substantially from the version of the bill that EPA evaluated on June 16, 1992.

9. Previous CBO estimate: None.

10. Estimate prepared by: C.G. Nuckles, Assistant Director for Budget Analysis.

INFLATIONARY IMPACT STATEMENT

Pursuant to clause 2(l)(4) of rule XI of the Rules of the House of Representatives, the Committee makes the following statement with regard to the inflationary impact of the reported bill:

The Committee is unaware of any inflationary impact on the economy that will result from the passage of H.R. 3865, as amended.

SECTION-BY-SECTION ANALYSIS

Section 1. Short title

The National Waste Reduction, Recycling, and Management Act.

Section 2. Amendments to the Solid Waste Disposal Act

Technical Amendments

Section 3. Authorization

Authorizes appropriations for the fiscal years 1993 through 1998 for the purposes of carrying out the provisions of this Act.

Title I—State Solid Waste Management Planning

Section 101. Federal guidelines for plans

This section makes additions to the guidelines EPA is required to issue under existing section 4002 of RCRA for the purpose of assisting states with development of solid waste management plans, including standard methodologies for measurement, and economic analysis of waste management options. New guidelines will be required to be published within 6 months after date of enactment.

Section 102. Minimum requirements for State plans

This section amends existing section 4003 of RCRA to expand the minimum required elements for state solid waste management plans. These new requirement include: solid waste management capacity estimates and planning; a waste inventory; source reduction, recycling and composting programs; diversion programs; public education and personal training; scrap tire management; provisions for the management of specific wastes, such as hazardous household waste and yard wastes; and procurement of recycled products.

Section 103. Submission, approval, and implementation of State plans

This section amends existing section 4007 of RCRA. The section requires each state to develop a solid waste management plan. The state solid waste management plan must be based on the solid waste inventory required by section 4011 and the guidelines and methodologies published by the Administrator pursuant to section 4002, and must address the minimum elements required by section 4003. The state must provide notice and opportunity for public comment on the plan, and submit the plan to EPA for approval within 30 months of the date of enactment. A certification of completeness by the governor must accompany each plan submitted to EPA for approval.

EPA is required to approve or disapprove a state solid waste management plan within 6 months after plan submission. EPA will approve a state plan if the state governor certifies that the plan is complete and if EPA finds the plan addresses the minimum required elements. If EPA disapproves a state plan, the state may revise and resubmit the plan. EPA must then take final action on all state solid waste management plans within 42 months after the date of enactment.

EPA is required to review each approved state solid waste management plan three years after approval to determine whether the plan is being fully implemented. If the Administrator determines that a state is not implementing its plan, the plan is deemed disapproved.

Section 104. Waste inventory

This section requires each state, within 18 months after the date of enactment, to identify the types and amounts of solid waste generated in the state, or transported into the state, during the "baseline year" (the calendar year preceding the year in which the inventory is required to be completed) and expected to be generated in the state, or transported into the state, during the planning period (ten years).

Section 105. Scrap tire management and recovery

This section requires each state to include in its solid waste management plan a scrap tire management program. This program must address the reduction of existing scrap tire piles, with a goal of eliminating the piles by January 1, 2005, and the current and future disposal and recycling, recovery and reuse of scrap tires. The plan must include, at a minimum: identification of existing

scrap tire piles; a prioritization scheme for eliminating existing scrap tire piles based on the need to protect human health and the environment; a prohibition of permanent disposal in landfills, tire monocells, tire monofills (unless no reasonably available recycling alternative exists and the tires are shredded); a sufficient number of tire collection sites; a prohibition of the operation of a collection site unless it is in compliance with regulations promulgated by EPA; a prohibition of storage of more than 3,000 tires for more than 60 days, with exceptions; and a prohibition of the commingling of new scrap tires with existing piles. The Administrator (or designated state or local authority) shall provide exemptions from the commingling prohibitions as he deems necessary for the implementation of state scrap tire management plans.

Section 106. Interstate transportation and disposal of municipal solid waste

This section prohibits owners of operators of MSW landfills and MSW incinerators from accepting municipal solid waste generated outside the state for disposal or incineration unless the owner or operator obtains authorization to receive the waste from the affected local government. Facilities which accepted out-of-state waste prior to November 26, 1992, and on that date met applicable state requirements, are exempted from the prohibition. The section allows the governor of a state, in any case in which a local government is considering authorizing a facility to receive municipal solid waste generated outside the state, to veto the local government's authorization if the acceptance of such out-of-state waste by the facility would preclude the use of solid waste management capacity needed for disposal of waste generated capacity in which the local government is located.

Facilities may not accept MSW generated in another state if the exporting state: (1) has not submitted a solid waste management plan to EPA for approval by 30 months after date of enactment; (2) does not have an approved solid waste management plan by 42 months after date of enactment; or (3) has had its plan disapproved by EPA.

Facilities need not obtain local government authorization to receive out-of-state MSW if the state in which the facility is located (the importing state): (1) has not submitted a solid waste management plan to EPA for approval by 30 months after date of enactment; (2) does not have an approved solid waste management plan by 42 months after date of enactment; or (3) has had its plan disapproved by EPA.

Any state which approved legislation on May 2, 1984, allowing for the designation of municipal solid waste may limit or control exports of waste generated within the state and designate a facility at which the waste may be stored, treated, processed, or disposed of. This authority applies only to "municipal solid waste" as defined in Section 301 of this legislation.

Title II—Federal Solid Waste Management Requirements

Section 201. General requirements for solid waste management regulations

This section establishes, after new section 4013 of RCRA, "Part II—Federal Solid Waste Management Requirements." New Section 4201 authorizes the EPA Administrator to promulgate regulations to implement Subtitle D, and provides a general grant of authority to the Administrator to regulate such additional categories of solid waste under Subtitle D as he deems necessary and appropriate (except for solid wastes generated by wet process phosphoric acid production, which are excluded from regulation under this subtitle).

The section requires that the regulations promulgated by the Administrator under Subtitle D shall provide for protection of human health and the environment and may take into consideration the circumstances presented by the category of solid waste.

Section 202. Solid waste storage requirements

This section requires the Administrator, within 24 months after the date of enactment, to promulgate regulations for the safe storage of materials that have been separated from municipal solid waste and are destined for recycling.

Section 203. Scrap tire management and recovery regulations

This section prohibits, effective 24 months after the date of enactment: disposal of whole scrap tires in landfills or monofills; operation of tire collection sites except in compliance with regulations promulgated by the Administrator; storage of more than 3,000 tires for more than 60 days, except if necessary for a specific recycling, recovery or reuse project; and commingling of new scrap tires with existing tire piles. Certain exemptions to the requirements and prohibitions are provided.

States may apply to EPA for financial assistance to enforce the requirements of this section and to implement the provisions of state plans required under new section 4012. EPA must publish guidelines for application for, and the equitable distribution of, this assistance.

The section also requires EPA and other appropriate federal agencies, within 30 months after enactment, to develop and implement a plan for abatement of scrap tire piles on federal lands. The Administrator is required to report to Congress no later than 5 years after the date of enactment on the implementation of this section.

Section 204. Composting regulations

This section requires the Administrator to establish, within 18 months of the date of enactment, product standards for compost made from source-separated organic materials and compost made from mixed municipal solid waste.

This section also requires the Administrator to establish, no later than 24 months from the date of enactment, regulations for source-separated organic waste composting facilities and mixed municipal solid waste composting facilities. These regulations must include

requirements for separation of materials not suitable for acceptance by composting facilities.

Section 205. Scrap processing during recycling

This section establishes a specific regulatory regime under Subtitle D for scrap processing during recycling, the preparation for use in making new products of scrap metals, paper, plastics, glass and textiles that have been diverted from solid waste. The section requires the Administrator, within 24 months after date of enactment, to promulgate regulations governing scrap processing during recycling and the management of residues generated by such processing.

The regulations will establish a three-tiered regulatory scheme. Owners and operators of facilities whose activities have the potential only for minimal impact on the environment must notify the Administrator of the scope of their activities. Those facilities whose activities the Administrator identifies as having more than a minimal impact on the environment will be regulated under a class permit and must comply, at a minimum, with storage and record-keeping requirements. Those facilities which the Administrator finds have the potential for a significant impact on the environment will be required to obtain a site-specific permit and meet specific requirements designed to minimize or eliminate the environmental threat pose by their activities.

The section also provides for an EPA study of the potential toxicity of residues generated by scrap processing during recycling.

Section 206. Permits

This section authorizes each state to establish a permit program or other system of prior approval, for the purposes of assuring compliance with the requirements of the state solid waste management plan and this Act, within 36 months of the date of enactment. If a state fails to promulgate an adequate permit program, EPA is required to establish, implement and enforce the permit program in the state.

Effective 60 months after the date of enactment, operation of the following facilities, except in accordance with a permit, is prohibited: municipal solid waste combustion units, landfills, ash monofills, source separated organic waste, and mixed MSW comporting facilities, materials recovery facilities, scrap tire collection sites and monofills, and facilities engaged in scrap processing during recycling.

As a condition of the permit, each municipal solid waste incinerator must demonstrate an ability to divert wastes unsuitable for acceptance by the facility, including glass, metals, and other wastes determined by the Administrator to be unsuitable for acceptance by the facility. The Administrator is specifically required to make such a determination with respect to yard wastes. In addition, each MSW incinerator unit must have an ash management plan prior to obtaining a permit.

The section establishes a permit term of ten years, a permit fee requirement, and provisions for permits by rule.

Section 207. Community information statement

This section requires, as part of the permitting process for any new off-site solid waste treatment or disposal facility (or expansion of such a facility for which a permit is required that occurs after enactment), the preparation of a community information statement by a qualified independent contractor. The independent contractor is to be selected jointly, after consultation with concerned citizens, by the permit applicant and the chief elected officials of the host community, within 30 days after the permit application is filed. If the selection is not made within that timeframe, the permitting authority selects the contractor.

The community information statement is to be made available for public review for a period of at least 60 days prior to a public hearing held by the permitting authority on the permit application, becomes part of the official record, and must be taken into account by the permitting authority in making any final decision regarding issuance of the permit.

The section requires a community impact statement to identify and describe several factors pertinent to the siting of the facility, including: economic and other impacts of the proposed facility on the community, including potential effects on employment, public safety, transportation systems, and recreational amenities; types of wastes expected to be received at the facility and human health impacts associated with such wastes and potential releases of such wastes, as well as options for mitigating any impacts on the community; demographic characteristics of the affected host community according to race, ethnic background, and income; the presence of any existing solid waste treatment or disposal facilities in the community; and the permit applicant's history of compliance with state and federal environmental regulations and laws.

Section 208. Limitation on construction and operation of certain landfills

This section prohibits, effective on the date of enactment, the construction of any new landfill within 3,500 feet of a fen (a fen is defined as a type of wet meadow fed by an alkaline water source).

Section 209. Health effects study

This section requires the Administrator to conduct an audit of the Fresh Kills Landfill, New York, to determine whether the landfill is in compliance with the open dumping prohibition of section 4005 of RCRA and with the revised landfill criteria promulgated pursuant to section 4010(c).

As part of the audit, the Administrator is required to collect groundwater, surface water, soil, and air emission samples at the landfill site, and test such samples for the presence of hazardous constituents or air pollutants that may present a threat to human health or the environment. The Administrator shall use the experience gained in conducting the audit to develop guidelines for "model audits," which the states may use, at their discretion, in conducting similar audits.

Section 210. Groundwater protection policy

This section establishes that, for purposes of Subtitle D, protection of human health and the environment includes ensuring that the quality of the nation's groundwater is protected for all beneficial uses, both for this generation and future generations.

Section 211. Notification for industrial waste facilities

This section requires, within 12 months of the date of enactment, owners and operators of certain industrial waste management facilities (landfills, surface impoundments, waste piles, other land application units, and incinerators) to submit a one-time notification to the appropriate regulatory agency of the state in which the facility is located. Each state must then aggregate the information collected, and submit to EPA an inventory of industrial waste facilities located within the state.

Information required by the notification includes: name and address of the facility owner/operator; location of the facility; volumes and general physical and chemical nature of the industrial waste managed or disposed of at the facility; and a description of the methods used to manage the waste.

Section 212. Authority to deny permits to certain persons

This section provides that EPA or a state (whichever is the permitting authority) is not precluded from refusing to issue a permit under this subtitle to any person, whenever the permitting authority finds, after notice and opportunity for public hearing, that such person has demonstrated a pattern or practice of prohibited conduct that could reasonably be expected to result in adverse environmental impact.

Title III—Other Provisions**Section 301. Definitions**

This section adds new definitions to Subtitle D.

Section 302. Technical assistance

This section requires the Administrator to provide to state and local governments technical assistance in solid waste management and resource recovery, including development and implementation of state solid waste management plans.

Section 303. Retention of State authority

This section provides generally that, with the exception of the uniform national labeling requirements found in various sections of the bill, nothing in this subtitle shall be construed to prohibit states from imposing more stringent requirements than those imposed by this subtitle.

Section 304. Administrative review of regulations

This section establishes new procedures governing the review of RCRA Subtitle D rules and regulations by the Office of Management and Budget.

The section requires EPA to establish a public docket containing all written comments and documentary information on the proposed rule received from any person, including a copy of the draft proposed rule sent to OMB for review, all documents accompanying the draft, and an explanation of any changes made in the proposed rule as a result of its review by OMB.

Section 305. Beneficial reuse of nonhazardous foundry materials

This section requires the Administrator to report to Congress not later than 36 months after the date of enactment on the results of a study on the beneficial reuse of nonhazardous foundry materials. The study shall identify the volume of nonhazardous foundry materials generated; current methods of disposal of such materials, and volume disposed of by each method; the volume of such materials used for various purposes; the volume of landfill capacity that could be saved annually through beneficial reuse of foundry sand; barriers to the beneficial reuse of such materials; and existing studies on the leaching characteristics of discarded nonhazardous foundry sand.

Section 306. Total quality management

This section requires the Administrator to evaluate, and report to Congress on, the manner in which principles of total quality management, were applied by the Agency in the regulation of underground storage tanks, and to establish a schedule for the performance of total quality management evaluations of such regulatory programs promulgated under Subtitle D as the Administrator deems necessary and appropriate.

Section 307. Technical amendments

Technical and conforming amendments.

Title IV—Recycling and Related Provisions**Section 401. Content and recovery requirements**

This section establishes content and recovery requirements for certain categories of packaging and paper.

Subsection (a) defines the terms used in this section. Subsection (b) establishes a multiple option strategy for reducing packaging waste. Effective July 1, 1996, packaging covered by this section must meet one of five requirements.

First, packagers may meet the requirements by using packaging material which is being recovered at an industry-wide rate of 25% for plastic bottles and jars, 40% for glass containers and steel cans, and 65% for aluminum cans.

The second option allows packagers to meet the same recovery rate on a company-specific basis. Under this option packagers themselves may recover and recycle their packaging or assign this responsibility to a designee.

Third, packagers may choose a packaging material which on a yearly average contains 25% post-consumer content.

Fourth, a packager may use packaging that is designed to be refilled or reused for its original purpose at least five times, when at

least 50% of all such packaging is in fact refilled or reused for its original purpose.

Finally, packagers may choose to reduce their packaging 15% by volume or by weight (20% if a different packaging material is substituted) from packaging used one year earlier. This option contemplates that reductions occur on a continual basis, whereby packaging must be reduced by the appropriate percentage as compared to the previous year. If further reductions are not made, the packager must then rely on one of the other options. Reductions in packaging achieved between January 1, 1988 and the effective date of these requirements are deemed to have occurred on the effective date of these requirements.

The Administrator is authorized to set higher recycling rates and content requirements to take effect after 2000. Exemptions from the requirements are: packages used for drugs, drug products, medical devices or biological products; packages that directly hold FIFRA-registered pesticides; and packages that directly hold any substance or material that in the Administrator's determination would cause the recycling of the packaging to present an undue risk to public health, safety or the environment. Paper packaging is subject to the recovery rate requirement for all paper (discussed below).

Subsection (c) establishes, effective in 1995, an industry-wide recovery rate requirement for paper of 40%. Between the date of enactment of this provision and 1995, the industry must report annually to EPA on its progress in meeting the recovery rate.

In the event the industry fails to meet the recovery rate requirement in 1995, subsection (d) requires the Administrator, not later than December 31, 1997, to promulgate regulations imposing additional measures to be implemented by the industry to assure attainment of the recovery rate requirement. These additional requirements would be effective December 31, 1998. If the Administrator fails to promulgate regulations, each paper manufacturer is required to recover the percentage of the shortfall which represents its share of virgin fiber utilization.

The Administrator is required to set a further requirement for paper recovery to be met in 2000. Additionally, the Administrator may set recovery rate requirements for other materials and shall establish minimum content standards if these recovery requirements are not met.

The subsection also establishes record-keeping and reporting requirements to measure compliance, and provides that monies collected through assessment of fines and penalties for violations of the packaging and minimum content requirements are to be used to fund technical assistance for state and local government solid waste management plan activities.

Section 402. Large household appliances

This section requires the EPA Administrator to issue guidelines within 18 months after date of enactment, to assist local authorities in the development of programs for the environmentally sound collection, recycling and disposal of large household appliances. Adoption of the EPA guidelines is discretionary with the states, and packages have on the environment.

and the guidelines do not preempt existing state programs in this area.

Section 403. Environmental marketing claims

This section establishes the terms and conditions under which manufacturers and other advertisers may make environmental claims concerning products for the purpose of marketing such products.

Subsection (a) requires the Administrator to promulgate, within 24 months of the date of enactment, regulations containing standards and criteria for environmental marketing claims. Subsection (b) prohibits any person, after the effective date of such regulations, from making an environmental marketing claim except in accordance with such regulations. Subsection (c) provides that any environmental marketing claim made in violation of the regulations promulgated by the Administrator shall be subject to enforcement by the Federal Trade Commission as an unfair and deceptive trade practice.

Subsection (d) sets out specific requirements for regulations, including standards and criteria for substantiating specific claims on the environmental attributes of a product or package. Subsection (d)(3)(B) requires that the EPA criteria and standards for environmental claims be sufficient to address claims that may be misleading or environmentally detrimental. Subsection (d)(6) allows the Administrator to take into consideration the diversity in product and packaging categories in setting appropriate standards and criteria under this section.

Subsection (e) enumerates requirements relating to specific environmental claims. Specifically, subsection (e)(1) sets forth criteria and standards for the use of claims relating to the recycled content of products and packages. In addition to requiring that all such claims specify the actual level or recycled content, the provision draws an important distinction between "post-consumer" and "pre-consumer" sources of recycled materials.

Subsection (e)(2) sets our requirements for the use of environmental marketing claims relating to the recyclable nature of a product or package. Subsection (e)(4) sets our requirements for the use of environmental marketing claims relating to the compostable, photodegradable, biodegradable, degradable or decomposable nature of a product, package, or material. Subsection (e)(5) describes the conditions under which an environmental marketing claims may be made for products or packages that do not meet the numerical standards established elsewhere in the subsection.

Subsection (f) empowers the Administrator to promulgate additional regulations in order to carry out the purposes of this section.

Subsection (g) describes limitations on the use of environmental certifications and seals of approval.

Subsection (h) directs the Administrator to conduct a public information and education campaign on environmental claims, the standards upon which they are based, and the effect that products and packages have on the environment.

Subsection (i) describes the relationship of state standards and requirements to the new federal environmental marketing claims regulations.

Subsection (j) sets out savings provisions concerning existing federal law relating to labeling and advertising. Specifically, subsection (j)(2) clarifies that, while subsection (e) does provide some requirements that must be met for a claim to qualify as "clear and conspicuous," the intention is not to override the substantial experience and expertise of the FTC in assessing the need for additional requirements to ensure the adequacy of the required disclosures. This provision make clear that the FTC has authority to go beyond the statutory requirements as needed and as authorized under the FTC Act.

Section 404. Plastics recycling codes

This section requires the Administrator, within 12 months after date of enactment, to promulgate regulations requiring manufacturers of plastic containers to use codes identifying the principal plastic resin of which the containers are composed. The manufacturers' codes are required to consist of symbols and numbers specified in the section. The section authorizes the Administrator by rule to revise the codes, and establishes a procedure for persons to petition the Administrator to revise the codes.

The section further requires the Administrator, within 18 months after date of enactment, to promulgate regulations requiring manufacturers of plastic products to identify the principal plastic resins used in the manufacture of their products. States are prohibited from requiring different codes.

Section 405. Batteries

This section adds a new Part IV to Subtitle D. Effective 6 months after enactment, the incineration, landfilling, and composting of lead-acid, mercuric oxide and rechargeable dry cell batteries, except as provided for in this section, are prohibited. Exemptions from this prohibition are provided for inadvertent acceptance of these batteries by facility operators under certain conditions.

Section 405 establishes general recycling requirements for lead-acid batteries, as well as recycling requirements for retailers, wholesalers, auto dismantlers, community collection programs, and battery manufacturers. The section also contains collection requirements for retailers, wholesalers, and manufacturers. Within 6 months after enactment, retailers must display written notices alerting the public to the federal lead-acid battery recycling requirements and disposal prohibitions.

Section 405 also establishes labeling requirements for lead-acid and dry cell batteries. 18 months after enactment (for manufacturers) and 24 months after enactment (for any other person), the sale of such a battery not labeled in accordance with this section is prohibited. 18 months after enactment, states and their political subdivisions are prohibited from adopting or enforcing labeling requirements that are not identical to those described in this section. However, nothing prohibits a state or its political subdivisions from adopting or enforcing other requirements in addition to, but not in-

consistent with, the requirements of this section, if compliance with these state or local requirements would not result in a violation of this section. For all batteries covered under this section, such additional requirements may include deposits made at the time of purchase of new batteries. In the case of lead-acid batteries only, such requirements may also include additional lube(s).

Effective January 1, 1994, the sale of alkaline-manganese, zinc-carbon, and mercuric-oxide batteries with a mercury content in excess of that provided in the section is prohibited. For certain consumer mercuric-oxide batteries used in hearing aids, the prohibition date is January 1, 1996.

Beginning 36 months after enactment, no person may manufacture, sell, or offer for sale any mercuric-oxide or rechargeable battery, or consumer product containing nonremovable batteries, unless that person has implemented a battery management plan that has been approved by EPA. Further, the section establishes minimum requirements for battery management plans, provides a mechanism for administrative review and approval of such plans, and establishes a Battery Management Plan Advisory Committee to advise EPA concerning the development of battery management plans. Within 18 months after enactment, EPA must issue regulations governing the labeling and coding of dry cell batteries.

Not later than 18 months after date of enactment, EPA is required to submit to Congress the results of a study on the disposal of alkaline-manganese, carbon-zinc, nickel-metal hydride, and silver oxide dry-cell batteries, and to publish either a proposed rule to regulate the collection, transportation, storage and recycling of such batteries or a determination that such regulations are not needed.

After July 1, 1993, rechargeable consumer products must be manufactured in a way that allows the battery to be easily removed. Further, after this date, retailers must post clearly visible written notices regarding the recycling of rechargeable dry cell batteries, battery packs, and consumer products containing such batteries.

Section 406. Recycling of newsprint

This section establishes recycled content requirements for newsprint used in publishing covered newspapers (a covered newspaper is defined as a newspaper with an average daily circulation of 200,000 or more).

The section requires that, effective January 1, 1995, at least 35% of the total amount of newsprint used annually in publishing a covered newspaper shall consist of recycled content. Effective January 2002, the recycled content percentage requirement increases to 50%.

The section establishes reporting requirements and enforcement and penalty provisions. The section requires the owner of any covered newspaper which fails to comply with the recycled content requirement during a calendar year to print a notice, prominently at the top of the front page of the newspaper, that the newspaper does not contain the federally required percentage of recycled content. This notice must be displayed until the publisher can demonstrate compliance with the recycled content requirement. In addi-

tion, the publisher must pay a \$25 per ton penalty for each ton of newsprint that does not meet the content standard.

Penalties will be placed into a newsprint recycling fund, administered by EPA, for allocation to the principal communities served by the non-complying newspaper. These monies will be used to support the communities' recycling efforts.

Title V—Enforcement

Section 501. Enforcement

In general, this section gives EPA inspection and enforcement authority over solid waste management facilities subject to federal requirements, and requires EPA to give 60 days' notice to states with approved state plans before taking certain enforcement actions. It authorizes civil penalties of up to \$25,000 a day for violations of compliance orders and requirements applicable to landfills and scrap processing during recycling, and \$5,000 per day for other violations. Criminal sanctions are also provided.

AGENCY VIEWS

By letter dated January 23, 1992, the Subcommittee on Transportation and Hazardous Materials requested the comments of the Environmental Protection Agency on H.R. 3865. The Subcommittee did not receive a response to this request.

CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3 of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

SOLID WASTE DISPOSAL ACT

SHORT TITLE AND TABLE OF CONTENTS

Sec. 1001. This title (hereinafter in this title referred to as "this Act"), together with the following table of contents, may be cited as the "Solid Waste Disposal Act":

Subtitle A—General Provisions

Subtitle D—State or Regional Solid Waste Plans

Subtitle D—Solid Waste Management

PART I—STATE SOLID WASTE PLANS

PART II—FEDERAL SOLID WASTE MANAGEMENT

PART III—Other Provisions

PART IV—Recycling and Related Provisions

PART V—BATTERIES

PART VI—Enforcement Provisions

PART II—FEDERAL SOLID WASTE MANAGEMENT REQUIREMENTS

- Sec. 4201. Authority and standard for regulations.
- Sec. 4202. Solid waste storage.
- Sec. 4203. Scrap tire management and recovery regulations.
- Sec. 4204. Composite regulations.
- Sec. 4205. Scrap processing during recycling.
- Sec. 4206. Permits.
- Sec. 4207. Community information statement.
- Sec. 4208. Ground water protection policy.
- Sec. 4209. Notification for industrial waste facilities.
- Sec. 4210. Authority to deny permits to certain persons.

PART III—Other Provisions

- Sec. 4301. Definitions.
- Sec. 4302. Technical assistance.
- Sec. 4303. Retention of State authority.
- Sec. 4304. General provisions relating to administrative proceedings.
- Sec. 4305. Beneficial reuse of nonhazardous foundry materials.
- Sec. 4306. Total quality management.

PART IV—Recycling and Related Provisions

- Sec. 4401. Content and recovery requirements.
- Sec. 4402. Large household appliances.
- Sec. 4403. Environmental marketing claims.
- Sec. 4404. Plastics recycling codes.
- Sec. 4405. Recycling of newsprint.

PART V—BATTERIES

- Sec. 4501. Definitions.
- Sec. 4502. Battery disposal and recycling.
- Sec. 4503. Recycling requirements for lead-acid batteries.
- Sec. 4504. Collection requirements.
- Sec. 4505. Notice in retail sales establishments.
- Sec. 4506. Lead-acid battery labels.
- Sec. 4507. State and local laws regarding batteries.
- Sec. 4508. Limitations on the sale of certain dry cell batteries containing mercury.
- Sec. 4509. Dry cell battery collection and recycling.
- Sec. 4510. Rechargeable consumer products.
- Sec. 4511. Notice in retail sales establishments.
- Sec. 4512. Relationship to subtitle C.

PART VI—Enforcement Provisions

- Sec. 4601. Inspections.
- Sec. 4602. Enforcement.
- Sec. 4603. Monitoring, analysis, and testing.

Subtitle D—State or Regional Solid Waste Plans

Subtitle D—Solid Waste Management

PART I—STATE SOLID WASTE MANAGEMENT

PART II—FEDERAL GUIDELINES FOR PLANS

- Sec. 4002. (a) • • •
- (b) Guidelines for State Plans.—Not later than [Eighteen months after the date of enactment of this section and after notice
- Sec. 4007. Approval of State plan; Federal assistance.]
- Sec. 4007. Submission, approval, and implementation of State plan.
- Sec. 4011. Waste inventory.
- Sec. 4012. Scrap tire management and recovery.
- Sec. 4013. Interstate transportation and disposal of municipal solid waste.

and hearing] 6 months after the date of enactment of the National Waste Reduction, Recycling, and Management Act, the Administrator shall, after consultation with appropriate Federal, State, and local authorities, [promulgate regulations containing] publish guidelines to assist in the development and implementation of State solid waste management plans (hereinafter in this title referred to as "State plans"). The guidelines shall contain methods for achieving the objectives specified in section 4001 and the requirements of section 4002. Such guidelines shall be reviewed from time to time, but not less frequently than every three years, and revised as may be appropriate.

(c) CONSIDERATIONS FOR STATE PLAN Guidelines.—The guidelines [promulgated] published under subsection (b) shall consider—

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(d) ADDITIONAL REQUIREMENTS FOR STATE PLAN GUIDELINES.—(1) The guidelines published under subsection (b) shall include a standard methodology for States to measure (A) the amounts and types of waste (by weight, British thermal units, or volume, as appropriate) generated in or transported into a State, for purposes of carrying out the waste inventory under section 4003(a); and (B) the waste management capacity, stated in terms of amounts and types of waste, of recycling and composting facilities, combustors, and landfills, for purposes of carrying out the capacity estimate under section 4003(a). The guidelines shall include a list of categories and sub-categories of the types of waste to be measured. Such list shall contain at least the following categories of waste: paper, glass, metals, plastics, rubber, yard waste, wood, asphalt pavement, and hazardous household waste. The Administrator shall add such other categories and subcategories of waste as he considers appropriate.

(2) The guidelines also shall include a standard methodology for measuring the cost of a waste management system over the lifetime of the system (hereinafter in this section referred to as "life-cycle cost"). In developing the methodology for measuring the life-cycle cost of a particular system of waste management, the Administrator shall take into account the following costs:

(A) Costs associated with the waste management system, including the following:

(i) Costs of collecting and hauling waste to the facility.

(ii) Direct capital costs.

(iii) Operation and maintenance costs.

(iv) Preconstruction costs, including permitting, siting, and regulatory compliance costs.

(v) Capital acquisition, amortization, and debt service costs.

(vi) Consulting costs.

(vii) Costs and potential liabilities of future environmental remediation associated with the waste management system.

(viii) Revenues (or other cost offsets) from material and energy sales.

(ix) Costs associated with emissions control and ash disposal.

(x) Land acquisition costs.

(xi) Costs of insurance.

(B) A voided or additional costs of managing the waste using an alternative waste management system.

(3) The guidelines also shall include a standard methodology for States to measure, through the use of statistical sampling and analysis, compliance with the source reduction, recycling, composting, and diversion provisions of State plans (as required pursuant to paragraphs (6), (7), (8), and (9) of section 4003(a)).

(4) In developing methodologies under this subsection, the Administrator shall consult with States that have carried out waste composition studies and inventories and take into account the work performed by such States.

MINIMUM REQUIREMENTS FOR APPROVAL OF PLANS

Sec. 4003. (a) MINIMUM REQUIREMENTS.—In order to be approved under section 4007, each State plan must comply with the following minimum requirements—

(1) The plan shall identify (in accordance with section 4006(b)) (A) the responsibilities of State, local, and regional authorities in the implementation of the State plan, (B) the distribution of Federal funds to the authorities responsible for development and implementation of the State plan, and (C) the means for coordinating regional planning and implementation under the State plan.

(2) The plan shall, in accordance with sections 4004(b) and 4005(a), prohibit the establishment of new open dumps within the State, and contain requirements that all solid waste (including solid waste originating in other States, but not including hazardous waste) shall be (A) utilized for resource recovery or (B) disposed of in sanitary landfills (within the meaning of section 4004(a)) or otherwise disposed of in an environmentally sound manner.

(3) The plan shall provide for the closing or upgrading of all existing open dumps within the State pursuant to the requirements of section 4005.

(4) The plan shall provide for the establishment of such State regulatory powers as may be necessary to implement the plan.

(5) The plan shall provide that no State or local government within the State shall be prohibited under State or local law from negotiating and entering into long-term contracts for the supply of solid waste to resource recovery facilities, from entering into long-term contracts for the operation of such facilities, or from securing long-term markets for material and energy recovered from such facilities or for conserving materials or energy by reducing the volume of waste.

(6) The plan shall provide for such resource conservation or recovery and for the disposal of solid waste in sanitary landfills or any combination of practices so as may be necessary to use or dispose of such waste in a manner that is environmentally sound.]

(a) **MINIMUM REQUIREMENTS.**—In order to be approved under section 4007, each State plan shall comply with the following minimum requirements:

(1) **CAPACITY ESTIMATE AND PLANNING.**—(A) The plan shall—

- (i) include an estimate of the current capacity of the State or each regional planning area to manage municipal solid waste, including an identification of each municipal solid waste management facility and a projection of its remaining useful life; and
- (ii) include procedures by which the State shall develop, during the planning period, capacity adequate to manage the municipal solid waste identified pursuant to paragraph (3), taking into account the waste that, as a result of source reduction, recycling, and composting, will not require treatment or disposal.

(B) The procedures to develop capacity shall include the following:

- (i) The identification of additional facilities, or expansion of existing facilities, needed for the transportation, separation, and processing of recyclable materials, including materials recovery facilities.
- (ii) The identification of additional facilities, or expansion of existing facilities, needed for the storage, composting, treatment, transfer, transloading, and disposal of municipal solid waste.
- (iii) Provisions to facilitate the siting of facilities that will be used for the transportation, separation, and processing of recyclable materials, including materials recovery facilities, and that will be operated in a manner that is protective of human health and the environment.
- (iv) Provisions to facilitate the siting of facilities that will be used for the treatment, storage, transfer, transloading, and disposal of municipal solid waste and that will be operated in a manner that is protective of human health and the environment.

(C) The plan shall require that the capacity estimate be updated not less often than biennially.

(2) **PLANNING PERIOD.**—The plan shall establish an overall solid waste management strategy for the State that covers the 10-year period that begins on the date which is 30 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act.

(3) **WASTE INVENTORY.**—The plan shall be based on the waste inventory carried out by the State pursuant to section 4011 and shall include a description of the methodology by which the State carried out such waste inventory.

(4) **DUMP PROHIBITION.**—The plan shall, in accordance with sections 4004(b) and 4005(a), prohibit the establishment of new open dumps within the State, and provide for the closing or upgrading of all existing open dumps within the State pursuant to the requirements of section 4005. Any existing open dump shall be closed in compliance with the closure and postclosure regulations promulgated for sanitary landfills under the revised criteria under section 4004(a) (as required by section 4010(c)).

(5) **CONTRACTS.**—The plan shall provide that no State or local government within the State shall be prohibited under State or local law from negotiating and entering into long-term contracts for the resupply of solid waste to resource recovery facilities, from entering into long-term contracts for the operation of such facilities, or from securing long-term markets for material and energy recovered from such facilities or for conserving materials or energy by reducing the volume of waste.

(6) **SOURCE REDUCTION.**—The plan shall provide for source reduction to be an integral part of the solid waste management planning and decisionmaking process in the State. The plan shall establish goals for the amount of municipal solid waste to be reduced annually in the State. The State shall use the amounts and types of solid waste generated in the State during the baseline year identified for purposes of the waste inventory required pursuant to section 4011 as a baseline against which to measure the source reduction goals established in the plan.

(7) **RECYCLING.**—The plan shall provide for recycling to be an integral part of the solid waste management planning and decisionmaking process in the State, with source separation of recyclable materials as the preferred method of recycling. In developing the recycling provisions of the plan, the State shall—

(A) estimate the amount of each type of municipal solid waste being recycled in the State (expressed as a percentage of the total amount of that type of waste generated in the State, based on the waste inventory required pursuant to section 4011) during the baseline year;

(B) conduct life-cycle cost analyses of the various options for managing waste, including recycling, composting, disposal in landfills, and disposal in combustors, using the guidelines published under section 4002(d)(2); and

(C) based on the waste inventory carried out pursuant to section 4011 and the results of the analyses conducted pursuant to subparagraphs (A) and (B), develop recycling programs for the State, identify materials to be recycled under such programs, set goals for the rates at which such materials shall be recycled, and set deadlines by which such goals shall be met.

(8) **COMPOSTING.**—The plan shall provide for composting to be an integral part of the solid waste management planning and decisionmaking process in the State. In developing the composting provisions of the plan, the State shall give preference to composting of organic waste separated at the source of generation.

(9) **DIVERSION.**—For purposes of assisting in meeting the recycling provisions of the plan, the plan shall require the State, regional, and local authorities identified in the plan pursuant to paragraph (16) to carry out a program to annually divert away from disposal by combustion or landfilling, and from composting in mixed municipal solid waste composting facilities, those recyclable or reusable materials that otherwise would be destined for disposal or composting by those methods. The amount of the materials to be diverted shall be based on the waste inventory required pursuant to section 4011 and life-cycle cost

analyses conducted in developing the recycling provisions of the plan.

(10) TIRES.—The plan shall comply with the minimum scrap tire requirements contained in section 4012.

(11) PERSONNEL TRAINING.—The plan shall include requirements for the training of personnel collecting solid waste and personnel working at solid waste storage, recycling, treatment, and disposal facilities. In developing such requirements, the State shall take into account solid waste operator training programs developed and implemented by the American Society of Mechanical Engineers and other appropriate existing training programs.

(12) PUBLIC EDUCATION.—The plan shall include requirements for the State, acting through local school boards, public colleges and universities (including land grant universities), the State cooperative extension service, and other appropriate agencies, to develop public educational programs about solid waste management options, with an emphasis on source reduction and recycling.

(13) SPECIFIC WASTES.—The plan shall provide for, in a manner determined appropriate by the State and that protects human health and the environment, the management of hazardous household waste, yard waste, asphalt pavement, and large household appliances (including, for large household appliances, consideration of the guidelines issued under section 4402). In providing for such management in the plan, the State shall incorporate any other requirements of this subtitle for such wastes and shall consider requirements or programs for separate handling, special collection, prohibitions on disposal in landfills or combustors, recycling, composting, and special treatment facilities. The plan shall specifically provide for the management of such materials collected for recycling but which have remained in storage longer than allowed under the regulations promulgated under section 4203 (due to market fluctuations or other reasons).

(14) MARKETS.—The plan shall identify existing State and regional markets for recovered materials and actions that the State will take to promote the development of recycling markets and the training of State, regional, and local officials, in the marketing of recovered materials.

(15) PROCUREMENT.—The plan shall include a policy requiring the State to procure reusable products, products that result in a decrease in the generation of waste, and products made with recovered materials whenever such products are available at a reasonable price. To the maximum extent practicable, the plan shall assure that political subdivisions of the State comply with the State procurement policies.

(16) COORDINATION.—The plan shall identify (in accordance with section 4006(b)) (A) the responsibilities of State, local, and regional authorities in the implementation of the State plan, (B) the distribution of Federal funds authorized by this Act to the State authorities responsible for development and implementation of the State plan, and (C) the means for coordinating regional planning and implementation under the State plan.

Any State agency that develops the plan must consult and coordinate with local and regional authorities in the development of the plan and any revisions of the plan.

(17) REVISIONS.—The plan shall provide for revision of the plan, after notice and opportunity for public comment, and submission of the revised plan to the Administrator for approval, whenever guidelines under section 4002 or this section are revised, or whenever the State determines it is appropriate because of significant changes in the waste inventory or waste capacity needs of the State. Any revision made because of revisions in the guidelines shall be submitted to the Administrator for approval.

(18) CERTIFICATION OF LEGAL AUTHORITY.—The plan shall include a statement that the laws of the State provide such legal authority as may be necessary to implement and enforce the requirements of the State plan.

(19) MUNICIPAL SOLID WASTE MANAGEMENT COSTS.—The plan shall provide, in a manner determined appropriate by the State in consultation with local governments, for local governments to provide customers of municipal solid waste management services separate statements of account for such services or provide such customers separate disclosure of the costs of such services. Such statements or disclosure shall be based on the weight or volume of waste generated within the jurisdiction of the local government, or some other appropriate measure of waste generation if the local government determines that measurement by weight or volume is not practicable.

(20) REPORT.—The plan shall provide for a report to the Administrator by the State every 3 years on progress in implementing the plan and in achieving the goals and requirements established under the plan. Each report shall contain a comparison of projections made in the plan with actual performance by the State during the 3-year period covered by the report, including projections and performance relating to recycling, composting, source reduction, and development of municipal solid waste management capacity. Such reports shall be available to the public. The first report under this paragraph shall be submitted not later than 3 years after the plan is approved.

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CRITERIA FOR SANITARY LANDFILLS; SANITARY LANDFILLS REQUIRED FOR ALL DISPOSAL

SEC. 4004. (a) * * *

(b) DISPOSAL REQUIRED TO BE IN SANITARY LANDFILLS, ETC.—For purposes of complying with section [4003(2)] 4003(a)(4) each State plan shall prohibit the establishment of open dumps and contain a requirement that disposal of all solid waste within the State shall be in compliance with such section [4003(2)] 4003(a)(4).

* * * * *

[(c) EXISTING ACTIVITIES.—Nothing in this subtitle shall be construed to prevent or affect any activities respecting solid waste planning or management which are carried out by State, regional, or local authorities unless such activities are inconsistent with a State plan approved by the Administrator under this subtitle.]

SEC. 4007. SUBMISSION, APPROVAL, AND IMPLEMENTATION OF STATE PLAN.

(a) **PLAN SUBMISSION.**—*Each State, in coordination with regional and local authorities, shall develop a solid waste management plan that complies with the requirements of section 4003 and shall submit such plan to the Administrator not later than 30 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act. In developing such plan, each State shall provide notice and opportunity for public comment, including public hearings in both urban and rural areas of the State.*

(b) **PLAN APPROVAL OR DISAPPROVAL.**—(1) Subject to paragraph (5), not later than 6 months after a State plan has been submitted to the Administrator pursuant to subsection (a), the Administrator shall approve or disapprove the plan.

(2) The Administrator shall approve a State plan if—

(A) the Governor submits a certification of completeness pursuant to subsection (c); and

(B) the Administrator finds that each requirement of section 4003(a) is addressed in the plan and that the plan was developed in accordance with the guidelines published under section 4002, including the methodologies contained in such guidelines.

(3) The Administrator shall disapprove a State plan if—

(A) the Governor does not submit the certification of completeness pursuant to subsection (c); or

(B) the Administrator finds that the plan does not address each requirement of section 4003(a) or was not developed in accordance with the guidelines published under section 4002, including the methodologies contained in such guidelines.

(4) If the Administrator disapproves a State plan, the Administrator shall notify the State in writing of the disapproval. Such notification shall include an explanation of the reasons for the disapproval.

(c) **CERTIFICATION OF COMPLETENESS BY GOVERNOR.**—In order for a State plan to be approved under subsection (b), the Governor of the State must submit to the Administrator a certification of completeness. Such certification shall consist of a statement by the Governor that, to the best of the Governor's knowledge and belief—

(1) each of the requirements contained in section 4003(a) are addressed in the State plan in a complete manner; and

(2) the plan was developed in accordance with the guidelines published under section 4002, including the methodologies contained in such guidelines.

(d) **STATE REVISION OF DISAPPROVED PLAN.**—In any case in which the Administrator disapproves a State plan under subsection (b), the State shall make revisions to the plan to correct the deficiencies in the plan and shall resubmit the plan to the Administrator not later than 90 days after the Administrator disapproves the State plan. A revised plan shall be subject to the approval and disapproval pro-

cedures of subsection (b) in the same manner as the original submission of the plan.

(e) **FINAL EPA ACTION ON STATE PLANS.**—The Administrator shall respond (by approving or disapproving) to all revised State plans submitted pursuant to subsection (d) not later than 42 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act.

(f) **CONDITIONAL APPROVAL.**—The Administrator is not required to disapprove a plan or a revised plan based on a failure of a State to make the certification under section 4003(a)(18) if the plan contains a commitment of the State to adopt specific measures to provide the legal authority referred to in such section by a date certain not later than 36 months after the date of enactment of the National Waste Reduction, Recycling, and Management Act. Any such conditional approval shall be treated as disapproval if the State fails to comply with such commitment.

(g) **REVIEW.**—The Administrator shall review each approved plan 3 years after the plan was approved to determine if the plan is being fully implemented. If the Administrator determines a State is not implementing the plan, the plan is deemed to be disapproved as of the date of the Administrator's determination, and the Administrator shall notify the State in writing of such disapproval.

SEC. 4011. WASTE INVENTORY.

(a) WASTE INVENTORY.—*Each State, not later than 18 months after the date of enactment of the National Waste Reduction, Recycling, and Management Act, shall identify the amounts and types of solid waste (other than hazardous waste identified or listed under subtitle C) that are reasonably expected to be generated in the State or transported into the State during the planning period described in section 4003(a)(2) and during the baseline year. Such identification shall include information on the sources of such wastes, characteristics of such wastes, current waste management practices, and the amount and destinations of waste exported from the State. The State shall conduct the inventory in accordance with the methodologies contained in the guidelines published under section 4002(d)(1). The inventory shall cover, at a minimum, the categories and subcategories of waste listed in such guidelines. The State shall update the waste inventory not less often than biennially.*

(b) BASELINE YEAR.—*For purposes of this part, the baseline year is the calendar year preceding the year in which the deadline occurs for completion of the requirements of this section or a different calendar year established by the Administrator if the Administrator determines a different year is more appropriate. In determining whether a different calendar year is more appropriate, the Administrator shall consult with States that have carried out waste composition studies and inventories.*

SEC. 4012. SCRAP TIRE MANAGEMENT AND RECOVERY.

(a) MINIMUM SCRAP TIRE REQUIREMENTS.—*For purposes of section 4003(a)(10), the minimum scrap tire requirements each State plan shall comply with are the following:*

(1) **REDUCTION AND ELIMINATION OF EXISTING SCRAP TIRE RULES.**—The plan must address the reduction and elimination of existing scrap tire piles that contain more than 3,000 scrap tires and must meet the following minimum requirements:

(A) Except to the extent that a State has already identified the location, size, and characteristics of existing significant scrap tire piles, it shall provide for identifying the location, size, and characteristics of existing scrap tire piles containing at least 3,000 scrap tires, estimate present and future capacity of each site and the number of tires at each site on the date which is 12 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, and describe any health or environmental hazards existing at each site.

(B) It shall provide for a system under which tires in existing scrap tire piles can be separated, identified, or distinguished from new scrap tires.

(C) It shall provide for the prioritization of the elimination of existing scrap tire piles, based on the need to protect human health and the environment.

(D) It shall provide for the elimination of existing scrap tire piles through recycling, energy recovery, or reuse of scrap tires, and if no recycling, energy recovery, or reuse markets are immediately available for the scrap tires, then it shall provide for environmentally sound management of such piles.

(E) It shall have as its goal the elimination, by January 1, 2005, of all existing scrap tire piles within the State, as determined by the State as required under subparagraph (A).

(F) It shall provide a detailed breakdown of estimated costs of implementing the requirements of the plan relating to tires, and shall consider specifying a method for cost recovery from, or cost sharing with, existing owners of piles.

(2) **CURRENT AND FUTURE DISPOSAL OF SCRAP TIRES.**—The plan must address current and future disposal and recycling, energy recovery, and reuse of scrap tires and must meet the following minimum requirements:

(A) It shall have as its goal the reuse, recycling, or energy recovery of 100 percent of the scrap tires generated in the State after the date which is 18 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act.

(B) It shall prohibit the permanent disposal of scrap tires generated after the date which is 24 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act in landfills, tire monocells, or tire monofills unless the person desiring to so dispose of such tires (i) uses tires as daily cover, a landfill construction material, or in layers for leachate collection; (ii) demonstrates, to the State or local authority identified in the State plan, that the size of the tire is at least 42 inches in outside diameter and that the tire is used on off-road equipment; or (iii) demonstrates, to the State or local au-

thority identified in the State plan, that there is no reasonably available recycling, energy recovery, or reuse alternative for such tires, and shreds such tires.

(C) It shall require that scrap tire collection sites at which no fee is charged for the acceptance of scrap tires available in the State in a number sufficient to accommodate the amount of scrap tires expected to be generated in the State annually, unless the State demonstrates to the Administrator that—

(i) the State's current scrap tire program includes collection sites which charge fees;

(ii) such fees do not deter collection of scrap tires; and

(iii) there are sufficient scrap tire collection sites in the State to accommodate the amount of scrap tires expected to be generated in the State annually.

(D) It shall establish standards for the operation of scrap tire collection sites that conform to or exceed the regulations promulgated by the Administrator under section 4203(a)(1)(B) and shall prohibit the operation of a collection site except in compliance with those standards and with applicable State and local law.

(E) It shall prohibit storage of more than 3,000 scrap tires for more than 60 days at a collection site, unless such storage is necessary for implementation of a specific project for further reuse, energy recovery, recycling, or shredding for further reuse and only continues for a reasonable period of time.

(F) It shall prohibit scrap tires generated in the State after the date which is 24 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act from being commingled with existing scrap tire piles (as identified pursuant to paragraph (1)(A)).

(G) It shall provide for such exemptions from the commingling prohibition of subparagraph (F) as may be necessary for the implementation of the State plan. Any such exemptions shall be granted by designated local or State authorities for persons in the business of tire shredding or energy recovery.

(3) **ENVIRONMENTALLY SOUND RECYCLING.**—The plan shall encourage the environmentally sound recycling of scrap tires through all available means.

(b) **DEFINITIONS.**—For purposes of this section, the definitions in section 4203 apply.

SEC. 4013. INTERSTATE TRANSPORTATION AND DISPOSAL OF MUNICIPAL SOLID WASTE.

(a) **RESTRICTION ON RECEIVER OF OUT-OF-STATE WASTE.**—(1) Except as provided in subsections (d) and (f), the owner or operator of a landfill, incinerator, or other waste disposal facility in a State may not receive for disposal or incineration any municipal solid waste generated outside the State unless the owner or operator obtains authorization to receive such waste from the affected local government. Any such authorization shall be granted by formal action at a meet-

(h) **AUTHORITY TO CONTROL EXPORTS.**—(1) Any State that approved, on May 2, 1984, the legislation described in paragraph (2)–

(A) may limit or prohibit the movement of municipal solid waste generated within the boundaries of the State if such movement is for the purpose of storage, treatment, processing, or disposal of such waste at a solid waste management facility located outside the State; and

(B) may designate a facility at which municipal solid waste generated within the boundaries of the State may be stored, treated, processed, or disposed of if the designated facility is in compliance with all applicable Federal and State environmental laws and regulations and the designation is consistent with the State solid waste management plan required under this subtitle.

(2) The legislation referred to in paragraph (1) is any legislation that allows for the designation of municipal solid waste for the purpose of ensuring the proper management of such waste.

PART II—FEDERAL SOLID WASTE MANAGEMENT REQUIREMENTS

SEC. 4201. AUTHORITY AND STANDARD FOR REGULATIONS.

(a) **AUTHORITY TO PROMULGATE REGULATIONS.**—(1) The Administrator is authorized to promulgate regulations to implement this subtitle.

(2) The Administrator shall publish a notice in the Federal Register identifying any additional solid waste categories appropriate for regulation under this subtitle and is authorized to promulgate such regulations as are necessary or appropriate to govern any such solid waste categories.

(b) **PROTECTION OF HUMAN HEALTH AND ENVIRONMENT.**—The regulations promulgated by the Administrator under this subtitle shall provide for the protection of human health and the environment and may take into consideration the circumstances presented by the category of solid waste.

(c) **LIMITATION.**—Notwithstanding subsection (a), the Administrator may not identify for regulation, or regulate, wet process phosphoric acid production solid wastes under this subtitle.

SEC. 4202. SOLID WASTE STORAGE.
Not later than 24 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, the Administrator shall promulgate, after notice and opportunity for public comment, regulations as may be necessary to protect human health and the environment for the storage of recyclable materials that have been separated from municipal solid waste otherwise destined for disposal. At a minimum, such regulations shall specify those requirements necessary to ensure that such recyclable materials are stored safely and for no longer than a reasonable period of time.

SEC. 4203. SCRAP TIRE MANAGEMENT AND RECOVERY REGULATIONS.

(a) **PROHIBITIONS AND EXEMPTIONS.**—

(1) **PROHIBITIONS.**—The following prohibitions shall take effect 24 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act:

(A) **DISPOSAL.**—(i) It shall be unlawful to dispose of scrap tires in a landfill, tire monocell, or tire monofill, unless the person desiring to so dispose of such tires (I) uses tires as daily cover, a landfill construction material, or in layers for leachate collection; (II) demonstrates, to the State or local authority identified in the State plan, that the size of the tire is at least 42 inches in outside diameter and that the tire is used on off-road equipment; or (III) demonstrates, to the State or local authority identified in the State plan, that there is no reasonably available recycling, energy recovery, or reuse alternative for such tires, and shreds such tires.

(ii) It shall be unlawful to dispose of scrap tires in a mixed municipal solid waste composting facility.

(B) **OPERATION OF COLLECTION SITES.**—(i) It shall be unlawful to operate a collection site except in compliance with regulations promulgated by the Administrator under this subparagraph with respect to conditions applicable to scrap tire piles (including piles containing shredded tire material).

(ii) Not later than 12 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, the Administrator shall promulgate regulations that address, at a minimum, the following:

(I) The maximum permissible size of scrap tire piles, measured in terms of height, base, and length.

(II) The distance that must be maintained between scrap tire piles.

(III) The distance that must be maintained between scrap tire piles and the perimeter of the collection site property and any building.

(IV) The manner in which scrap tire piles must be maintained to minimize mosquito breeding.

(V) Requirements for owners and operators of collection sites to have an emergency plan which provides for the accessibility of scrap tire piles to firefighting equipment and maintaining roads approaching those piles.

(VI) The size of a berm sufficient to contain any liquid that may be discharged as the result of fire or

firefighting efforts at scrap tire piles.

(VII) The size of scrap tire piles that shall be completely enclosed behind fencing.

(VIII) Such other matters as the Administrator determines necessary to protect human health and the environment.

(C) **OPERATION OF SCRAP TIRE MONOFILLS.**—(i) It shall be unlawful to operate a scrap tire monofill except in compliance with regulations promulgated by the Administrator under this subparagraph with respect to conditions applicable to scrap tire monofills.

(ii) Not later than 12 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, the Administrator shall promulgate such regulations relating to scrap tire monofills as he considers necessary to protect human health and the environment.

(D) STORAGE AT COLLECTION SITES.—It shall be unlawful to store more than 3,000 scrap tires for more than 90 days at collection sites unless such storage is necessary for implementation of a specific project for further reuse, energy recovery, recycling, or shredding for further reuse and only continues for a reasonable period of time.

(E) COMMINGLING.—It shall be unlawful for any person to commingle with existing scrap tire piles any scrap tires generated after the date which is 18 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, unless the person is subject to an exemption provided by a State pursuant to section 4012(a)(2)(G).

(2) EXEMPTIONS.—(A)(i) The Administrator may by regulation exempt any of the persons listed in clause (ii) from any requirement or prohibition of this subsection other than the prohibition of paragraph (1)(A), if such exemption is not inconsistent with the goals and requirements of this subtitle and no threat of an adverse effect on human health or the environment will result from such exemption. Any exemption granted under this subparagraph shall be made by categories of persons and not on a case by case basis.

(ii) The persons eligible for exemption under clause (i) are the following:

(I) A tire retailer that stores fewer than 3,000 scrap tires at any collection site where tires generated after the date which is 18 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act are sold or installed.

(II) A tire retreader that stores fewer than 3,000 scrap tires or a quantity of scrap tires equal to the number to be retreaded over a 30-day period, whichever is greater, at any collection site where tires are retreaded.

(III) A business that removes tires from vehicles and stores fewer than 3,000 scrap tires at any collection site where such removals occur.

(IV) A scrap tire disposal facility that stores fewer than 3,000 scrap tires for future processing or disposal which has already received a permit under a State solid scrap program imposing conditions and requirements to protect human health and the environment comparable to those imposed by this subtitle.

Any person who stores or uses scrap tires for a marine purpose within 6 months after the date the tire is removed from use, unless stored for such purpose is necessary for longer than 6 months and the storage continues only for a reasonable period of time.

(VII) A transporter of new and used tires to the manufacturer for warranty adjustment.

(VII) A tire manufacturing, finishing center or tire adjustment center that stores fewer than 3,000 tires on the business premises.

(B) The prohibition set forth in paragraph (1)(A) shall not apply to the composting or disposal of a scrap tire by the owner or operator of a municipal solid waste landfill, tire monocell, tire monofill, or mixed municipal solid waste composting facility if such owner or operator—

(i) inadvertently receives a scrap tire which is commingled with municipal solid waste and not readily removable from the waste stream;

(ii) has established contractual requirements or other appropriate notification or inspection procedures to assure that scrap tires are not received at such facility; and

(iii) is in compliance with any applicable rules promulgated by the Administrator under this section and applicable State or local laws.

(C) The Administrator is authorized to impose alternative requirements, including requirements for fire prevention and disqualification, as a condition for any exemption or partial exemption under this paragraph.

(b) FINANCIAL ASSISTANCE.—

(1) In GENERAL.—The Administrator shall provide financial assistance to States in accordance with this subsection for purposes of enforcing the requirements of this section and implementing the provisions of State plans required pursuant to section 4012.

(2) GUIDELINES.—Not later than 12 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, the Administrator shall issue guidelines, after consultation with appropriate Federal, State, and local authorities, setting forth an equitable formula for distribution of financial assistance under this subsection. The formula shall provide a preference to applicants that have shown substantial progress in eliminating scrap tire piles, and should be based on some or all of the following factors:

(A) Number of tires generated.

(B) Population.

(C) Magnitude and severity of the scrap tire problem.

(3) APPLICATION.—(A) To qualify for financial assistance under this subsection, a State shall submit to the Administrator an application at such time, in such manner, and containing such information as the Administrator prescribes in the guidelines under paragraph (2). The application shall contain, at a minimum, the following:

(i) A proposed schedule for conducting surveys necessary to comply with the requirements of section 4012(a)(1)(A).

(ii) A list of each scrap tire pile in the State that the State estimates contains more than 3,000 scrap tires. The list shall include the location and ownership of each such pile.

(iii) A plan for conducting surveys necessary to comply with the requirements of section 4012(a)(1)(A) within 6 months after receipt of financial assistance.

(iv) An identification of the State agency responsible for enforcing the requirements of this section.

(v) An estimate of the cost of conducting the surveys, implementing the other requirements of section 4012, and enforcing the requirements of this section and the amount of Federal financial assistance being sought for such purposes.

(vi) A description and copies of all scrap tire pile inventories previously conducted by the State.

(vii) A description of all scrap tire disposal, energy recovery, reuse, and recycling programs and activities that the State has conducted, together with an estimation of the costs and benefits of such programs or activities.

(B) In the guidelines issued under paragraph (2) the Administrator shall allow States to apply for financial assistance individually or in conjunction with neighboring States.

(4) APPROVAL OF APPLICATION.—Not later than 60 days after the Administrator receives an application for financial assistance from a State under this subsection, the Administrator shall approve or disapprove the application. The Administrator shall approve the application if the Administrator determines that the application meets the requirements of paragraph (3).

(5) AUDIT.—For purposes of assessing the accuracy of a survey conducted by a State using assistance provided under this section, the Administrator may audit the survey if the Administrator considers an audit necessary.

(6) OVERSIGHT.—The Administrator may oversee the use of financial assistance provided under this subsection for purposes of ensuring that the assistance is used for the purposes for which it is intended.

(7) STATE FEES.—Nothing in this section or in section 4012 shall be construed as prohibiting States from charging fees for scrap tire management in the implementation of section 4012 and the enforcement of this section.

(c) DEFINITIONS.—For purposes of this section and section 4012:

(1) The term "scrap tire" means a tire that is no longer usable for its original purpose because of wear, damage, or defect.

(2) The term "collection site" means a location where scrap tires may be stored, processed, or disposed of.

(3) The term "energy recovery", with respect to scrap tires, means a process in which energy is recovered from controlled combustion of whole or shredded scrap tires.

(4) The term "environmentally sound" means the disposition or application of a scrap tire in a manner that will result in no threat of an adverse effect on human health or the environment.

(5) The term "tire monocell" means a section of a landfill or a monofill in which only shredded tires are placed.

(6) The term "tire monofill" means a landfill used exclusively for the storage of shredded tires in the ground.

(7) The term "rubberized asphalt" includes asphalt paving mixes which incorporate rubber recovered from scrap tires.

either in the asphalt cement or in the aggregate used to make asphalt concrete, and also includes surface treatments, interlayerers, and crack sealants.

(8) The term "shredded tire material" or "shredded tires" means tire material resulting from tire shredding, chipping, or other mechanical processing that produces pieces 6 by 6 inches or of a size or configuration that does not hold water when stored in piles.

(d) RELATIONSHIP TO EXISTING ACTIVITIES.—Nothing in this section shall be construed to prevent or affect any current activities in a State respecting scrap tire management (including the elimination of scrap tire piles) unless such activities are less stringent than the requirements of this subtitle.

(e) REPORT.—Not later than 5 years after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, the Administrator shall submit to Congress a report on the implementation of this section (other than subsection (f)) and the effectiveness of achieving the objectives of this section. The report shall include such recommendations as the Administrator considers appropriate.

(f) REMOVAL OR SCRAP TIRES ON PROPERTY UNDER FEDERAL JURISDICTION OR CONTROL.—

(1) DETERMINATION.—Not later than 12 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, the heads of all appropriate departments, agencies, and instrumentalities of the Federal Government, in consultation with the Administrator, shall determine the extent of scrap tire piles on property under Federal jurisdiction or control.

(2) PLAN.—Not later than 18 months after such date of enactment, the heads of all appropriate departments, agencies, and instrumentalities of the Federal Government, in consultation with the Administrator, shall develop and implement a plan for abatement of those scrap tire piles in accordance with this section and with paragraph (3) of this subsection.

(3) ABATEMENT.—All scrap tire piles on property under Federal jurisdiction or control shall be abated by January 1, 2005.

(4) REPORT.—Not later than 48 months after such date of enactment, the Administrator shall submit to Congress a report on the progress made in abating scrap tire piles on property under Federal jurisdiction or control.

SEC. 424. COMPOSTING REGULATIONS.

(a) COMPOST PRODUCTS.—(1) Not later than 18 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, the Administrator shall promulgate regulations to provide standards for the classifications and allowable uses of compost and mulch products produced from homogeneous organic solid waste separated at the source of generation, including compost made from the following materials which have been separated from municipal solid waste at the source of generation:

(A) Tree stumps, limbs, and leaves; grass clippings; and untreated wood wastes.

(B) Food scraps or food processing byproducts.

(C) Material that is nonrecyclable, that has been shown to be compatible with composting, and that does not contain toxic contaminants, including food-soiled paper, food-soiled paper, board-based material, biodegradable material, and material based on or derived from agricultural feedstocks.

(D) Agricultural byproducts.

(E) Byproducts and residuals from the production, processing, or distribution of food, fiber, forestry, livestock, and fish products.

(2) Not later than 18 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, the Administrator shall promulgate regulations to provide standards for the classifications and allowable uses of compost and mulch products produced from mixed municipal solid waste from which organic materials have not been separated or diverted at the source of generation.

(3) The standards for classifications under paragraphs (1) and (2) shall be based on the level of contaminants contained in the product. At a minimum, standards shall be set for heavy metals, polychlorinated biphenyls, pH, pathogens, and foreign matter.

(b) COMPOSTING FACILITIES.—Not later than 24 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, the Administrator shall promulgate regulations establishing standards for mixed municipal solid waste composting facilities and for source separated organic waste composting facilities. At a minimum, the regulations shall include requirements for the following:

(1) Storage of solid waste awaiting composting.

(2) Criteria for compost curing areas to minimize potential leachate releases into the ground water or onto the surrounding land surface.

(3) Leachate collection and treatment systems.

(4) Odor control.

(5) Collection and proper disposal of residuals from the facility.

(6) Facility capacity to handle projected incoming volumes of municipal solid waste.

(7) Waste separation.

SEC. 4205. SCRAP PROCESSING DURING RECYCLING.

(a) DEFINITIONS.—For purposes of this section:

(1) The term "scrap processing during recycling" means the storage, sorting, shredding, shearing, bolting, chipping, or similar act of separating or sizing scrap paper, scrap plastic, scrap glass, scrap textiles, or scrap metal, to prepare such materials for use in making new products. The term does not include the following:

(A) Placement on land or water of residues from such processing.

(B) The storage and use of such materials by the same person in making a new product.

(C) The sizing of scrap metal if—

(i) such sizing activity is carried out occasionally by a person who obtains material that has undergone

scrap processing during recycling and uses the material solely for making a new product at the facility at which the material was sized, or such sizing activity involves only the sizing of material generated on-site and such material is reused within 30 days in the same production process as the process that produced the material; and

(ii) such sizing activity either does not generate residues or generates residues that are completely used in making a new product.

(2) The term "scrap metal" means bits and pieces of metal parts (such as bars, turnings, rods, sheets, wire) or metal pieces that may be combined with bolts or soldering (such as radiators, scrap automobiles, railroad boxcars) which when worn or superfluous can be recycled. The term does not include metal bearing sludge or pollution control dust.

(b) SCRAP PROCESSING DURING RECYCLING REGULATIONS.—

(1) REGULATIONS.—Not later than 24 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, the Administrator shall promulgate regulations governing scrap processing during recycling and the management of residues from such processing. In promulgating the regulations, the Administrator may distinguish between various scrap processing activities in use for different scrap materials.

(2) EXEMPTIONS.—

(A)(i) In cases in which the Administrator determines that the regulation of particular scrap processing during recycling activities, or particular residue management activities, is not necessary to protect human health and the environment, the Administrator may exempt such activities from the regulations promulgated under paragraph (1).

(ii) Notwithstanding clause (i), the collection and processing of used beverage containers, scrap paper, scrap glass, and scrap plastic are exempt from the regulations promulgated under paragraph (1), unless the Administrator determines the regulation of any such activity is necessary to protect human health and the environment.

(B) Any activities exempted under this paragraph shall be subject to any notification requirements that the Administrator determines appropriate.

(3) CLASS PERMITS.—In cases in which the Administrator determines that the regulation of particular scrap processing during recycling activities, or particular residue management activities, is necessary to protect human health and the environment, and such regulation can be effectively accomplished through a class permit, the Administrator shall promulgate regulations to govern such activities through class permits. At a minimum, the regulations shall include requirements governing record keeping and storage of scrap materials. In promulgating the regulations, the Administrator shall consider requiring the storage of scrap metal amenable to airborne or waterborne migration.

(4) SITE-SPECIFIC PERMITS.—In cases in which the Administrator determines that the regulation of particular scrap processing

essing during recycling activities, or particular residue management activities, through the issuance of a site-specific permit is necessary to protect human health and the environment, the Administrator shall promulgate regulations to govern such activities through individual permits. At a minimum, the regulations shall include the requirements included in the regulations under paragraph (3).

(5) **RELATIONSHIP TO SUBTITLE C.**—Nothing in this section shall be construed to restrict the authority of the Administrator to list or identify wastes as hazardous, and regulate the management of such wastes, under subtitle C of this Act.

(6) **REGULATION UNDER THIS SECTION.**—Scrap processing during recycling shall be regulated by the regulations promulgated under this section in lieu of other provisions of this subtitle, unless the Administrator specifically determines, after notice and opportunity for public comment, that the application of other requirements of this subtitle is necessary to protect human health and the environment. Nothing in this subsection shall be construed to restrict or otherwise affect—

(A) the State solid waste planning and waste inventory provisions of this subtitle;

(B) section 4402, section 4303, or part VI of this subtitle; or

(C) the obligation of an owner or operator of a scrap processing during recycling facility which disposes of residues from such processing on-site to meet applicable disposal requirements.

(c) **STUDY OF RESIDUES.**—(1) The Administrator shall conduct a study to ascertain the appropriate method or methods for sampling and determining the potential toxicity of residues from scrap processing during recycling that are destined for disposal, taking into account the heterogeneous nature of the residues. Nothing in this subsection shall be construed to limit the Administrator's authority to regulate such residues using existing methods.

(2) The study shall be completed not later than 36 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act.

SEC. 4206. PERMITS.

(a) **PERMIT REQUIREMENT.**—(1) Not later than 36 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, each State may establish a permit program or other system of prior approval to assure that persons owning or operating facilities in the State comply with all applicable requirements of the approved State plan (including protection of human health and the environment), with all applicable requirements of this part and regulations promulgated under this part, with all applicable requirements of revised criteria promulgated under section 4004(a) (as required by section 4010(c)), and with all applicable requirements of State law. Effective 60 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, no person may carry out any of the following activities except in accordance with a permit issued pursuant to this section:

(A) Combustion of municipal solid waste.

(B) Disposal of municipal solid waste or the residues of scrap processing during recycling in a landfill.

(C) Disposal of municipal solid waste combustor ash in a landfill or monofill.

(D) Operation of a mixed municipal solid waste composting facility.

(E) Operation of a source separated organic waste composting facility.

(F) Operation of a materials recovery facility.

(G) Operation of a scrap tire collection site or scrap tire mono-

fill.

(H) Operation of a facility engaged in scrap processing during recycling.

(2) If, by the date which is 36 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, a State does not establish a permit program or other system of prior approval under this section, the Administrator shall promulgate, administer, and enforce a permit program for such State.

(3) For purposes of compliance with this section with respect to the revised criteria promulgated under section 4004(a), a permit program or other system of prior approval and conditions adopted pursuant to section 4005(c) shall be considered to be a permit program, or other system of prior approval and conditions under this section, as long as such program or system meets the requirements of this section.

(4) For purposes of this Act, any reference to a permit under this section is deemed to refer to either a permit under this section or a system of prior approval and conditions under this section.

(b) **WASTE SEPARATION REQUIREMENT.**—(1) Each State (or, in the case of a State for which the Administrator promulgates a permit program, the Administrator), as a condition of a permit issued under this section, shall require that each municipal waste combustion unit in the State establish a program to identify, separate out, and prevent the types of waste listed in paragraph (2) from being accepted at the unit. A unit shall be considered to have established a such a program if the owner or operator of the unit establishes a contractual or other binding agreement to divert such types of waste away from the unit. In lieu of establishing such a program with respect to glass or metals, a unit may demonstrate to the State that, in the areas served by the unit, a program exists that is adequate to meet the recycling or diversion requirements of the State's solid waste management plan for glass or metals. In evaluating whether an adequate program exists, a State shall consider the recovery of ferrous or nonferrous metals by the owner or operator of the unit after combustion of the waste which contains the metals. The owner or operator of a unit may make the demonstration described in this subsection only in a State which sets specific recycling or diversion requirements for glass or metals in the State's solid waste management plan.

(2) Any program established pursuant to paragraph (1) shall apply to glass, metals, and such other types of waste as the Administrator considers appropriate.

(3) Not later than 12 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, the

Administrator shall determine whether programs required under paragraph (1) should apply to yard waste. In making such determination, the Administrator shall consider the level of nitrogen oxides associated with combusting such waste, the Btu value and moisture content of such waste, alternative beneficial uses of such waste, and the composting requirements of all State plans. If the Administrator does not make a determination by the deadline, any program established under paragraph (1) shall apply to yard waste, in addition to the types of waste that the program applies to pursuant to paragraph (2), effective 24 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act.

(c) **ASH MANAGEMENT PLAN.**—Each State (or, in the case of a State for which the Administrator promulgates a permit program, the Administrator), as a condition of a permit issued under this section, shall require the owner or operator of a municipal waste combustion unit to prepare an ash management plan that demonstrates adequate capacity to dispose of the ash generated by the combustor in a manner that is protective of human health and the environment.

(d) **TRANSITION.**—(1) During the period beginning on the date of the enactment of the National Waste Reduction, Recycling, and Management Act and ending on the date which is 24 months after a State (or, in the case of a State for which the Administrator promulgates a permit program, the Administrator) establishes a permit program under this section, the owner or operator of a facility, other than a facility described in subsection (a)(1)(H), in that State shall comply with the requirements of this subsection.

(2) Owners or operators of existing facilities and facilities under construction on the date of the enactment of the National Waste Reduction, Recycling, and Management Act which are covered by an existing State system of municipal solid waste management permitting or prior approval shall obtain a permit or prior approval under such system no later than 12 months after the date of the enactment of such Act. Owners or operators of new facilities which would be covered by such system shall obtain such a permit or prior approval before commencing construction.

(3) Owners or operators of new and existing facilities which are not covered by an existing State system of municipal solid waste management permitting or prior approval shall submit to the State (or, in the case of a State for which the Administrator promulgates a permit program, the Administrator) a notification and exposure assessment that contains, at a minimum, information regarding the facility's location, general facility information, waste types and volumes managed, number of households within one mile of the facility, facility monitoring programs and results, use of local surface waters or ground water, number of local drinking water wells, and any other information deemed appropriate by the State or the Administrator in order to carry out the requirements of this subtitle. The information required under this subparagraph shall be submitted in such form and manner as the State or the Administrator requires in regulations. Owners or operators of existing facilities shall submit such information no later than 12 months after such date. Owners or operators of new facilities shall submit such infor-

mation before commencing operation. The State shall make available to the public any notifications submitted pursuant to this section.

(e) **STATE LEGAL AUTHORITY.**—Not later than 36 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, the laws of each State which establishes a permit program or other system of prior approval under this section shall provide such regulatory authority and personnel as may be necessary to implement the requirements of this section, including authority to—

(1) issue permits under State law that—
(A) meet the requirements of this section and assure compliance with—

- (i) any applicable revised criteria promulgated under section 4004(a); and
- (ii) any applicable regulations promulgated by the Administrator under this part within 18 months after such promulgation or such earlier date as the Administrator may by rule establish, and
- (B) can be terminated, modified, or revoked for cause, including the violation of any condition of a permit or obtaining a permit by misrepresentation, or failure to disclose fully all relevant facts;
- (2) provide for periodic inspections, monitoring, access at reasonable times, and require reports to the extent necessary to assure compliance with this subtitle;
- (3) assure that the public receives notice of each application for a permit and provide an opportunity for public hearing before ruling on each such application;
- (4) collect permit fees pursuant to subsection (h) from all facilities required to obtain a permit under subsection (a); and
- (5) enforce permits, permit fee requirements, and the requirement to obtain a permit, including authority to recover civil and criminal penalties.

(f) **PERMIT TERM.**—Any permit issued by a State or the Administrator under this section shall be for a fixed term not to exceed 10 years.

(g) **SINGLE PERMIT.**—A single permit may be issued for a facility with multiple units.

(h) **PERMIT FEE.**—(1) The owner or operator of any facility subject to the permit requirement under subsection (a) (except facilities described in paragraphs (1)(E), (1)(F), and (1)(H) of subsection (a)) shall pay an annual fee, or the equivalent of an annual fee over some other period, sufficient to cover all reasonable (direct and indirect) costs of the State or the Administrator to develop and administer the permit program requirements of this section, including the reasonable costs of—

- (A) reviewing and acting upon any application for such a permit;
- (B) implementing and enforcing the terms and conditions of any such permit;
- (C) monitoring; and
- (D) preparing generally applicable regulations or guidance.

(2) The total amount of fees collected by the State or the Administrator shall conform to the following requirements:

(A) Subject to subparagraph (B) and (C), the program will result in the collection, in the aggregate, from all sources subject to subsection (a), of an amount that the State or the Administrator determines adequately reflects the reasonable cost of the permit program.

(B) In determining the amount under subparagraph (A), the State or the Administrator is not required to include any amount of municipal solid waste managed by any facility in excess of 50,000 tons per year.

(C) The amount calculated under subparagraph (A) shall be increased consistent with the need to cover the reasonable costs authorized by paragraph (1) in each year beginning after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, by the percentage, if any, by which the Consumer Price Index for the most recent calendar year ending before the beginning of such year exceeds the Consumer Price Index for the calendar year 1990. For purposes of this subparagraph:

(i) The Consumer Price Index for any calendar year is the average of the Consumer Price Index for all urban consumers published by the Department of Labor, as of the close of the 12-month period ending on August 31 of each calendar year.

(ii) The revision of the Consumer Price Index which is most consistent with the Consumer Price Index for calendar year 1990 shall be used.

(i) PERMIT BY RULE.—(1) A State (or, in the case of a State for which the Administrator promulgates a permit program, the Administrator) may promulgate regulations under subsection (a) which provide for one or more specified classes of facilities that shall be deemed to have a permit for the purpose of this subtitle and to be operating in compliance with such permit, if such facility is constructed and operating in compliance with the requirements of such regulations.

(2) A class of facilities may be specified in a permit by rule under this subsection only if the State or the Administrator determines that the class of facilities, in the aggregate, will have minimal adverse effect on human health and the environment.

(3) Regulations promulgated under this subsection shall require—

(A) provisions for public notice that require the owner or operator of a facility to notify the State or the Administrator and other interested persons of the intent to construct or commence operations of such facility or unit sufficiently in advance of such action as specified by the State in such regulations;

(B) provisions for environmental monitoring;

(C) provisions for annual on-site inspections by the State; and

(D) such additional measures as the State or the Administrator considers appropriate to ensure that such facilities are designed and operated in a manner that protects human health and the environment.

SEC. 4207. COMMUNITY INFORMATION STATEMENT.

(a) REGULATIONS.—Not later than one year after the enactment of this section, the Administrator shall promulgate regulations to re-

quire the preparation of a community information statement as part of the permitting processes applicable to any new off-site solid waste treatment or disposal facility. Each statement shall be made available for public review. The final statement for any facility shall be available for public review for a period of at least 60 days before a public hearing is conducted by the permitting authority regarding the proposed issuance of a permit for such facility. The permitting authority shall take the community information statement into account in making any final decision regarding the issuance of such permit and in establishing any conditions to be imposed in such permit. Such statement shall be a part of the record on which the permit decision is based.

(b) SELECTION OF INDEPENDENT CONTRACTOR TO PREPARE STATEMENT.—The community information statement required under this section shall be prepared by an independent contractor selected jointly, after consultation with concerned citizens, by the applicant for the permit and the chief elected official of the affected host community. If the applicant and chief elected official do not agree on the selection of any independent contractor within 30 days after the date on which the application for a permit under this section is filed, the permitting authority shall select the independent contractor to prepare the statement required under this section.

(c) COSTS.—The permitting authority shall impose and collect a fee on the submission of each application for a permit for which a statement under this section is required. The fee shall cover the reasonable costs of preparing the community information statement. (d) REQUIREMENTS.—A community information statement meets the requirements of this section if such statement accurately identifies and describes each of the following:

(1) The economic and other impacts of the proposed facility on the affected host community including, but not limited to, the effects of such facility on employment, housing, public safety and emergency preparedness, transportation systems serving such communities and recreational amenities and tourism in the area.

(2) The types of wastes expected to enter the facility and the types of releases expected from the facility and the human health impacts associated with such wastes and with such releases.

(3) The options or alternatives for mitigating any such impacts on the affected community.

(4) The demographic characteristics of the affected host community according to race, ethnic background, and income.

(5) The presence in the affected host community of any—

(A) existing solid waste treatment or disposal facility, or

(B) site in which a release of hazardous substances (within the meaning of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980) has occurred and the extent to which such site has been remediated; and

whether the presence of the facilities at sites referred to in subparagraphs (A) and (B), in conjunction with the proposed facility, will have a cumulative effect on the affected host community.

(3) The volume (by tons) of nonhazardous foundry materials used in 1992 for—

- (A) foundations of buildings;
- (B) highway fill;
- (C) road bed material;
- (D) asphalt paving;
- (E) landfill daily cover;
- (F) manufacture of cement; and
- (G) such other uses as the Administrator considers appropriate for inclusion.

(4) The volume of landfill capacity, on a State-by-State basis, that could be saved annually through beneficial reuse of foundry sand, and the corresponding cost savings resulting from saved capacity.

(5) State and local regulations and other identifiable barriers to the marketing and beneficial reuse of nonhazardous foundry materials.

(6) Existing studies and other sources of information on the leaching characteristics of discarded nonhazardous foundry sand and that of natural soils.

(b) REPORT.—Not later than 36 months after the date of the enforcement Act, the Administrator shall complete the study required under subsection (a) and submit to Congress and the Governors of each State a report on the results of the study. The report shall include an evaluation by the Administrator of the utility of guidelines that establish specific goals for reusing nonhazardous foundry materials.

(c) DEFINITION.—For purposes of this section, the term "nonhazardous foundry materials" means sand, slag, and emission control residues that are generated by iron, steel, and nonferrous foundries and that are not listed or characterized as hazardous waste under subtitle C.

SEC. 4306. TOTAL QUALITY MANAGEMENT.

(a) GUIDELINES FOR TOTAL QUALITY MANAGEMENT EVALUATIONS.—

(1) IN GENERAL.—Not later than 12 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, the Administrator shall publish, after notice and opportunity for public comment, guidelines for use by the Administrator in performing total quality management evaluations of regulatory programs or elements of such programs promulgated under this subtitle.

(2) DEFINITIONS AND METHODS.—The guidelines published under this section shall include—

- (A) a definition of "total quality management" and "total quality management evaluation";
- (B) methods for the Administrator to identify persons subject to, involved in the implementation of, or otherwise affected by, the program being evaluated, including small businesses, public interest groups, relevant offices of the Environmental Protection Agency, other Federal agencies, State agencies, and the Congress;

(C) appropriate methods to measure the performance of the programs to be evaluated and the responsiveness of such programs to the needs of persons identified pursuant to subparagraph (B); and

(D) methods to identify the relationship of new major regulations proposed pursuant to this subtitle to other Federal regulations in order to avoid unnecessary duplication, inconsistency, or confusion.

(b) TOTAL QUALITY MANAGEMENT EVALUATION.—

(1) EVALUATION AND REPORT.—Following publication of the guidelines required under subsection (a), the Administrator shall evaluate, and report to Congress on, the manner in which the principles of total quality management have been applied in the regulation of underground storage tanks, and the potential for such principles to be applied in programs of the Environmental Protection Agency promulgated under this subtitle. In carrying out the evaluation, the Administrator shall request evaluations from persons subject to, involved in the implementation of, or otherwise affected by, the underground storage tank regulations, including persons referred to in subsection (a)(2)(B).

(2) SCHEDULE.—The Administrator shall include in the report to Congress submitted pursuant to paragraph (1) a schedule for performance by the Administrator of such total quality management evaluations of regulatory programs or elements of regulatory programs promulgated under this subtitle as the Administrator deems necessary and appropriate.

(c) RELATIONSHIP TO OTHER PROVISIONS.—Nothing in this section is intended to change any statutory requirement otherwise applicable under this subtitle.

PART IV—RECYCLING AND RELATED PROVISIONS

SEC. 4401. CONTENT AND RECOVERY REQUIREMENTS.

(a) DEFINITIONS.—As used in this section:

(1) PACKAGE.—The terms "package" and "packaging"—

(A) in the case of aluminum, mean aluminum cans with a capacity of at least 8 fluid ounces;

(B) in the case of steel, mean steel and bimetal cans with a capacity of at least 8 fluid ounces;

(C) in the case of glass, mean glass bottles and jars;

(D) in the case of plastic, mean plastic bottles and jars;

(E) in the case of any other material for which the Administrator prescribes a recovery rate under subsection (b)(2), the packages to which such rate applies.

(2) PACKAGER.—The term "packager" means—

(A) in the case of a product placed in a package before entry into the United States, the distributor or wholesaler who causes the product to be brought into the United States;

(B) in the case of a product placed in a package in the United States before retail sale of the product, the person who places the product in the package; and
 (C) in the case of a product placed in a package at the point of retail sale, the retail seller.

(3) **RECYCLE.**—The terms "recycle" and "recycling" mean a process by which materials separated or diverted from municipal solid waste are transformed or remanufactured into useable or marketable materials for use other than landfill disposal or incineration in any facility which directly combusts municipal solid waste or refuse derived fuel.

(4) **RECOVERY RATE.**—The term "recovery rate" means the amount of materials generated in or imported into the United States that are separated or diverted annually from municipal solid waste landfills, combustion units, and mixed municipal solid waste composting units and reused or recycled (including export for reuse or recycling), expressed as a percentage of the total amount of such material that would be destined for such landfills and units in a year if separation or diversion and reuse or recycling did not occur.

(5) **MINIMUM CONTENT STANDARD.**—The term "minimum content standard" means, with respect to a product or package, a percentage (by weight or, in the case of paper, by fiber weight) of the product or package that is required to consist of postconsumer material.

(6) **BOTTLES AND JARS.**—The terms "bottles" and "jars" mean a formed or molded rigid or semirigid vessel which—
 (A) substantially retains its shape whether empty or full;
 (B) has a capacity of at least 8 fluid ounces and not more than 5 gallons; and
 (C)(i) has a neck narrower than the body of the vessel with an opening that accepts a closure device, or
 (ii) has a wide-mouth opening that accepts a threaded, spring-loaded, or lever-actuated closure device.

(b) **REQUIREMENT.**—

(1) **MULTIPLE OPTIONS PACKAGING STRATEGY.**—Effective July 1, 1996, a package may use only those packages that meet at least one of the following requirements:

(A) **INDUSTRY-WIDE RECOVERY RATE OPTION.**—

(i) **ALUMINUM.**—Packages made predominantly of aluminum must achieve a recovery rate of at least—
 (I) 65 percent during each of calendar years 1995 through 2000; and
 (II) for each calendar year after calendar year 2000, 65 percent or, if the Administrator establishes a rate under paragraph (2), the rate so established.

(ii) **GLASS.**—Packages made predominantly of glass must achieve a recovery rate of at least—
 (I) 40 percent during each of calendar years 1995 through 2000; and
 (II) for each calendar year after calendar year 2000, 40 percent or, if the Administrator estab-

lishes a rate under paragraph (2), the rate so established.

(iii) **STEEL.**—Packages made predominantly of steel must achieve a recovery rate of at least—

(I) 40 percent during each of calendar years 1995 through 2000; and
 (II) for each calendar year after calendar year 2000, 40 percent or, if the Administrator establishes a rate under paragraph (2), the rate so established.

(iv) **PLASTIC.**—Packages made predominantly of plastic must achieve a recovery rate of at least—

(I) 25 percent during each of calendar years 1995 through 2000; and
 (II) for each calendar year after calendar year 2000, 25 percent or, if the Administrator establishes a rate under paragraph (2), the rate so established.

(v) **OTHER MATERIALS.**—Packages made predominantly from any material (other than paper, aluminum, glass, steel or plastic) for which a recovery rate has been established by the Administrator in a rule prescribed under paragraph (2) must achieve the recovery rate established in such rule.

(B) **COMPANY-SPECIFIC PROGRAM.**—The package must be used by a packager which, itself or through a designee, recycles material—

(i) that has been diverted or separated from municipal solid waste landfills, combustion units, or mixed municipal solid waste composting units; and
 (ii) that is the same material as the material from which the package is made;

(C) **RECYCLED CONTENT OPTION.**—The package must be made of materials that contain at least 25 percent postconsumer material, or, if the Administrator establishes a higher percentage under paragraph (2), the percentage so established. For purposes of this subparagraph, a packager may average together the recycled content of all packages of the same material used by the packager in a year.

(D) **REFILLABILITY OR REUSE OPTION.**—The package must be designed to be refilled or reused for its original purpose at least 5 times, and at least 50 percent of all such packages, as determined by the Administrator, must be refilled or reused.

(E) **SOURCE REDUCTION OPTION.**—The package must be reduced in volume or weight, per use or per unit of product, by at least—

(i) 15 percent when compared to a package used for the same purpose or product and made of the same material used by the same packager 1 year earlier; or

(ii) 20 percent when compared to a package used for the same purpose or product but made of a different material used by the same packager 1 year earlier. A reduction achieved between January 1, 1988, and July 1, 1996, shall be deemed to have been implemented on July 1, 1996.

(2) AUTHORITY TO MODIFY RECOVERY RATES AND RECYCLED CONTENT OPTION.—(A) With respect to packages made predominantly from aluminum, glass, steel, or plastics, the Administrator may, by rule, establish, for calendar years commencing after 2000, recovery rates higher than the respective rates for such packages specified in paragraph (1)(A). With respect to packages made from materials other than paper, aluminum, glass, steel, and plastics, the Administrator may, by rule, establish recovery rates for such packages for calendar years commencing after 1996.

(B) The Administrator may, by rule, establish a higher percentage for the recycled content option under paragraph (1)(C) for calendar years commencing after 2000.

(C) In establishing a recovery rate or recycled content percentage under this paragraph, the Administrator shall consider technological feasibility, economic impact on both packagers and solid waste management costs, protection of the environment, and energy conservation. Any rule establishing a recovery rate or recycled content percentage under this paragraph shall be finally promulgated at least 36 months before the beginning of the calendar year in which such rate or percentage is to be applicable.

(3) PUBLICATION OF RECOVERY RATES.—Not later than June 30, 1994, and by June 30 of each year thereafter, the Administrator shall calculate and publish the recovery rate achieved during the preceding calendar year for each packaging for which a recovery rate is specified in paragraph (1)(A) or established under paragraph (2).

(4) EXEMPTION.—The following packages are exempt from the requirements of this subsection:

(A) Packages that directly hold drugs, drug products, cosmetics, medical devices (as such terms are defined under the Federal Food, Drug, and Cosmetic Act), or biological products (as such term is defined in the Public Health Services Act).

(B) Packages that directly hold any pesticide registered under the Federal Insecticide, Fungicide, and Rodenticide Act, or any substance or material that would cause the recycling of the packaging to present an undue risk to public health, safety, or the environment, as determined by the Administrator by rule.

(5) PAPER PACKAGES.—Packages made predominantly of paper are subject to the requirements of subsection (c)(1) and not to the requirements of this subsection.

(6) FOOD SAFETY CONSIDERATIONS.—In order to protect the safety and integrity of food packaging materials, State and local governments shall consider food safety concerns and the requirements of the Food, Drug, and Cosmetic Act (21 U.S.C.

301 et seq.), and the rules and regulations promulgated under that Act, when developing packaging laws and regulations.

(7) IMPLEMENTATION.—

(A) ANNUAL REPORTS.—The Administrator shall, by rule, require packagers subject to this subsection, or their representative trade associations, to report to the Administrator annually on the progress made during the preceding calendar year in complying with the requirements of this subsection.

(B) CERTIFICATION OF COMPLIANCE.—Effective July 1, 1996, each packager subject to this subsection shall certify to the Administrator, with respect to each type of package used by the packager, that the package is in compliance with the requirements of this subsection, or, in the case of a package that is exempt from the requirements of this subsection pursuant to paragraph (4), the specific basis for the exemption. Such certification shall be contained in a certificate of compliance signed by an authorized official of the packager. A certification under this paragraph shall be submitted to the Administrator each year, as well as each time a package is reformulated or replaced. A copy of the certificate shall be kept on file by the packager.

(C) EVALUATION REPORTS.—The Administrator, in consultation with the Secretary of Commerce, shall annually perform a detailed evaluation of the implementation of this subsection. An annual report on the implementation of this subsection shall be submitted to Congress no later than December 31 of each year, beginning with 1996.

(D) REQUEST FOR INFORMATION.—In conducting the evaluation under this paragraph, the Administrator may request from packagers subject to this subsection, or from their representative trade associations, information which the Administrator determines necessary to monitor compliance with the requirements of this subsection. Upon request from the Administrator under this subparagraph, the manufacturer or trade organization under this subsection shall provide the information requested by the Administrator.

(E) AUDITS.—The Administrator shall annually conduct representative audits to ensure compliance with the requirements of this subsection.

(F) RECOVERY RATE REQUIREMENTS.—(1) PAPER.—Not later than December 31, 1995, manufacturers of paper shall ensure that all paper and paper products are recovered, in the aggregate, at a rate of at least 40 percent. After such recovery rate requirement is met, the Administrator shall establish a higher recovery rate requirement for purposes of this subsection, to be met no later than December 31, 2000.

(2) OTHER MATERIALS.—The Administrator may establish recovery rate requirements for materials in addition to paper. Any rate requirement for an additional material shall reflect the maximum feasible recovery rate for such material.

(3) ANNUAL REPORT.—Each paper manufacturer and each manufacturer subject to a requirement under paragraph (2)

shall submit to the Administrator each year a report on the

progress made during the last year by the manufacturer in meeting the applicable recovery rate requirements. The report shall include information on the amounts of preconsumer and postconsumer materials recovered from solid waste, the amounts of preconsumer and postconsumer materials used in domestic manufacturing processes, and the amount of recovered materials exported for recycling. The first annual report shall be submitted not later than December 31, 1995.

(4) **MINIMUM CONTENT STANDARDS FOR OTHER MATERIALS IF RECOVERY RATE REQUIREMENT NOT MET.**—If a recovery rate requirement for a material established by the Administrator pursuant to paragraph (2) is not met, the Administrator shall establish minimum content standards for products made from such material. Any such standard shall take effect not later than 3 years after the date on which the recovery rate requirement was required to be met.

(5) **REPORTS.**—Each manufacturer or importer subject to minimum content standards under this subsection shall maintain quarterly records showing the manner in which the manufacturer or importer is complying with such standards. By January 15 of each year, the manufacturer or importer shall submit to the Administrator an annual report summarizing the manufacturer's or importer's quarterly records for the previous year and discussing the progress the manufacturer or importer made in the previous year in complying with the minimum content standards. By April 15 of each year, the Administrator shall submit to Congress a report discussing the progress being made nationwide in meeting the minimum content standard requirements under this subsection. The report shall include a list indicating, by product, the average annual amount of postconsumer materials used in each product.

(d) **DETERMINATION OF COMPLIANCE.**—

(1) **EVALUATION AND REPORTS.**—The Administrator, in consultation with the Secretary of Commerce, each year, beginning with 1993, shall conduct a detailed evaluation of the implementation of subsection (c)(1) and shall make available for public comment, by December 31 of the year concerned, interim reports on the achievement of the 40 percent recovery rate requirement under such subsection during the year concerned. A final report on the implementation of the 40 percent recovery rate requirement, including an evaluation of the actual recovery rate achieved as well as a summary of comments received on the interim reports, shall be submitted to Congress no later than December 31, 1996.

(2) **REQUESTS FOR INFORMATION.**—(A) In conducting the evaluation under paragraph (1), the Administrator may request the following information from manufacturers of paper and appropriate representative trade organizations:

- (i) The total quantity of paper and paper products consumed domestically in each of the years 1988 through 1995.
- (ii) The total quantity of paper and paper products recovered from the waste stream in each of the years 1988 through 1995.

(iii) The total quantity of recovered paper and paper products reused domestically in each of the years 1988 through 1995.

(iv) The total quantity of recovered paper and paper products exported for reuse by foreign manufacturers in each of the years 1988 through 1995.

(v) The status of new and planned deinking and other facilities intended to increase recycling capacity for paper and paper products.

(vi) Information regarding alternative uses of recycled fibers, including animal bedding, composting, energy recovery, building materials, and insulation.

(B) Upon any request for information under subparagraph (A) from the Administrator, a manufacturer or trade organization shall provide such information.

(3) **INSPECTIONS AND AUDITS.**—The Administrator shall conduct selective inspections of paper manufacturing facilities and shall conduct audits of the information provided by such manufacturers pursuant to paragraph (2) for the purpose of confirming data regarding the total quantity of recovered paper reused, the progress of new deinking and other facilities intended to increase recycling capacity, and reductions in the weight or volume of paper packaging. If the information requested under paragraph (2) is submitted on behalf of the manufacturers by a representative trade organization, the Administrator may also conduct an audit of the data maintained by the trade association. If, after evaluating data obtained as a result of an inspection or audit, the Administrator believes that the data are not consistent with information provided by the manufacturer pursuant to paragraph (2), the Administrator shall notify the manufacturer that it has 30 days either to amend the original information or to provide a supplementary explanation to the Administrator or to regarding the apparent discrepancy. If the manufacturer is unable to explain the discrepancy to the satisfaction of the Administrator, the Administrator may institute an enforcement action pursuant to part VI. The Administrator may request information from the Secretary of Commerce and other appropriate sources to confirm data regarding the quantity of paper or paper products consumed domestically, the quantity of recovered paper exported for reuse, and alternative uses of recovered paper.

(4) **CONFIDENTIALITY.**—The Administrator shall maintain the confidentiality of documents, records, and other information received pursuant to this subsection that contain proprietary information. Notwithstanding any limitation contained in this section, all documents, records, and other information received by the Administrator (or any representative of the Administrator) under this section shall be made available to a duly authorized subcommittee or committee of the Congress upon written request by such a subcommittee or committee.

(5) **CONTENTS OF FINAL REPORT.**—The final report required under paragraph (1) shall include, at a minimum, the following:

(A) Data regarding the actual overall rate of paper recovery, as well as individual recovery rates for each of the following grades of recovered paper: old newsprint; mixed; high-grade drinking; old corrugated containers; and pulp substitutes.

(B) An analysis of the economic, social, and environmental benefits of complying with the 40 percent recovery rate requirement, including avoided disposal costs.

(C) An analysis of the economic, social, and environmental impacts of the 40 percent recovery rate requirement, including an evaluation of all capital expenditures incurred by the paper and paper products industry since 1988 to increase recycling capacity, transportation and storage issues associated with moving recovered paper to recycling facilities, source separation and waste collection programs implemented by State and local governments to increase the supply of recovered paper for recycling, and pollution sources resulting from recycling facilities.

(D) Information regarding the sources and volume of paper recovered.

(E) A summary of comments received relating to the interim reports.

(6) ADDITIONAL CONTENTS OF FINAL REPORT.—If the Administrator finds that the 40 percent recovery rate requirement has not been achieved by December 31, 1995, the report submitted to Congress under paragraph (1) also shall include the following:

(A) An analysis of the progress made by paper manufacturers toward achievement of the 40 percent recovery rate requirement and a determination of when such recovery rate requirement is likely to be achieved.

(B) A detailed evaluation of the factors that may have contributed to the failure to achieve the 40 percent recovery rate requirement, including the availability of capacity to utilize recovered paper.

(C) An evaluation of the extent to which national emergencies or other unforeseen circumstances may have contributed to the failure to achieve the 40 percent recovery rate requirement.

(7) ADDITIONAL MEASURES.—If the Administrator finds that the 40 percent recovery rate requirement has not been achieved by December 31, 1995, the Administrator shall, by December 31, 1997, promulgate regulations, to become effective by no later than December 31, 1998, imposing additional measures that shall be implemented by the paper manufacturers, to assure attainment of the 40 percent recovery rate requirement. These measures may include industry utilization rates; economic incentives and credits; source reduction, minimum content standards; and such other measures that the Administrator concludes will achieve the 40 percent recovery rate in the most cost-effective manner. The Administrator may use the enforcement provisions of part VI to enforce any additional measures imposed under this paragraph.

(8) COMPANY-SPECIFIC REQUIREMENTS.—If the 40 percent recovery rate requirement is not achieved by December 31, 1995,

and if the Administrator does not promulgate regulations by December 31, 1997, then to achieve the difference in tonnage between the actual recovery rate and the 40 percent recovery rate requirement, based upon the total tonnage of paper consumed domestically in 1998 and subsequent years, each United States paper manufacturer shall be responsible for recovering that percentage of the total difference that represents each company's share, as of December 31, 1995, of the total United States utilization of virgin fiber (expressed on an annualized basis).

(e) ENFORCEMENT.—(1) Each packager who violates subsection (b), and each manufacturer or importer who violates an applicable minimum content standard under subsection (c), is subject to enforcement under part VI of this subtitle.

(2) In addition to the authority provided by section 4602(c), in the case of a second violation, or a violation of any compliance order issued pursuant to section 4602(a), the Administrator shall require the violator to label the product or packaging concerned, in a manner that is clearly visible to the consumer, with language stating that the violator has failed to meet applicable requirements of this section. The Administrator also may ban the sale in commerce of the product or package concerned.

(f) TECHNICAL ASSISTANCE FUND.—Any penalties collected in enforcing the provisions of this section shall be deposited in a special fund in the United States Treasury. The amounts in such fund shall be available for appropriation and shall remain available until expended. Such funds shall be used, subject to appropriation, to provide technical assistance under section 4302 of this subtitle.

(g) REGULATIONS.—The Administrator shall promulgate regulations to carry out this section.

SEC. 402. LARGE HOUSEHOLD APPLIANCES.

(a) RECYCLING GUIDELINES.—Not later than 18 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, the Administrator shall issue guidelines, after notice and opportunity for public comment, on the recycling of large household appliances. The guidelines shall include instructions for community-level recyclers and city- or county-level solid waste handlers on how to properly process large household appliances for metal recycling. The guidelines shall also identify appropriate economic and regulatory incentives for environmentally sound management of the collection and disposal of large household appliances.

(b) CRITERIA.—(1) In issuing the guidelines, the Administrator shall consider—

(A) early replacement of older energy inefficient appliances with new models; and

(B) economic and regulatory incentives to encourage recycling and other alternatives for minimizing the disposal of large household appliances in landfills.

(2) In issuing the guidelines, the Administrator shall distinguish, as appropriate, between appliances already in use, those that currently are manufactured, and those that could be manufactured in the future.

SEC. 4403. ENVIRONMENTAL MARKETING CLAIMS.

(a) **REGULATIONS.**—The Administrator, after consultation with the Federal Trade Commission, shall promulgate regulations containing standards and criteria for environmental marketing claims in accordance with this section. Such regulations shall be proposed not later than 18 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act and shall be finally promulgated and effective not later than 2 years after such date of enactment.

(b) **PROHIBITION.**—After the date which is 2 years after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, no person may make an environmental marketing claim covered by this section or by regulations promulgated under this section that cannot be substantiated in accordance with the standards and criteria contained in this section or the regulations. If no regulations are promulgated and effective by such date, an environmental marketing claim may be made after such date only in a manner consistent with the provisions of this section.

(c) **ENFORCEMENT BY FEDERAL TRADE COMMISSION.**—Any violation of any of the provisions of this section, or of the regulations promulgated by the Administrator under this section, shall constitute an unfair or deceptive act or practice in or affecting commerce in violation of section 5(a) of the Federal Trade Commission Act (15 U.S.C. 45(a)) and shall be subject to enforcement by the Federal Trade Commission under that Act. In enforcing this section, the Federal Trade Commission—

(1) shall use the regulations promulgated under subsection (a) to determine what constitutes an unfair or deceptive act or practice in or affecting commerce; and

(2) may distinguish, as appropriate, between environmental marketing claims that appear on products or packaging of products and such claims made in the advertising of products, so long as claims made in advertising are consistent with product or packaging criteria and standards and are not deceptive.

(a) **SPECIFIC REQUIREMENTS FOR REGULATIONS.**—(1) In promulgating regulations under subsection (a), the objective of the Administrator shall be to reduce negative environmental impacts and improve environmental attributes.

(2) The regulations under subsection (a) shall include standards and criteria for substantiating claims to the effect that a product or package—

- (A) is source reduced;
- (B) is refillable;
- (C) is reusable;
- (D) is recyclable;
- (E) has a recycled content;
- (F) is compostable;
- (G) is ozone neutral;
- (H) is non-toxic;
- (I) is photodegradable;
- (J) is biodegradable;
- (K) is degradable; or
- (L) is decomposable.

The Administrator shall include standards and criteria for substantiating such other claims related to a specific environmental impact or attribute of a product or package as the Administrator considers appropriate.

(3) The Administrator shall ensure that the criteria and standards contained in the regulations are sufficient to allow the Federal Trade Commission—

(A) to determine whether an environmental marketing claim has adequate substantiation with respect to a specific environmental impact or attribute; and

(B) to ensure that claims are not deceptive or environmentally detrimental (i) as a result of stating the absence of an environmental attribute that is not a usual characteristic of a product, package, or product or package category, or (ii) in light of other characteristics of the product or package.

(4) The Administrator shall ensure that the criteria and standards contained in the regulations are based on the best available scientific information.

(5) The Administrator shall ensure that the standards and criteria contained in the regulations address the use of commonly used symbols and emblems in environmental marketing claims, including those associated with recycled content and recyclability, consistent with requirements in this section.

(6) The Administrator may distinguish among product or package categories in setting standards and criteria in the regulations.

(7) In promulgating the regulations, the Administrator shall ensure that environmental marketing claims make a clear distinction between the product and any accompanying packaging unless the claim applies to both.

(e) **REQUIREMENTS RELATING TO SPECIFIC CLAIMS.**—The Administrator shall include the following requirements in the regulations promulgated:

(i)(A) An environmental marketing claim stating that a product or package is "recycled" or has "recycled content" shall be used only in connection with a product or package if—

(i)(I) the percentage of recovered materials and the percentage of postconsumer materials are specified no less prominently in the claim than the claim itself, and

(II) except as provided in subparagraph (B), the percentage of postconsumer materials is not less than 25 percent (by weight) during the period beginning on December 31, 1999, and is not less than 50 percent (by weight) on or after January 1, 2000; or

(ii)(I) the percentage of recovered materials is 100 percent and is disclosed no less prominently in the claim than the claim itself, and

(II) the percentage of postconsumer materials is not less than 35 percent (by weight) during the period beginning on the effective date of the regulation and ending on December 31, 1999; and is not less than 60 percent on and after January 1, 2000, or is not less than 55 percent (by weight) and the manufacturer of the product demonstrates, using a measurement method developed and authorized by the Ad-

ministrator, that the average percentage of postconsumer materials used in all products in connection with which the claim is made that are produced by the manufacturer is not less than 60 percent on and after January 1, 2000.

(B) Notwithstanding subparagraph (A), an environmental marketing claim stating that a product or package is "recycled" or has "recycled content" may be used in connection with a product or package that contains a percentage of postconsumer materials that is less than the percentage specified in subparagraph (A)(ii) if the manufacturer, retailer, distributor, or other person responsible for the use of such environmental marketing claim includes in such claim a sentence (in which the terms described in the regulation promulgated under this subsection are displayed, no more prominently than other words in the sentence) that states the percentage (by weight) of postconsumer and preconsumer materials used in such product or package and no symbols are used in such claim.

(2)(A) An environmental marketing claim relating to the "recyclable" nature of a product or package shall be used only in connection with a product or package for which a manufacturer, retailer, distributor, or other person responsible for the use of such environmental marketing claim is able to demonstrate, using standards and criteria contained in the regulations, all of the following:

(i) During the period beginning on the effective date of the regulations and ending on December 31, 1999, 10 percent or more of all of such type of products or packages produced in the United States are recycled annually.

(ii) On and after January 1, 2000, 30 percent or more of all of such type of products or packages produced in the United States are recycled annually.

(iii) Any such environmental marketing claim is made only in a sentence (in which the terms described in the regulation promulgated under this subsection are displayed no more prominently than other words in the sentence) that states the percentage of the product or package recycled annually in the United States.

(iv) No symbols or emblems are used in such claim.

(v) If recycling collection facilities for the product, package, or material are not available in every region of the country, any such environmental marketing claim clearly, conspicuously, and in immediate proximity to the sentence referred to in clause (iii) discloses that recycling facilities for the product, package, or material are not available everywhere and indicates a means by which consumers can determine if local recycling collection programs for the product, package, or material exist in their communities. For purposes of this clause, a disclosure on a product or package label or in a print advertisement or other printed material is considered clear and conspicuous if it is readily noticeable and readable by the prospective purchaser when examining the principal display panel of the package or product or the section of the printed material in which the claim appears, and is of a type size that is at least two

thirds the size of the type used in the sentence referred to in clause (iii), or, in the case of a disclosure that is of 10-point type size or smaller, is no less prominent than, and of a type size no smaller than the size of the type used in, the sentence referred to in clause (iii). A disclosure in a broadcast commercial is considered clear and conspicuous if, in the case of an oral broadcast, it is as clear and understandable in pace and volume as other information, and, in the case of a visual broadcast, it is presented against a contrasting background and is displayed for sufficient duration and in large enough letters to be read easily.

(B) Notwithstanding subparagraph (A), an environmental marketing claim relating to the "recyclable" nature of a product or package may be used in connection with a product or package without meeting all of the requirements of that subparagraph if the manufacturer, retailer, distributor, or other person responsible for the use of such environmental claim is able to demonstrate, using standards and criteria contained in the regulations, the following:

(i) During the period beginning on the effective date of the regulations and ending on December 31, 1999, 35 percent or more of all of such type of products or packages produced in the United States are recycled annually.

(ii) On and after January 1, 2000, 60 percent or more of all of such type of products or packages produced in the United States are recycled annually.

(iii) Any such environmental marketing claim is made at least once in a sentence (in which the terms described in the regulation promulgated under this subsection are displayed no more prominently than other words in the sentence) that states the percentage of the product or package that is recycled annually in the United States. If the claim is also made without stating the percentage, such claim may be no more prominent than, and of a type size no larger than the size of the type used in, the sentence which states the percentage. The number of times a claim that does not state the percentage is made in connection with a package or product may not exceed the number of times a claim that does state the percentage is made in connection with such package or product.

(3) An environmental marketing claim relating to the "reusable" or "refillable" nature of a product or package shall be used only in connection with a product or package that is reused for the original purpose of the product or package an average of 5 times or more.

(4)(i) No environmental marketing claim relating to the "compostable", "photodegradable", "biodegradable", or "decomposable" nature of a product, package, or material, or any similar description, shall be used in connection with a product, package, or material unless the manufacturer, retailer, distributor, or other person responsible for the use of such environmental marketing claim is able to demonstrate, using standards and criteria contained in the regulations, that the require-

ments of either clause (ii) or clause (iii) of this paragraph are met, and that all of the following requirements also are met:

(I) Such product, package, or material will decompose safely in such a waste management system through natural chemical and biological processes into basic constituents, containing no toxic residues, within an amount of time compatible with such system.

(II) Such product, package, or material will not release or produce at any time toxic substances or other substances that may otherwise be harmful to human health or the environment, including during the management process and any subsequent application or use of byproducts of the process, such as use of the product or byproduct of composting as a soil amendment or mulch.

(III) The claim clearly specifies the applicable management system and that such claim applies only to products, packages, or material that are managed in such a system. For purposes of clause (ii), the requirements that a manufacturer, retailer, distributor, or other person responsible for the use of the claim must be able to demonstrate to meet the requirements of this clause are the following:

(I) During the period beginning on the effective date of the regulations and ending on December 31, 1999, 10 percent or more of all of such type of products, packages, or materials produced in the United States are managed annually in a waste management system that is protective of human health and the environment, and for which the Administrator determines the claim is a relevant and environmentally desirable and significant characteristic.

(II) On and after January 1, 2000, 30 percent or more of all of such type of products, packages, or materials produced in the United States are managed annually in such a waste management system.

(III) Any such environmental marketing claim is made only in a sentence (in which the terms described in the regulation promulgated under this subsection are displayed no more prominently than other words in the sentence) that states the percentage of the product or package managed annually in a such a waste management system.

(IV) No symbols or emblems are used in such claim.

(V) If such waste management systems for the product, package, or material are not available in every region of the country, any such environmental marketing claim clearly, conspicuously, and in immediate proximity to the sentence referred to in subclause (III) discloses that waste management systems for the product, package, or material are not available everywhere and indicates a means by which consumers can determine if local waste management systems for the product, package, or material exist in their communities. For purposes of this subclause, a disclosure on a product or package label or in a print advertisement or other printed material is considered clear and conspicuous if it is readily noticeable and readable by the prospective purchaser when examining the principal display panel of the package or

product or the section of the printed material in which the claim appears, and is of a type size that is at least two-thirds the size of the type used in the sentence referred to in subclause (III), or, in the case of a disclosure that is of point type size or smaller, is no less prominent than, and of a type size no smaller than the size of the type used in the sentence referred to in clause (iii). A disclosure in a broadcast commercial is considered clear and conspicuous if, in the case of an oral broadcast, it is as clear and understandable in pace and volume as other information, and, in the case of a visual broadcast, it is presented against a contrasting background and is displayed for sufficient duration and in large enough letters to be read easily.

(vi) For purposes of clause (i), the requirements that a manufacturer, retailer, distributor, or other person responsible for the use of the claim must be able to demonstrate to meet the requirements of this clause are the following:

(I) During the period beginning on the effective date of the regulations and ending on December 31, 1999, 35 percent or more of all of such type of products or packages produced in the United States are managed annually in a waste management system that is protective of human health and the environment, and for which the Administrator determines the claim is a relevant and environmentally desirable and significant characteristic.

(II) On and after January 1, 2000, 60 percent or more of all of such type of products or packages produced in the United States are managed annually in such a waste management system.

(III) Any such environmental marketing claim is made at least once in a sentence (in which the terms described in the regulation promulgated under this subsection are displayed no more prominently than other words in the sentence) that states the percentage of the product or package that is managed annually in such a waste management system in the United States. If the claim is also made without stating the percentage, such claim may be no more prominent than, and of a type size no larger than the size of the type used in, the sentence which states the percentage. The number of times a claim that does not state the percentage is made in connection with a package or product may not exceed the number of times a claim that does state the percentage is made in connection with such package or product.

(5) Notwithstanding the requirements of this subsection, an environmental marketing claim of a type covered by this subsection may be made with respect to a package, product, or material that does not itself qualify under this subsection for the claim, if—

(A) the claim is made at a retail outlet by use of a point-of-purchase display sign for the package, product, or material, and does not appear on the package, product, or material itself;

(B) the community in which the retail outlet is located has a program for the recycling, reuse, composting, or other activity with respect to which the claim is made; and

(C) the program is identified in the display sign.

(f) ADDITIONAL REGULATIONS.—(1) The Administrator may, at any time after the date of the promulgation of the regulations required under subsection (a), promulgate such additional regulations or revise existing regulations as the Administrator determines to be necessary to carry out the purposes of this section. In promulgating additional regulations or revising existing regulations, the Administrator shall consult with the Federal Trade Commission as necessary and appropriate.

(2) Not later than 3 years after the date of the promulgation of the final regulations described in subsection (a) or any additional regulations promulgated under this subsection, and every 3 years thereafter, the Administrator, in consultation with the Federal Trade Commission, shall review such regulations. In reviewing such regulations, the Administrator shall take into account new technologies that have developed since the most recent promulgation of regulations, and shall, if determined appropriate by the Administrator, revise the standards and criteria contained in the regulations to reflect such new technologies.

(3)(A) Any person may petition the Administrator to initiate rule-making procedures with respect to promulgating additional regulations under this subsection.

(B) Not later than 80 days after receiving a petition described in subparagraph (A), the Administrator shall determine whether to accept or deny the petition and shall publish the petition in the Federal Register, along with an explanation of the reasons for such determination. If the Administrator issues a decision accepting the petition, the Administrator shall issue a proposed regulation to take the action requested in the petition not later than 12 months after the date of such decision.

(g) ENVIRONMENTAL CERTIFICATIONS AND SEALS OF APPROVAL.—After the effective date of the regulations under this section, no person may issue environmental certifications and seals of approval unless such certifications or seals are awarded according to criteria and standards at least as stringent as the criteria and standards contained in regulations promulgated under this section. With respect to environmental certifications and seals of approval relating to claims for which regulations are promulgated under subsection (e)(2) or (e)(4), the certifications and seals must be awarded according to the criteria and standards set forth in subsection (e)(2)(B) or clauses (i) and (iii) of subsection (e)(4), respectively.

(h) PUBLIC INFORMATION CAMPAIGN.—The Administrator shall conduct a public information and education campaign, including public service advertising, in order to enable consumers to—

(1) recognize environmental marketing claims regulated under this section and be able to distinguish them from other environmental marketing claims;

(2) have information about the criteria and standards used by the Administrator in the regulations promulgated under this section; and

(3) have a better understanding about the effects that products and packages can have on the environment.

(i) RELATIONSHIP TO STATE STANDARDS AND REQUIREMENTS.—(1) Nothing in this section shall be construed as prohibiting a State,

during the period before the date of promulgation of regulations under this section, from enacting and enforcing standards, criteria, and definitions with respect to any type of environmental marketing claim.

(2) Effective on the date of promulgation of such regulations, no State or political subdivision of a State may establish or continue in effect any standard, criteria, or definition with respect to a type of environmental marketing claim unless such standard, criteria, or definition is identical to the standard criteria, or definition with respect to that type of claim in the regulations.

(3) After the date of promulgation of such regulations, nothing in this section shall be construed as prohibiting a State from enacting and enforcing standards, criteria, or definitions with respect to a type of environmental marketing claim that is not regulated by the Administrator under such regulations.

(j) SAVINGS PROVISIONS.—(1) Nothing in this section shall be construed to repeal, invalidate, or supersede any provision of Federal law relating to the labeling of products or commodities.

(2) Nothing in this section shall be construed to limit or restrict the authority of the Federal Trade Commission with respect to unfair or deceptive acts or practices in environmental marketing claims, including authority to ensure clear and conspicuous disclosures relating to specific claims.

SEC. 4404. PLASTICS RECYCLING CODES.

(a) DEFINITIONS.—As used in this section:

(1) PLASTIC CONTAINER.—(A) Except as provided in subparagraph (B), the term "plastic container" means—

(i) a rigid or semirigid vessel, including bottles, made of plastic with a capacity of 8 fluid ounces or more and less than 5 gallons, designed to hold some commodity; and

(ii) flexible garden and leaf bags made of plastic.

(B) Such term shall not apply to (i) vessels manufactured for use in medical or laboratory processes or procedures, or (ii) containers used in motor vehicles (c).

(2) PLASTIC PRODUCT.—The term "plastic product" means any article, other than a plastic container, made of plastic and weighing more than 0.1 kilogram. The term does not include a lead-acid battery regulated under part V.

(3) PLASTIC.—The term "plastic" means a material that contains as an essential ingredient one or more organic polymeric substances of large molecular weight, that is solid in its finished state, and that at some stage in the manufacture or processing into finished articles can be shaped by flow.

(b) CODING REQUIREMENTS FOR PLASTIC CONTAINERS.—

(1) IDENTIFICATION OF PLASTIC RESIN.—Effective 12 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, plastic containers manufactured in or imported into the United States must be encoded on or near the bottom to identify the principal plastic resin used in their manufacture in accordance with either paragraph (2) or paragraph (3) of this subsection.

(2) **PARTICULAR RESINS.**—For resins identified in subparagraph (B), the code required under paragraph (1) shall consist of all of the following:

(A) A symbol that is triangular in shape.

(B) A specific number within the symbol and a series of letters immediately below the base of the symbol identifying the principal type of plastic resin from which the container was produced in accordance with the following schedule:

(i) The number "1" and the letters "PETE" for polyethylene terephthalate.

(ii) The number "2" and the letters "HDPE" for high density polyethylene.

(iii) The number "3" and the letter "V" for vinyl.

(iv) The number "4" and the letters "LDPE" for low density polyethylene.

(v) The number "5" and the letters "PP" for polypropylene.

(vi) The number "6" and the letters "PS" for polystyrene.

(vii) The number "7" and the letter "D" for degradable resins.

(viii) The number "8" and the letters "PC" for polycarbonate.

(3) **OTHER RESINS.**—For resins not identified under paragraph (2)(B), including resins added or revised by the Administrator under paragraph (4), the code required under paragraph (1) shall consist of all of the following:

(A) A symbol that is triangular in shape.

(B) Immediately below the base of the symbol, the letter or letters identifying the principal type of plastic resin from which the container was produced as provided in Table 1 or 2 of the American Society for Testing and Materials' Standards for Generic Marking of Plastic Products, ASTM D1372.

(4) **REVISIONS.**—(A) The Administrator, after consultation with standard setting organizations such as the American Society for Testing and Materials (hereinafter in this section referred to as "ASTM"), may, by rule, from time to time, add to or otherwise revise the designation of resins referred to in paragraph (2)(B).

(B) Any such revision shall, as appropriate—
(i) require any additional information that the Administrator considers appropriate to facilitate recycling of plastic resins;

(ii) prohibit the use of any single resin code established under paragraph (2)(B) or designated under paragraph (4)(A) on any plastic container, if any nonprincipal resin used in the manufacture of such container is incompatible with its recycling based on the single resin code for the principal resin;

(iii) adopt consensus codes developed under the auspices of ASTM, or, as appropriate, similarly recognized standards organizations, except where the Administrator deter-

mines that such codes are inconsistent with the purposes of this subsection; and

(iv) adopt codes that, to the maximum extent practicable, promote an internationally uniform and compatible system of plastic container coding.

(5) **PERMISSIONS.**—(A) Any person may petition the Administrator to revise regulations issued under this subsection either to:

(i) add to or otherwise revise the designation of resins referred to in paragraph (2)(B), including resins added or revised by the Administrator under paragraph (4); or

(ii) adopt internationally accepted consensus coding requirements.

(B) The Administrator must, within 90 days after receiving a petition under this paragraph, publish an explanation of his proposed response to the petition.

(6) **SAVINGS CLAUSE.**—Nothing in this subsection should be construed—

(A) to require coding or to prohibit the sale of any non-coded plastic container manufactured or imported and placed in commerce, or held as inventory prior to the effective date provided in paragraph (1); or

(B) to preclude any manufacturer of plastic containers from including additional information on such containers relevant to the identification of resins or additives used in their manufacture if such information is not inconsistent with the requirements of this subsection.

(c) **CODING REQUIREMENTS FOR PLASTIC PRODUCTS.**—

(1) **REGULATIONS.**—Within the 9-month period following the date of enactment of the National Waste Reduction, Recycling, and Management Act, and after consulting with ASTM, the Society of Automotive Engineers (SAE), the International Standards Organization (ISO), and, as appropriate, other similarly recognized standards organizations, the Administrator shall propose regulations requiring manufacturers of plastic products manufactured or offered for sale in the United States to encode such products to identify the principal plastic resins used in their manufacture. Final regulations requiring such encoding shall be promulgated, after notice and opportunity for public comment, by no later than 18 months after such date of enactment. The effective date for the requirement to encode plastic products shall be 4 years after the date final regulations under this paragraph are promulgated, except that the Administrator may encourage earlier compliance where practical and without a cost penalty to such manufacturers.

(2) **LIMITATIONS.**—Regulations required under paragraph (1) shall adopt codes—
(A) that have been developed under the auspices of ASTM, SAE, ISO, and, as appropriate, other similarly recognized standards organizations, except where the Administrator determines that such codes are inconsistent with the purposes of this subsection; and

(B) that, to the maximum extent practicable, promote an internationally uniform and compatible system of plastic product coding.

(3) **APPLICABILITY.**—The regulations required under paragraph (1) shall not apply to a manufacturer with respect to plastic products produced in quantity of less than 1,000 per year by the manufacturer and that have an expected useful life of 15 years or more.

(4) **REVISIONS.**—(A) The Administrator shall revise regulations issued under this subsection, as necessary and on a timely basis, to keep domestic plastic product recycling codes consistent, to the maximum extent practicable, with internationally accepted consensus coding requirements. Such revisions shall be made, after consultation with the Secretary of Commerce, ASTM, SAE, ISO, and, as appropriate, other similarly recognized standards organizations and shall adopt codes developed under the auspices of such organizations, except where the Administrator determines that such codes are inconsistent with the purposes of this subsection.

(B) Any person may petition the Administrator to revise regulations established under this subsection to adopt internationally accepted industry consensus coding requirements, and the Administrator must, within 90 days after receiving any such petition, publish an explanation of his proposed response to the petition.

(5) **SAVINGS CLAUSE.**—Nothing in this subsection shall be interpreted to—

(A) require coding of standing inventory manufactured prior to the effective date of such regulations, or parts or replacement parts made after the effective date of such regulations, if such parts or replacement parts are made (i) with tooling, and (ii) for products, both of which were manufactured prior to the effective date of such regulations; or

(B) preclude any manufacturer of plastic products from including additional information on such products relevant to the identification of resins or additives used in their manufacture, if such information is not inconsistent with the requirements of this subsection.

(d) **UNIFORMITY.**—No State or political subdivision thereof may enforce any requirement of State or local law applicable to the coding of any plastic container or plastic product unless such requirement is identical to the provisions of this section or regulations issued under this section.

(e) **VIOLATIONS.**—A violation of this section or regulations issued under this section shall be determined on a per run basis, not on a per unit basis.

SEC. 465. RECYCLING OF NEWSPRINT.

(a) **ANNUAL AGGREGATE USE.**—(1) Effective January 1, 1995, at least 35 percent of the total amount of newsprint used in publishing a covered newspaper during a calendar year shall consist of recycled content.

(2) Effective January 1, 2002, at least 50 percent of the total amount of newsprint used in publishing a covered newspaper during a calendar year shall consist of recycled content.

(b) **REPORTING REQUIREMENT.**—Not later than March 1 of each year, beginning with March 1, 1996, the owner of a covered newspa-

per shall submit to the Administrator a report on the manner in which the owner complied with the requirements of this section during the preceding calendar year. The report shall include, at a minimum—

(1) the total amount of newsprint used in producing the newspaper during such calendar year; and

(2) the average amount of recycled content in such newsprint during such calendar year, expressed as a percentage of the total amount of newsprint reported under paragraph (1).

(c) **ENFORCEMENT.**—If a covered newspaper does not comply with an applicable recycled content requirement under subsection (a) with respect to a calendar year, as determined by the Administrator, both of the following provisions apply:

(1) **PENALTY.**—The owner of the covered newspaper shall pay a penalty to the Administrator in an amount equal to the amount determined by multiplying the number of tons of newsprint in noncompliance during such calendar year by \$25. For purposes of this paragraph, the number of tons of newsprint in noncompliance is the amount equal to the product of—

(A) the total number of tons of newsprint used in producing such newspaper during such calendar year, and
(B) the percentage equal to 100 percent reduced by the percentage determined by dividing—

(i) the average amount of recycled content in the newsprint of such newspaper during such calendar year (expressed as a percentage of the total amount of newsprint used in producing such newspaper during such calendar year), by

(ii) the percentage of recycled content required under subsection (a) for such calendar year.

(2) **CONTENT DISCLOSURE.**—(A) Effective on March 1 of the year following such calendar year, the owner of the covered newspaper shall ensure that the following language appears each day prominently at the top of the front page of the newspaper. “The newsprint on which the _____ is printed does not meet the Federal Government’s required percentage of recycled content,” with the blank being filled in with the name of the newspaper.

(B) The requirement of subparagraph (A) shall continue in effect until the owner of the covered newspaper demonstrates to the Administrator that the newspaper complies with the applicable recycled content requirement under subsection (a).

(d) NEWSPRINT RECYCLING FUND.

(1) **ESTABLISHMENT OF FUND.**—The proceeds of any penalties collected by the Administrator under subsection (c)(1) shall be deposited in a special fund in the United States Treasury, to be known as the “Newsprint Recycling Fund”. Amounts in such fund shall thereafter be available for appropriation and shall remain available until expended.

(2) **USE OF FUND.**—Subject to appropriation, amounts in such fund shall be available for distribution by the Administrator to local governments in the principal area served by any covered newspaper paying a penalty under subsection (c)(1) for the pur-

pose of establishing and implementing necessary programs to collect and recycle old newsprint.

(e) **DEFINITIONS.**—For purposes of this section, the following definitions apply:

(1) The term "covered newspaper" means a newspaper with an average daily circulation of 200,000 or more.

(2) The term "recycled content", when used in connection with newsprint, means the portion of the dry weight of the newsprint that is attributable to previously used paper fibers.

PART V—BATTERIES

SEC. 4591. DEFINITIONS.

For the purposes of this part—

(1) **BATTERY.**—The term "battery" means a cell or group of cells containing an electrode and an electrolyte and used as a power source without the addition of fuel.

(2) **LEAD-ACID BATTERY.**—The term "lead-acid battery" means a battery that contains lead and sulfuric acid and is not a dry cell battery.

(3) **DRY CELL BATTERY.**—The term "dry cell battery" means a battery that contains a liquid starved or gel electrolyte, and that weighs less than 25 pounds.

(4) **BATTERY PACK.**—The term "battery pack" means any combination of rechargeable dry cell batteries generally assembled for a particular application and containing wire leads, terminals, and dielectric housing.

(5) **SECONDARY LEAD SMELTER.**—The term "secondary lead smelter" means a facility which produces metallic lead from various forms of lead scrap, including used lead-acid batteries.

(6) **RECHARGEABLE DRY CELL BATTERY.**—The term "rechargeable dry cell battery" means any dry cell battery of any shape that is designed for reuse and is capable of being recharged after repeated uses. Such term shall not include any dry cell battery that is used as the principal power source for transportation equipment.

(7) **MERCURIC-OXIDE BATTERY.**—The term "mercuric-oxide battery" means a dry cell battery of any shape that uses a mercuric oxide electrode.

(8) **CONSUMER MERCURIC-OXIDE BATTERY.**—The term "consumer mercuric-oxide battery" means any button-shaped or coin-shaped mercuric oxide battery that is purchased at retail for personal or household use, and includes batteries used in hearing aids.

(9) **MANUFACTURER.**—The term "manufacturer" means any person who affixes a brand name or private label on a dry cell battery, battery pack, or rechargeable consumer product with nonremovable batteries or who produces any such item.

(10) **RECHARGEABLE CONSUMER PRODUCT.**—The term "rechargeable consumer product" means any product, including any laptop computer or cordless electric tool or appliance, containing a rechargeable dry cell battery as its primary energy supply, and that is purchased at retail and commonly used for

personal or household purposes. Such term shall not include any product that uses a rechargeable dry cell battery as a backup power source for memory or program instruction storage, timekeeping, or any similar purpose that requires constant electrical flow in order to function if the primary energy supply fails or waivers momentarily.

(11) **SILVER-OXIDE BATTERY.**—The term "silver-oxide battery" means any dry cell battery, of any shape, containing a silver-oxide electrode, that is commonly used in wrist watches and other electrical appliances.

SEC. 4592. BATTERY DISPOSAL AND RECYCLING.

(a) PROHIBITIONS.—

(1) **BAN ON INCINERATION, LANDFILLING, AND COMPOSTING OF LEAD-ACID MERCURIC-OXIDE, SILVER-OXIDE, AND RECHARGEABLE BATTERIES.**—Beginning 6 months after the enactment of the National Waste Reduction, Recycling, and Management Act no person may—

(A) incinerate any lead acid, mercuric oxide, or rechargeable dry cell battery in a municipal solid waste incinerator;

(B) transport any lead acid, mercuric oxide, or rechargeable dry cell battery to a mixed municipal solid waste composting facility or mixed municipal solid waste landfill;

(C) compost any lead acid, mercuric oxide, or rechargeable dry cell battery in a mixed municipal solid waste composting facility; or

(D) landfill any lead-acid, mercuric-oxide, or rechargeable dry cell battery in a mixed municipal solid waste landfill.

(2) **DISPOSAL OF LEAD-ACID BATTERIES.**—Beginning 6 months after the enactment of the National Waste Reduction, Recycling, and Management Act, except as otherwise provided in subsection (c), no person may discard or otherwise dispose of a lead-acid battery in a manner other than as provided under the recycling requirements of section 4103.

(b) **REGULATIONS AND NOTICE.**—The Administrator shall promulgate regulations under this section as practicable after the enactment of the National Waste Reduction, Recycling, and Management Act. The failure of the Administrator to promulgate such regulations before the date 6 months after the enactment of the National Waste Reduction, Recycling, and Management Act shall not delay the effective date of the prohibitions contained in subsection (a). Not later than 3 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, the Administrator shall publish in the Federal Register notice of the requirements of this section and other related information that the Administrator determines to be appropriate.

(c) **EXEMPTION FROM DISPOSAL PROHIBITION.**—The prohibition set forth in subsection (a) shall not apply to the combustion, composting, or disposal of a lead acid, mercuric oxide, or rechargeable dry cell battery by the owner or operator of a municipal solid waste landfill, combustion unit, or mixed municipal solid waste composting facility, or the operator of a program for the collection of mate-

rials other than lead-acid batteries for recycling purposes, if such owner or operator—

(1) inadvertently receives such battery commingled with municipal solid waste and not readily removable from the waste stream;

(2) has established contractual requirements or other appropriate notification and inspection procedures, as determined by the Administrator, to assure that any such batteries are not received at such facility or accepted through such collection program; and

(3) is in compliance with any applicable rules promulgated by the Administrator under this section.

SEC. 4503. RECYCLING REQUIREMENTS FOR LEAD-ACID BATTERIES.

(a) **GENERAL REQUIREMENTS.**—After 6 months after the enactment of the National Waste Reduction, Recycling, and Management Act, each person (other than a person described in subsection (b), (c), or (d)) may discard or otherwise dispose of used lead-acid batteries only by delivery to any of the following (or to the authorized representative of any of the following):

(1) A person who sells lead-acid batteries of the same general type at retail or wholesale.

(2) A secondary lead smelter regulated by a State or the Administrator under this Act or the Clean Air Act (42 U.S.C. 7401 et seq.).

(3) A collection or recycling facility regulated by a State or subject to regulation by the Administrator under this Act.

(4) An automotive dismantler (as defined by the Administrator).

(5) A community collection program operated by or through agreement with a governmental entity.

(6) A manufacturer of batteries of the same general type.

(b) **REQUIREMENTS FOR RETAILERS.**—Beginning 6 months after the enactment of the National Waste Reduction, Recycling, and Management Act, each person who sells lead-acid batteries at retail may discard or otherwise dispose of used lead-acid batteries only by delivery to any of the following (or to the authorized representative of any of the following):

(1) A person who sells lead-acid batteries at wholesale.

(2) A secondary lead smelter regulated by a State or the Administrator under this Act or the Clean Air Act (42 U.S.C. 7401 et seq.).

(3) A battery manufacturer of batteries of the same general type.

(4) A collection or recycling facility regulated by a State or subject to regulation by the Administrator under this Act.

(c) **REQUIREMENTS FOR WHOLESALERS, AUTOMOTIVE DISMANTLERS, AND COMMUNITY COLLECTION PROGRAMS.**—Beginning 6 months after the enactment of the National Waste Reduction, Recycling, and Management Act, each person who sells lead-acid batteries at wholesale, each automotive dismantler, and each operator of a community collection program operated by or through agreement with a governmental entity may discard or otherwise dispose of used lead-

acid batteries only by delivery to any of the following (or to the authorized representative of any of the following):

(1) A secondary lead smelter regulated by a State or the Administrator under this Act or the Clean Air Act (42 U.S.C. 7401 et seq.).

(2) A battery manufacturer of batteries of the same general type.

(3) A collection or recycling facility regulated by a State or subject to regulation by the Administrator under this Act.

(d) **REQUIREMENTS FOR BATTERY MANUFACTURERS.**—Beginning 6 months after the enactment of the National Waste Reduction, Recycling, and Management Act, each person who manufactures lead-acid batteries may discard or otherwise dispose of used lead-acid batteries only by delivery to one of the following (or to the authorized representative of any of the following):

(1) A secondary lead smelter regulated by a State or the Administrator under this Act or the Clean Air Act (42 U.S.C. 7401 et seq.).

(2) A collection or recycling facility regulated by a State or subject to regulation by the Administrator.

SEC. 4504. COLLECTION REQUIREMENTS.

(a) **COLLECTION REQUIREMENTS FOR RETAILERS.**—Beginning 6 months after the enactment of the National Waste Reduction, Recycling, and Management Act, no person (hereinafter in this section referred to as a "wholesaler") who has sold lead-acid batteries at retail (hereinafter in this section referred to as a "retailer") shall refuse to accept, at the place where lead-acid batteries are offered for sale, any used lead-acid battery which is of the same general type and in approximately the same quantity as the batteries sold by such person.

(b) **COLLECTION REQUIREMENTS FOR WHOLESALERS.**—(1) Beginning 6 months after the date of enactment of the National Waste Reduction, Recycling, and Management Act, no person (hereinafter in this section referred to as a "wholesaler") who has sold lead-acid batteries to any retailer for resale shall refuse to accept from such retailer used lead-acid batteries of the same general type and in the same quantity as were sold by such wholesaler to such retailer.

(2) In the case of a wholesaler who sells, or offers for sale, lead-acid batteries to a retailer, such wholesaler shall provide for removing from the place of business of the retailer used lead-acid batteries of the same type and in the same quantity as were sold by such wholesaler to such retailer. Such removal shall occur not later than 90 days after the retailer notifies the wholesaler of the existence of such used lead-acid batteries for such removal unless there are less than 5 such batteries, in which case the wholesaler shall remove such batteries within 180 days.

(c) **COLLECTION REQUIREMENTS FOR MANUFACTURERS.**—Beginning 6 months after the date of enactment of the National Waste Reduction, Recycling, and Management Act, no person who manufactures lead-acid batteries and sells such batteries to any person shall refuse to accept from such person used lead-acid batteries of the same type as the batteries sold to such person in a quantity approximately equal to the number of batteries sold to such person.

SEC. 4505. NOTICE IN RETAIL SALES ESTABLISHMENTS.

(a) **WRITTEN NOTICE REQUIREMENTS FOR RETAILERS.**—Beginning 6 months after the enactment of the National Waste Reduction, Recycling, and Management Act, a person who sells, or offers for sale, lead-acid batteries at retail shall post written notice that—

- (1) is clearly visible in a public area of the establishment in which such lead-acid batteries are sold or offered for sale;
- (2) is at least 8 and 1/2 inches by 11 inches in size; and
- (3) contains the following language:

“IT IS ILLEGAL TO THROW AWAY A MOTOR VEHICLE BATTERY OR OTHER LEAD-ACID BATTERIES.

“RECYCLE YOUR USED BATTERIES.

“FEDERAL LAW REQUIRES BATTERY RETAILERS TO ACCEPT USED LEAD-ACID BATTERIES FOR RECYCLING.

“FEDERAL LAW REQUIRES YOU TO RETURN USED BATTERIES TO AN AUTHORIZED BATTERY COLLECTOR, RECYCLER, OR PROCESSER, OR TO AN AUTOMOTIVE DISMANTLER.”

(b) **CIVIL PENALTY.**—Any person who, after receiving a written warning from the Administrator or from any State agency authorized to enforce this section, fails to post a notice required under subsection (a) shall be subject to a civil penalty of not more than \$1,000 per day.

SEC. 4506. LEAD-ACID BATTERY LABELS.

(a) **LEAD-ACID BATTERY LABELING REQUIREMENTS FOR MANUFACTURERS.**—Beginning 18 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, it shall be unlawful for any lead-acid battery manufacturer to sell, or offer for sale, any lead-acid battery that does not bear a permanent label that contains the statements required under subsection (c).

(b) **LEAD-ACID BATTERY LABELING REQUIREMENTS FOR OTHER SALES.**—Beginning 24 months after the date of the enactment of the National Waste Reduction, Recycling, and Management Act, it shall be unlawful for any person to sell a lead-acid battery that does not bear a permanent label that contains the statements required under subsection (c).

(c) **LEAD-ACID BATTERY LABELS.**—A label shall be deemed consistent with the requirements of this section if it—

- (1) identifies that the lead-acid battery contains lead; and
- (2) contains the following prominently visible statements:

“SELLER MUST ACCEPT RETURN”

“FEDERAL LAW REQUIRES RECYCLING”

Nothing in this section shall be interpreted as prohibiting the display on the label of a lead-acid battery a recycling symbol (as defined by the Administrator) or other information intended to encourage recycling.

SEC. 4507. STATE AND LOCAL LAWS REGARDING BATTERIES.

(a) **STATE AND LOCAL LABELING LAWS REGARDING LEAD ACID BATTERIES.**—Beginning 18 months after the enactment of the National Waste Reduction, Recycling, and Management Act, no State or political subdivision of a State shall adopt or enforce requirements regarding the labeling of lead-acid batteries that are not identical with the requirements of section 4506. Nothing in this subsection shall take effect on January 1, 1996.

section or in any other provision of this part shall be construed to prohibit a State or local government from adopting or enforcing any labeling requirement which is additional to, and not inconsistent with, the labeling requirements of section 4506. Nothing in subsection (a) or (b) or in any other jurisdiction of this part shall be construed to prohibit a State or local government from adopting any requirement, other than a requirement relating to labeling, relating to the manufacture, sale, collection, storage, disposal, or combustion of batteries (including any requirement relating to the payment of a deposit upon the sale of a lead-acid battery) if compliance with such State or local requirement would not result in a violation of any requirement of this part.

(b) **STATE AND LOCAL LABELING AND CODING LAWS REGARDING DRY CELL BATTERIES.**—No State or political subdivision thereof shall adopt or enforce any requirement regarding the labeling and coding of dry cell batteries that is not identical with the requirements of sections 4506 and 4510 and regulations under section 4509. Except in the case of the labeling or coding of dry cell batteries, nothing in this part shall prohibit a State from enacting and enforcing any standard or other requirement regarding dry cell batteries that is more stringent than a standard or requirement established or promulgated under this part.

SEC. 4508. LIMITATIONS ON THE SALE OF CERTAIN DRY CELL BATTERIES CONTAINING MERCURY.**(a) IN GENERAL.**—

(1) **ALKALINE-MANGANESE BATTERY.**—No person shall sell, offer for sale, or offer for promotional purposes any alkaline-manganese battery with a mercury content that was intentionally introduced, and that exceeds the applicable mercury concentration level under paragraph (2) or (3).

(2) **OTHER THAN BUTTON-OR COIN-SHAPED.**—(A) For any alkaline manganese battery that is not a button-shaped or coin-shaped battery, and that is manufactured on or after January 1, 1993, the applicable mercury concentration level is 250 parts per million by weight.

(B) For any alkaline manganese battery described in subparagraph (A) that is manufactured on or after January 1, 1996, the applicable mercury concentration level is 1 part per million by weight.

(3) **BUTTON-OR COIN-SHAPED.**—For any button-shaped or coin-shaped alkaline manganese battery manufactured on or after January 1, 1993, the applicable mercury concentration level is 25 milligrams of mercury per battery.

(b) **ZINC CARBON.**—No person shall sell, offer for sale, or offer for promotional purposes any zinc carbon battery manufactured on or after January 1, 1993, that contains any mercury that was intentionally introduced into the battery at a mercury concentration level greater than 1 part per million by weight.

(c) **CONSUMER MERCURIC-OXIDE BATTERIES.**—No person may sell, offer for sale, or offer for promotional purposes, any consumer mercuric-oxide battery on or after January 1, 1994, except that for consumer hearing aids, such consumer mercuric-oxide batteries used in hearing aids, such prohibition shall take effect on January 1, 1996. The Administrator shall

establish, by rule, an earlier effective date if the Administrator determines that consumer mercuric oxide batteries are no longer required for use in certain hearing aids that, as of the date of enactment of this part, require the use of such batteries.

(d) **MERCURIC-OXIDE BATTERIES.**—

(1) **IN GENERAL.**—No person may sell, offer for sale, or offer for promotional purposes, any mercuric-oxide battery on or after July 1, 1993, unless such person complies with the labeling requirements of paragraph (2).

(2) **CONTENT.**—Each mercuric-oxide battery shall include a label on the battery that contains—

(A) the statement: "CONTAINS MERCURY, MUST BE RECYCLED OR DISPOSED OF PROPERLY"; and

(B) the symbol: "Hg" (the chemical symbol for mercury).

SEC. 4509. DRY CELL BATTERY COLLECTION AND RECYCLING.
(a) **PROHIBITION.**—Beginning on the day after the date that is 36 months after the date of enactment of this section, no person shall sell, offer for sale, or offer for promotional purposes—

(1) any mercuric-oxide battery;

(2) any rechargeable battery; or

(3) any rechargeable consumer product with nonremovable batteries,

unless such batteries or products are covered by a battery management plan approved pursuant to this section.

(b) **LIABILITY FOR COSTS.**—Notwithstanding any other provision of law, each manufacturer of a mercuric-oxide battery or rechargeable battery shall be liable for the costs, related to the environmentally sound collection, transportation, and recycling or proper disposal of each mercuric-oxide or rechargeable battery produced by the manufacturer and sold in the United States, incurred pursuant to a battery management plan approved pursuant to this section.

(c) **IN GENERAL.**—

(1) **REGULATIONS.**—Not later than 18 months after the date of enactment of this section, the Administrator, with the advice and counsel of a Battery Management Plan Advisory Committee (hereafter in this section referred to as the "Advisory Committee") established pursuant to subsection (n) shall promulgate regulations setting forth the requirements for battery management plans.

(2) **PREPARATION.**—Before the Administrator promulgates the regulations under paragraph (1), the Administrator, in consultation with the Advisory Committee, shall review, evaluate and compare existing battery management and collection systems, including those used in various States of this Nation, the European Community, and other major industrialized nations, and the Administrator and the Advisory Committee shall consult with the States, manufacturers, and the public to determine the most environmentally sound and efficient method for battery management. The Advisory Committee shall make recommendations to the Administrator upon completion of its activities under this paragraph before the Administrator promulgates the regulations under paragraph (1).

(3) **BATTERY MANAGEMENT PLANS.**—Not later than 30 months after the date of enactment of this part, each manufacturer of mercuric-oxide or rechargeable batteries or rechargeable consumer products with nonremovable batteries sold or offered for sale or promotional purposes in the United States, shall prepare and submit 1 or more written battery management plans to the Administrator for the batteries or products described in this paragraph manufactured by such manufacturer. Any manufacturer subject to the requirements of section 4509(a) that wishes to file its own plan may sponsor a plan for the batteries or products sold by that manufacturer.

(4) **REQUIREMENTS FOR PLANS.**—The battery management plans described in paragraph (1) shall provide for environmentally sound collection, transportation, and recycling or disposal, upon termination of use, of each mercuric-oxide or rechargeable battery or rechargeable consumer product with nonremovable batteries produced by the manufacturer, and shall meet the requirements of subsection (t). Each battery management plan for a manufacturer shall have annual goals for the recycling of at least a minimum quantity of mercuric-oxide or rechargeable batteries or rechargeable consumer products manufactured by that manufacturer (or the equivalent type of batteries or products manufactured by other manufacturers). The goal for any calendar year shall be a percentage of the total quantity of such batteries or products manufactured by such manufacturer in that calendar year. For the first calendar year beginning after the approval by the Administrator of the battery management plan, the percentage shall be at least 30 percent of the quantity of such batteries or products manufactured in that year, for the second calendar year after such approval, the goal shall be at least 40 percent, and for each calendar year thereafter the goal shall be at least 50 percent.

(5) **PROHIBITED METHODS OF DISPOSAL UNDER A PLAN.**—No plan described in paragraph (1) may provide for disposal of any rechargeable consumer product—

(A) by incineration for the purpose of reducing waste volume or generating energy or
(B) in a solid waste disposal facility other than a solid waste disposal facility that is the subject of a permit issued in accordance with subtitle C.

(6) **GROUP PLAN.**—Two or more manufacturers subject to the requirements of this section, or an organization or association representing such manufacturer, may submit, with respect to any specific mercuric-oxide or rechargeable battery or rechargeable consumer product with nonremovable batteries manufactured by the manufacturers, one or more group plans that meet the requirements of this section, in lieu of submitting individual plans.

(d) **CONTENT OF BATTERY MANAGEMENT PLAN, ADMINISTRATIVE REVIEW.**—

(1) **IN GENERAL.**—Each battery management plan described in subsection (c)(1) shall include the following:

(A) A description of the systems to be used for the collection, transportation, and recycling, or disposal of used mercuric-oxide or rechargeable batteries and rechargeable consumer products with nonremovable batteries.

(B) A commitment of financial resources by the manufacturer for the costs of implementing the plan.

(C) A strategy for informing consumers by providing the following information on any store display or advertisement that promotes the sale or use of any mercuric-oxide or rechargeable battery or rechargeable consumer product produced by the manufacturer that:

(i) The battery must be recycled or disposed of properly.

(ii) A convenient mechanism is available to the consumer for the collection, transportation, and recycling, or disposal of the battery upon termination of use.

(D) A description of the products covered by the plan, including the name on the label and such other information to identify the product that the Administrator deems appropriate.

(2) ADDITIONAL INFORMATION.—The Administrator shall, by not later than 45 days after the receipt of a plan submitted by a manufacturer, request such information as the Administrator considers necessary to review the plan. If the Administrator does not make a request under this paragraph during the 45-day period, the plan shall be deemed completed. If the Administrator makes a request under this paragraph, the plan shall be deemed completed upon receipt by the Administrator of the information requested.

(3) PLAN APPROVAL.—(A) The Administrator, in consultation with the heads of State solid waste management programs, shall approve or deny a plan submitted under this section that has been deemed completed pursuant to paragraph (2), by not later than the date that is 180 days after the date of receipt of the completed plan.

(B) If the Administrator fails to act on a completed plan within the 180-day period described in subparagraph (A), the completed plan shall be deemed approved.

(C) The Administrator shall approve the plan if the plan meets the requirements of paragraph (1) and the Administrator determines that the plan incorporates an environmentally sound and efficient method for the collection, transportation, recycling or disposal of mercuric-oxide or rechargeable batteries and rechargeable consumer products with nonremovable batteries.

(4) PLAN MODIFICATION.—After a plan has been approved, the sponsor of a plan may submit a modification of the plan to the Administrator. The review and approval of a modified plan shall be conducted in the same manner as for the review and approval of a plan under this section, except that the Administrator shall by regulation establish abbreviated review periods for modification. In order to establish an abbreviated review period, the Administrator must determine that the modification to the plan is not significant.

(5) PERIODIC REVIEW.—(A) The Administrator shall review each approved plan by not later than 36 months after the date of the approval of the plan under paragraph (3), and at least every 36 months thereafter.

(B)(i) If, upon completion of a review under subparagraph (A), the Administrator determines that a plan no longer incorporates an environmentally sound and efficient method for the collection, transportation, and recycling or disposal of mercuric-oxide or rechargeable batteries, or rechargeable consumer products with nonremovable batteries or the plan is not being implemented adequately, the Administrator shall issue a written finding, and require the manufacturer to submit a modified plan to remedy the problems identified in the finding.

(ii) During the period of time beginning on the date of issuance of a request by the Administrator for a revision of a plan, the plan reviewed by the Administrator under subsection (A) shall remain in effect.

(6) PLAN RESPONSIBILITY.—Every manufacturer that contracts with a third party to carry out any portion of the plan, shall be responsible to assure that the plan is carried out if the third party fails to perform under the contract.

(e) REPORT.—Not later than 180 days after the date of enactment of this part, and annually thereafter, each manufacturer that produces any mercuric-oxide or rechargeable battery or rechargeable consumer product with nonremovable batteries shall submit a written report to the Administrator concerning the recovery, recycling, and reclamation rates for all mercuric-oxide and rechargeable batteries and rechargeable consumer products with nonremovable batteries produced by the manufacturer. In addition to recycling rates, the report shall include the numbers of mercuric-oxide batteries, rechargeable dry cell batteries, battery packs, and rechargeable consumer products with nonremovable dry cell batteries recovered, recycled, and reclaimed. In lieu of submitting an individual report, the manufacturer may submit a group report with one or more manufacturers of such batteries and products. The Administrator shall make all reports submitted under this subsection available to the public. Within 180 days after the date on which reports are required to be submitted under this subsection, the Administrator shall review and analyze the data contained in such reports and submit a report to the Committee on Energy and Commerce of the United States House of Representatives and to the Committee on the Environment and Public Works of the United States Senate. The report shall contain the results of such review and analysis, including a summary of the numbers of batteries, by type, and product, recovered and recycled, and a summary of the recycling rates for such batteries and products during the past year for each manufacturer submitting reports under this subsection and the aggregate recycling rate for such batteries and products for all such manufacturers during such year.

(f) REGULATIONS.—The Administrator may promulgate regulations establishing such additional requirements on the collection, transportation, or storage of mercuric-oxide or rechargeable batteries as are necessary to protect human health and the environment.

(g) **ACCEPTANCE OF BATTERIES BY MANUFACTURERS.**—Beginning on the date which is 3 years after the date of enactment of the National Waste Reduction, Recycling, and Management Act, a manufacturer of batteries or battery cells shall accept at its place of business or such other location as it publicly designates, from any person spent batteries, battery cells, rechargeable batteries and battery packs of the same type as product by such manufacturer and in a quantity approximately equal to the average annual quantity sold in the United States by such manufacturer.

(h) **PROHIBITION RELATING TO THE DISPOSAL OF USED MERCURIC OXIDE OR RECHARGEABLE BATTERIES OR RECHARGEABLE CONSUMER PRODUCT WITH NONREMOVABLE BATTERIES.**—

(1) **IN GENERAL.**—Except as provided in paragraph (2), beginning on the date that is 12 months after the date of enactment of this part, no person shall recycle or dispose of any used mercuric-oxide battery or rechargeable battery or rechargeable consumer product with nonremovable batteries in a manner that is inconsistent with this section (including any regulation promulgated to carry out this section).

(2) **EXCLUSION.**—Subsection (a) shall not apply to any owner or operator of a municipal solid waste landfill, incinerator, or collection program that inadvertently receives any dry cell battery regulated under this subtitle if—

(A) the dry cell battery is commingled with other municipal solid waste and is not readily removable from the waste stream; and

(B) the owner or operator has established contractual requirements or other appropriate notification and inspection procedures, as determined by the Administrator, to ensure that dry cell batteries are not received or burned at the facility or accepted through the collection program.

(i) **ADDITIONAL AUTHORITY.**—If the Administrator issues a written determination that the continued disposal into the solid waste stream of any dry cell battery (including any used lithium, silver-oxide, zinc-air, alkaline-manganese, nickel-metal hydride or zinc-carbon battery) poses a threat to the environment or public health and safety, the Administrator shall issue regulations that establish appropriate activities that must be carried out to reduce the level of risk associated with the disposal of the battery.

(j) **INFORMATION DISSEMINATION.**—The Administrator shall, in consultation with representatives of appropriate industries and groups, establish an outreach program to educate the public concerning the proper handling and return for recycling of used mercuric-oxide and rechargeable batteries and rechargeable consumer products with nonremovable batteries.

(k) **CODING.**—

(1) **IDENTIFICATION OF DRY CELL BATTERY.**—Not later than 18 months after the date of enactment of this part, the Administrator, in consultation with State solid waste officials and battery manufacturers, shall issue regulations to require manufacturers of dry cell batteries manufactured or offered for sale in the United States to encode such batteries for the purposes of identifying the brand name and electrode type. The code shall facilitate manual or automated separation of rechargeable con-

sumer products with nonremovable batteries and rechargeable batteries or battery packs and shall be consistent with the label requirements of this subtitle. Such code may include color codes or machine-readable bar codes. In preparing battery coding regulations, the Administrator shall review, evaluate and compare battery coding systems used by various manufacturers, the States, and major industrialized nations, and shall adopt the coding system that will best facilitate international battery recycling and disposal efforts. Such regulations shall apply to dry cell batteries manufactured on or after July 1, 1994.

(2) **BUTTON AND COIN CELL BATTERY EXCEPTION.**—

(A) **IN GENERAL.**—Dry cell batteries which resemble buttons and coins in size and shape shall be exempt from the coding regulations issued under paragraph (1), except that consumer mercuric-oxide batteries shall be encoded with a plus sign ("+" inside a circle).

(B) **EXCEPTION.**—Notwithstanding subparagraph (A), if the Administrator determines that the coding of a button or coin battery described in subparagraph (A) would not interfere with the electrical conductivity between cell terminals or the electrical contacts in devices with respect to which the cells are used with the battery mechanism of consumer product and would not cause unfavorable reactions or effects in the battery powered product, the Administrator shall, by regulation, require the coding of such battery pursuant to this section.

(3) **LABELING.**—

(A) **IN GENERAL.**—Each rechargeable battery, rechargeable consumer product with nonremovable batteries, battery pack containing one or more rechargeable batteries, and the package for each such product, manufactured after July 1, 1993, shall—

(i) be labeled in a manner that is visible to consumers;

(ii) include the standard abbreviation for the chemical composition of the battery or battery pack; and

(iii) inform consumers that rechargeable batteries when no longer reusable must be collected and recycled or disposed in an environmentally sound manner (as required under this Act).

(B) **REQUIREMENTS FOR LABELING VISIBLE TO CONSUMERS.**—(i) Labeling visible to consumers prior to purchase shall appear on—

(I) each rechargeable consumer product or the package containing the rechargeable consumer product;

(II) each rechargeable battery or battery pack sold separately from a rechargeable consumer product, or

(III) each retail display advertising or offering for sale any rechargeable battery or battery pack.

(ii) Labeling visible to consumers at the time of recycling or disposal shall appear on—

- (I) each rechargeable consumer product not containing an easily removable rechargeable battery or battery pack;
- (II) each rechargeable battery or battery pack easily removable from a rechargeable consumer product; and
- (III) each rechargeable battery or battery pack sold separately from a rechargeable consumer product.

(C) **CONTENT.**—The labeling required under paragraph (A) shall include one of the following statements (whichever is applicable), printed in capital letters:

- (i) "CONTAINS NICKEL-CADMUM RECHARGEABLE BATTERY. MUST BE RECYCLED OR DISPOSED OF PROPERLY."
- (ii) "CONTAINS SEALED LEAD RECHARGEABLE BATTERY. MUST BE RECYCLED OR DISPOSED OF PROPERLY."
- (iii) "NICKEL-CADMUM RECHARGEABLE BATTERY. MUST BE RECYCLED OR DISPOSED OF PROPERLY."

(iv) "SEALED LEAD BATTERY. MUST BE RECYCLED OR DISPOSED OF PROPERLY."

(I) **INFORMATION GATHERING AND ACCESS.**—

(1) **ACTION AUTHORIZED.**—Any officer, employee, or representative of the Administrator is authorized to take action under paragraph (2) or (3), or both, at any facility or other place or property where entry is necessary to determine compliance with, or to enforce this subtitle—

(2) **ACCESS TO INFORMATION.**—

(A) **IN GENERAL.**—Any officer, employee, or representative of the Administrator may require any person who has (or any person whom such officer, employee, or representative has reason to believe may have) information relevant to the implementation of this subtitle to furnish, upon reasonable request, information or documents pertaining to such matter. In addition, upon reasonable notice, such person either—

- (i) shall grant any such officer, employee, or representative access during regular business hours to such facility or location to inspect and copy all documents and records relevant to such matters; or
- (ii) shall copy and furnish to the officer, employee, or representative all such documents or records, at the option and expense of such person.

(B) **CONFIDENTIALITY.**—The Administrator shall maintain the confidentiality of documents and records that contain proprietary information. Notwithstanding any limitation contained in this section, all documents, records, and other information reported to or otherwise obtained by the Administrator (or any representative of the Administrator) under this section shall be made available to a duly authorized subcommittee or committee of the Congress upon the written request of such subcommittee or committee.

(3) **INSPECTION AND SAMPLES.**—

(A) **IN GENERAL.**—Any officer, employee, or representative described in paragraph (1) is authorized to inspect and obtain samples from any facility (or other location) described in paragraph (1). Any such officer, employee, or representative is authorized to inspect and obtain samples of any materials maintained at such facility or location. Each such inspection shall be completed with reasonable promptness.

(B) **SAMPLES.**—If the officer, employee, or representative obtains samples pursuant to subparagraph (A), before leaving the premises of the facility (or other location) such officer, employee, or representative shall give to the owner or operator of such facility (or other location) a receipt that describes the sample obtained and, if requested, a portion of each sample. A copy of the results of any analysis made of such samples shall be furnished promptly to the owner or operator of the facility (or other location).

(4) **COMPLIANCE ORDERS.**—

(A) **ISSUANCE.**—If consent is not granted regarding any request made by an officer, employee or representative under paragraph (2) or (3), the Administrator may issue an order to direct compliance with the request. The order may be issued after such notice and opportunity for consultation as is reasonably appropriate under the circumstances.

(B) **COMPLIANCE.**—The Administrator may request the Attorney General to commence a civil action to compel compliance with a request or order described in subparagraph (A). In any case where there is a reasonable basis to believe there may be a violation of this subtitle, the court shall—

(i) in the case of interference with entry or inspection, enjoin such interference, or direct compliance with any order issued by the Administrator to prohibit interference with entry or inspection (unless under the circumstances of the case, the demand for entry or inspection is arbitrary and capricious, an abuse of discretion, or does not otherwise meet the requirements of applicable laws); or

(ii) in the case an order or request for any information or document, enjoin interference with such request or order (unless under the circumstances of the case the demand for information or documents is arbitrary and capricious, an abuse of discretion, or does not otherwise meet the requirements of applicable laws).

(5) **STATUTORY CONSTRUCTION RELATING TO PREEMPTION.**—

Nothing in this subsection shall be construed so as to preclude the Administrator or a State from securing access or obtaining information in any lawful manner that is not described in this section.

(m) **ADVISORY COMMITTEE.**—

(1) **BATTERY MANAGEMENT PLAN ADVISORY COMMITTEE.**—

(A) **ESTABLISHMENT.**—Not later than 6 months after the date of enactment of this part, the Administrator shall establish a Battery Management Advisory Committee (hereafter in this section referred to as the "Advisory Committee").

(B) **MEMBERSHIP.**—The members of the Committee shall consist of 15 members. The members of the Committee shall include representatives of State and local governments, national environmental organizations, and organizations representing dry cell battery manufacturers, consumers, rechargeable consumer product manufacturers, battery distributors, and the battery recycling industry.

(C) **VACANCIES.**—Any vacancy on the Committee shall be filled in the same manner as the original appointment.

(D) **CHAIRMAN.**—A Chairman shall be selected by the Administrator from among the members of the Advisory Committee.

(E) **DUTIES OF THE ADVISORY COMMITTEE.**—The Committee shall advise the Administrator concerning the development of regulations for the preparation and management of battery plans pursuant to subsection (c), and shall advise the Administrator concerning any other matter that the Administrator determines to be appropriate.

(F) **MEETINGS.**—The Advisory Committee shall meet at the call of the Chairman.

(G) **STAFF.**—The Administrator shall provide such staff as may be necessary to enable the Advisory Committee to perform its duties.

(H) **TERMINATION.**—The Advisory Committee shall terminate on January 1, 1998.

(I) **REPORT TO THE CONGRESS.**—

(1) **IN GENERAL.**—Not later than 36 months after the date of enactment of this part, after opportunity for public comment, the Administrator shall submit a report to the Congress that documents the implementation of this subtitle, and makes such recommendations as the Administrator determines to be appropriate.

(2) **CONTENTS OF REPORT.**—The report described in paragraph (1) shall include the following:

(A) A review of any activities carried out by States in response to this subtitle, including any administrative actions taken to protect public health and safety and the environment with respect to the collection, transportation, and recycling or disposal of dry cell batteries.

(B) An estimate, for the period beginning on the date of enactment of this subtitle, and ending on the date of preparation of the report, of any reduction in the number of dry cell batteries (particularly mercuric-oxide and rechargeable batteries) entering the solid waste stream for disposal in incinerators and municipal solid waste landfills and municipal solid waste composting facilities.

(C) An estimate of further reductions that will occur.

(D) A review of the recycling and reclamation rates for mercuric-oxide and rechargeable batteries and rechargeable consumer products with nonremovable batteries and recommendations for improving such rates.

(E) An analysis of costs associated with implementation of dry cell management plans and recommendations as to how such costs can be reduced.

(o) **STUDY OF OTHER DRY CELL BATTERIES.**—Not later than 18 months after the date of enactment of the National Waste Reduction, Recycling, and Management Act, the Administrator shall submit a study and report to the Congress concerning the disposal of dry cell batteries, including alkaline-manganese, nickel-metal hydride, silver oxide, and carbon-zinc dry cell batteries (other than dry cell batteries referred to in subsection (a)) and shall publish in the Federal Register either a proposed rule to regulate the collection, transportation, storage, and recycling or proper disposal of any such dry cell batteries in such manner as the Administrator deems necessary to protect human health and the environment or a determination that no such regulations are needed. Such study and report shall include, at a minimum, the following:

(1) The volume of the various types of such dry cell batteries produced annually and an estimate of the volume of such dry cell batteries disposed of annually in municipal solid waste landfills and incinerators.

(2) The necessity and feasibility of recycling such dry cell batteries, including technologies for recovering reusable materials from such batteries and the costs of recycling such dry cell batteries.

(3) A comparison of the environmental impacts resulting from the landfilling, composting, and incineration of dry cell batteries.

(4) An evaluation of potential effects of long-term low-level exposure to the constituents of dry cell batteries.

(5) Such other information as the Administrator determines is appropriate, taking into account the current disposal practices relative to such dry cell batteries and the potential alternatives to such dry cell batteries.

SEC. 4510. RECHARGEABLE CONSUMER PRODUCTS.

(a) **PROHIBITION.**—After July 1, 1993, no person shall manufacture any rechargeable consumer product, unless—

(1) the rechargeable battery powering the product can be easily removed and easily replaced by the consumer or is contained in a battery pack that is separate from the product and can be easily removed;

(2) the rechargeable battery, battery pack, or rechargeable consumer product with nonremovable battery has a manufacturer's name or brand name affixed to it;

(3) the rechargeable consumer product with nonremovable batteries, the package containing the product, and the rechargeable battery are labeled in accordance with subsection (b); and

(4) the instruction manual accompanying the rechargeable consumer product includes specific information explaining methods to ensure the proper recycling or disposal of the used removable rechargeable batteries or rechargeable consumer products as provided for under this Act.

(b) EXEMPTIONS.

(1) **IN GENERAL.**—With respect to any rechargeable consumer product, any person may submit an application to the Administrator for an exemption from the requirements of subsection (a) in accordance with the procedures under paragraph (2) and in

accordance with regulations that the Administrator shall promulgate. The application shall include the following information:

(A) A statement of the specific basis for the request for the exemption.

(B) The name, business address, and telephone number of the applicant.

(2) GRANTING OF EXEMPTION.—Within 90 days after the receipt of an application under paragraph (1), the Administrator shall approve or deny the application. Upon approval of the application the Administrator shall grant an exemption to the applicant. The exemption shall be issued for a period of time that the Administrator determines to be appropriate, except that such period shall not exceed 2 years. The Administrator shall grant an exemption on the basis of evidence supplied to the Administrator that—

(A) the redesign of the rechargeable consumer product to comply with the requirements of this section would result in significant danger to public health or safety or the environment; or

(B) the rechargeable consumer product cannot reasonably be redesigned and manufactured to comply with the requirements of this section prior to the expiration of the period of the exemption (or, as the case may be, the renewal period).

(3) RENEWAL OF EXEMPTION.—A person granted an exemption may apply for a renewal of the exemption in accordance with the requirements and procedures described in paragraph (2). The Administrator may grant a renewal of an exemption to apply for a period of not more than 24 months after the date of granting of the renewal. Upon the expiration of the renewal, an additional renewal may be granted in accordance with the requirements and procedures described in paragraph (2). In addition to making the determinations under subparagraphs (A) and (B) of paragraphs (2), in order to grant a renewal under this paragraph, the Administrator must make a determination that there is no feasible or practical alternative or substitute for the rechargeable consumer product that is the subject of the renewal application.

SEC. 4511. NOTICE IN RETAIL SALES ESTABLISHMENTS.

After July 1, 1993, a person who sells, or offers for sale, rechargeable batteries or battery packs, or rechargeable consumer appliances at retail shall post written notice that—

(1) is clearly visible in a public area of the establishment in which such batteries, battery packs, or products are sold or offered for sale;

(2) is at least 8½ inches by 11 inches; and

(3) informs consumers—

- (A) the battery or product must be recycled or properly disposed of; and
- (B) how to conveniently assure that their used batteries are collected and recycled or properly disposed of.

SEC. 4512. RELATIONSHIP TO SUBTITLE C.
Nothing in this part shall be construed to restrict the authority of the Administrator to list or identify wastes as hazardous, and regulate the management of such wastes under subtitle C of this Act.

PART VI—ENFORCEMENT PROVISIONS

SEC. 4601. INSPECTIONS.

(a) ACCESS ENTRY.—(1) For purposes of developing or assisting in the development of any regulation or enforcing the provisions of this subtitle, any person who generates, stores, treats, transports, disposes of, or otherwise handles or has handled solid waste (other than hazardous waste identified or listed under subtitle C) shall, upon request of any officer, employee, or representative of the Environmental Protection Agency, duly designated by the Administrator, or upon request of any duly designated officer, employee, or representative of a State, furnish information relating to such wastes and to permit such person at all reasonable times to have access to, and to copy, all records relating to such wastes. For the purposes of developing or assisting in the development of any regulation or enforcing the provisions of this subtitle, such officers, employees, or representatives are authorized—

(A) to enter at reasonable times any establishment or other place where solid wastes (other than hazardous waste identified or listed under subtitle C) are or have been generated, stored, treated, disposed of, or transported from; and

(B) to inspect and obtain samples from any person of any such wastes and samples of any containers or labeling for such wastes.

(2) Each such inspection shall be commenced and completed with reasonable promptness. If the officer, employee or representative obtains any samples, prior to leaving the premises, he shall give to the owner, operator, or agent in charge a receipt describing the sample obtained and if requested a portion of each such sample in volume or weight to the portion retained. If any analysis is made of such samples, a copy of the results of such analysis shall be furnished promptly to the owner, operator, or agent in charge.

(b) AVAILABILITY TO PUBLIC.—(1) Any records, reports, or information (including records, reports, or information obtained from representatives of the Environmental Protection Agency) obtained from any person under this section shall be available to the public, except that upon a showing satisfactory to the Administrator (or the State, as the case may be) by any person that records, reports, or information, or particular part thereof, to which the Administrator (or the State, as the case may be) or any officer, employee or representative thereof has access under this section, if made public, would divulge information entitled to protection under section 1905 of title 18 of the United States Code, such information or particular portion thereof shall be considered confidential in accordance with the purposes of that section, except that such record, report, document, or information may be disclosed to other officers, employees, or authorized representatives of the United States concerned with carrying

FTC news

Federal Trade Commission *Washington, D.C. 20580*

FOR RELEASE: JULY 28, 1992

FTC CHAIRMAN STEIGER ANNOUNCES NATIONAL GUIDELINES TO PREVENT MISLEADING ENVIRONMENTAL MARKETING CLAIMS

The Federal Trade Commission today issued guidelines to help reduce consumer confusion and prevent the false or misleading use of environmental terms such as "recyclable," "degradable," and "environmentally friendly" in the advertising and labeling of products in the marketplace.

In announcing the guides at a Congressional hearing in Washington, D.C. this morning, FTC Chairman Janet D. Steiger said, "Our goal is to protect consumers and to bolster their confidence in environmental claims, and to reduce manufacturers' uncertainty about which claims might lead to FTC law-enforcement actions, thereby encouraging marketers to produce and promote products that are less harmful to the environment. I believe these guides, together with continued vigorous law enforcement by the FTC and the states, go a long way toward achieving these goals."

Steiger noted the extensive cooperation, expertise and support received from the U.S. Environmental Protection Agency in the guidelines project. EPA Administrator William K. Reilly expressed strong support for the FTC's decision today: "The Federal Task Force on labeling composed of EPA, FTC and the U.S. Office of Consumer Affairs has worked closely on the issue of environmental marketing. A primary goal of the Task Force has been to promote clear federal guidance to those who wish to make environmental claims. The FTC has today made a very significant contribution to that goal. The guidelines will help provide environmentally conscious consumers with more reliable information, ensuring the use of accurate, specific claims and discouraging those that are vague, trivial and overstated. We will see further environmental benefits as consumers use the formidable power of the marketplace to help achieve environmental goals. We applaud the FTC's decision today and are pleased we could assist the FTC in its efforts."

Ann Windham Wallace, Director of the U.S. Office of Consumer Affairs (USOCA), said, "Surveys show consumers are concerned about environmental issues. We are pleased the FTC has taken these concerns into account in developing its voluntary environmental

(Green Guides--07/28/92)

marketing guides. We believe the guides will help consumers understand the basis for claims marketers may make, as well as enable consumers to make comparisons and choices based on criteria they believe is important."

The FTC received petitions to issue environmental guides from a number of industry members and trade associations. In addition, a task force of state Attorneys General recommended that the federal government issue uniform standards. The Commission also held two days of public hearings on whether the FTC should augment its case-by-case law enforcement with national guidelines. (The Commission has brought eight such law-enforcement actions in the last two years.) The vast majority of comments received from consumer and industry groups, environmental organizations, state and local governments, USOCA, and the EPA, supported the issuance of FTC guidelines.

A summary of the Environmental Marketing Guides immediately follows this news release. Generally, the guides focus on how consumers are likely to interpret various environmental claims, and identify types of claims that should be explained or qualified to avoid deceiving consumers. For example, broad environmental benefit claims, claims about benefits that will not occur if the product is disposed of in the customary way, or claims where it is not clear whether the benefit applies to the product or its packaging, should be explained or qualified, according to the FTC guides. Otherwise, marketers must be able to substantiate whatever interpretation reasonable consumers draw from those claims. The guides also illustrate the types of qualifications that can be made to avoid consumer deception.

The guides do not rigidly define environmental terms. Instead, through specific guidance and a series of examples of both acceptable and deceptive claims, the guides set out the different meanings that might be conveyed by the use or omission of particular language describing environmental features. The types of claims addressed by the guides include recyclable, degradable, compostable, recycled content, source reduction, refillable, and ozone safe.

The guides will be published in the Federal Register shortly. The guides are not, themselves, legally enforceable. They represent administrative interpretations of laws administered by the Commission to guide marketers in conforming with legal requirements. The guides do not preempt state or local laws or regulations. The Commission will request comments on how the guides are working after three years.

The Commission has prepared an environmental assessment of the guidelines, available to the public for review and comment for 30 days, until Aug. 27. The assessment concludes that an Environmental Impact Statement is not necessary because the guides themselves will not result in a "significant impact on the environment."

SUMMARY OF FTC ENVIRONMENTAL MARKETING GUIDELINES

Background:

The Federal Trade Commission's Guides for the Use of Environmental Marketing Claims are based on a review of data obtained during FTC law-enforcement investigations, from two days of hearings the FTC held in July 1991, and from more than 100 written comments received from the public. Like all FTC guides, they are administrative interpretations of laws administered by the FTC. Thus, while they are not themselves legally enforceable, they provide guidance to marketers in conforming with legal requirements. The guides apply to advertising, labeling and other forms of marketing to consumers. They do not preempt state or local laws or regulations.

The Commission will seek public comment on whether to modify the guides after three years. In the meantime, interested parties may petition the Commission to amend the guides.

Basically, the guides describe various claims, note those that should be avoided because they are likely to be misleading, and illustrate the kinds of qualifying statements that may have to be added to other claims to avoid consumer deception. The claims are followed by examples that illustrate the points. The guides outline principles that apply to all environmental claims, and address the use of eight commonly-used environmental marketing claims.

General Concerns:

As for any advertising claim, the FTC guides specify that any time marketers make objective environmental claims -- whether explicit or implied -- they must be substantiated by competent and reliable evidence. In the case of environmental claims, that evidence often will have to be competent and reliable scientific evidence.

The guides outline four other general concerns that apply to all environmental claims. These are:

- (1) Qualifications and disclosures should be sufficiently clear and prominent to prevent deception.
- (2) Environmental claims should make clear whether they apply to the product, the package, or a component of either. Claims need not be qualified with regard to minor, incidental components of the product or package.

(Summary of FTC Environmental Marketing Guidelines)

- (3) Environmental claims should not overstate the environmental attribute or benefit. Marketers should avoid implying a significant environmental benefit where the benefit is, in fact, negligible.
- (4) A claim comparing the environmental attributes of one product with those of another product should make the basis for the comparison sufficiently clear and should be substantiated.

The guides then discuss particular environmental marketing claims. In most cases, each discussion is followed in the guides by a series of examples to illustrate how the principles apply to specific claims.

General environmental benefit claims. In general, unqualified general environmental claims are difficult to interpret, and may have a wide range of meanings to consumers. Every express and material implied claim conveyed to consumers about an objective quality should be substantiated. Unless they can be substantiated, broad environmental claims should be avoided or qualified.

Degradable, Biodegradable, and Photodegradable. In general, unqualified degradability claims should be substantiated by evidence that the product will completely break down and return to nature, that is, decompose into elements found in nature within a reasonably short period of time after consumers dispose of it in the customary way. Such claims should be qualified to the extent necessary to avoid consumer deception about: (a) the product or package's ability to degrade in the environment where it is customarily disposed; and (b) the extent and rate of degradation.

Compostable. In general, unqualified compostable claims should be substantiated by evidence that all the materials in the product or package will break down into, or otherwise become part of, usable compost (e.g., soil-conditioning material, mulch) in a safe and timely manner in an appropriate composting program or facility, or in a home compost pile or device. Compostable claims should be qualified to the extent necessary to avoid consumer deception: (1) if municipal composting facilities are not available to a substantial majority of consumers or communities where the product is sold; (2) if the claim misleads consumers about the environmental benefit provided when the product is disposed of in a landfill; or (3) if consumers misunderstand the claim to mean that the package can be safely composted in their home compost pile or device, when in fact it cannot.

Recyclable. In general, a product or package should not be marketed as recyclable unless it can be collected, separated, or otherwise recovered from the solid waste stream for use in the form of raw materials in the manufacture or assembly of a new product or package. Unqualified recyclable claims may be made if the entire product or package, excluding incidental components, is recyclable.

(Summary of FTC Environmental Marketing Guidelines)

Claims about products with both recyclable and non-recyclable components should be adequately qualified. If incidental components significantly limit the ability to recycle product, the claim would be deceptive. If, because of its size or shape, a product is not accepted in recycling programs, it should not be marketed as recyclable. Qualification may be necessary to avoid consumer deception about the limited availability of recycling programs and collection sites if recycling collection sites are not available to a substantial majority of consumers or communities.

Recycled Content. In general, claims of recycled content should only be made for materials that have been recovered or diverted from the solid waste stream, either during the manufacturing process (pre-consumer) or after consumer waste (post-consumer). An advertiser should be able to substantiate that pre-consumer content would otherwise have entered the solid waste stream. Distinctions made between pre- and post-consumer content should be substantiated. Unqualified claims may be made if the entire product or package, excluding minor, incidental components, is made from recycled material. Products or packages only partially made of recycled material should be qualified to indicate the amount, by weight, in the finished product or package.

Source Reduction. In general, claims that a product or package has been reduced or is lower in weight, volume, or toxicity should be qualified to the extent necessary to avoid consumer deception about the amount of reduction and the basis for any comparison asserted.

Refillable. In general, an unqualified refillable claim should not be asserted unless a system is provided for: (1) the collection and return of the package for refill; or (2) the later refill of the package by consumers with product subsequently sold in another package. The claim should not be made if it is up to consumers to find ways to refill the package.

Ozone Safe and Ozone Friendly. In general, a product should not be advertised as "ozone safe," "ozone friendly," or as not containing CFCs if the product contains any ozone-depleting chemical. Claims about the reduction of a product's ozone-depletion potential may be made if adequately substantiated.

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GUIDES FOR THE USE OF ENVIRONMENTAL MARKETING CLAIMS

**THE APPLICATION OF SECTION 5
OF THE FEDERAL TRADE COMMISSION ACT
TO ENVIRONMENTAL ADVERTISING AND MARKETING PRACTICES**

**Federal Trade Commission
July 1992**

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A. STATEMENT OF PURPOSE:

These guides represent administrative interpretations of laws administered by the Federal Trade Commission for the guidance of the public in conducting its affairs in conformity with legal requirements. These guides specifically address the application of Section 5 of the FTC Act to environmental advertising and marketing practices. They provide the basis for voluntary compliance with such laws by members of industry. Conduct inconsistent with the positions articulated in these guides may result in corrective action by the Commission under Section 5 if, after investigation, the Commission has reason to believe that the behavior falls within the scope of conduct declared unlawful by the statute.

B. SCOPE OF GUIDES:

These guides apply to environmental claims included in labeling, advertising, promotional materials and all other forms of marketing, whether asserted directly or by implication, through words, symbols, emblems, logos, depictions, product brand names, or through any other means. The guides apply to any claim about the environmental attributes of a product or package in connection with the sale, offering for sale, or marketing of such product or package for personal, family or household use, or for commercial, institutional or industrial use.

Because the guides are not legislative rules under Section 18 of the FTC Act, they are not themselves enforceable regulations, nor do they have the force and effect of law. The guides themselves do not preempt regulation of other federal agencies or of state and local bodies governing the use of environmental marketing claims. Compliance with federal, state or local law and regulations concerning such claims, however, will not necessarily preclude Commission law enforcement action under Section 5.

C. STRUCTURE OF THE GUIDES:

The guides are composed of general principles and specific guidance on the use of environmental claims. These general principles and specific guidance are followed by examples that generally address a single deception concern. A given claim may raise issues that are addressed under more than one example and in more than one section of the guides.

In many of the examples, one or more options are presented for qualifying a claim. These options are intended to provide a "safe harbor" for marketers who want certainty about how to make environmental claims. They do not represent the only permissible approaches to qualifying a claim. The examples do not illustrate all possible acceptable claims or disclosures that would be permissible under Section 5. In addition, some of the illustrative disclosures may be appropriate for use on labels but

not in print or broadcast advertisements and vice versa. In some instances, the guides indicate within the example in what context or contexts a particular type of disclosure should be considered.

D. REVIEW PROCEDURE:

Three years after the date of adoption of these guides, the Commission will seek public comment on whether and how the guides need to be modified in light of ensuing developments.

Parties may petition the Commission to alter or amend these guides in light of substantial new evidence regarding consumer interpretation of a claim or regarding substantiation of a claim. Following review of such a petition, the Commission will take such action as it deems appropriate.

E. INTERPRETATION AND SUBSTANTIATION OF ENVIRONMENTAL MARKETING CLAIMS:

Section 5 of the FTC Act makes unlawful deceptive acts and practices in or affecting commerce. The Commission's criteria for determining whether an express or implied claim has been made are enunciated in the Commission's Policy Statement on Deception.¹ In addition, any party making an express or implied claim that presents an objective assertion about the

¹ Cliffdale Associates, Inc., 103 F.T.C. 110, at 176, 176 n.7, n.8, Appendix, reprinting letter dated Oct. 14, 1983, from the Commission to The Honorable John D. Dingell, Chairman, Committee on Energy and Commerce, U.S. House of Representatives (1984) ("Deception Statement").

environmental attribute of a product or package must, at the time the claim is made, possess and rely upon a reasonable basis substantiating the claim. A reasonable basis consists of competent and reliable evidence. In the context of environmental marketing claims, such substantiation will often require competent and reliable scientific evidence. For any test, analysis, research, study or other evidence to be "competent and reliable" for purposes of these guides, it must be conducted and evaluated in an objective manner by persons qualified to do so, using procedures generally accepted in the profession to yield accurate and reliable results. Further guidance on the reasonable basis standard is set forth in the Commission's 1983 Policy Statement on the Advertising Substantiation Doctrine. 49 Fed. Reg. 30,999 (1984); appended to Thompson Medical Co., 104 F.T.C. 648 (1984). These guides, therefore, attempt to preview Commission policy in a relatively new context -- that of environmental claims.

F. GENERAL PRINCIPLES:

The following general principles apply to all environmental marketing claims, including, but not limited to, those described in Part G below. In addition, Part G contains specific guidance applicable to certain environmental marketing claims. Claims should comport with all relevant provisions of these guides, not simply the provision that seems most directly applicable.

1. *Qualifications and Disclosures:* The Commission traditionally has held that in order to be effective, any qualifications or disclosures such as those described in these guides should be sufficiently clear and prominent to prevent deception. Clarity of language, relative type size and proximity to the claim being qualified, and an absence of contrary claims that could undercut effectiveness, will maximize the likelihood that the qualifications and disclosures are appropriately clear and prominent.

2. *Distinction Between Benefits of Product and Package:* An environmental marketing claim should be presented in a way that makes clear whether the environmental attribute or benefit being asserted refers to the product, the product's packaging or to a portion or component of the product or packaging. In general, if the environmental attribute or benefit applies to all but minor, incidental components of a product or package, the claim need not be qualified to identify that fact. There may be exceptions to this general principle. For example, if an unqualified "recyclable" claim is made and the presence of the incidental component significantly limits the ability to recycle the product, then the claim would be deceptive.

Example 1: A box of aluminum foil is labeled with the claim "recyclable," without further elaboration. Unless the type of product, surrounding language, or other context of the phrase

establishes whether the claim refers to the foil or the box, the claim is deceptive if any part of either the box or the foil, other than minor, incidental components, cannot be recycled.

Example 2: A soft drink bottle is labeled "recycled." The bottle is made entirely from recycled materials, but the bottle cap is not. Because reasonable consumers are likely to consider the bottle cap to be a minor, incidental component of the package, the claim is not deceptive. Similarly, it would not be deceptive to label a shopping bag "recycled" where the bag is made entirely of recycled material but the easily detachable handle, an incidental component, is not.

3. Overstatement of Environmental Attribute: An environmental marketing claim should not be presented in a manner that overstates the environmental attribute or benefit, expressly or by implication. Marketers should avoid implications of significant environmental benefits if the benefit is in fact negligible.

Example 1: A package is labeled, "50% more recycled content than before." The manufacturer increased the recycled content of its package from 2 percent recycled material to 3 percent recycled material. Although the claim is technically true, it is likely to convey the false impression that the

advertiser has increased significantly the use of recycled material.

Example 2: A trash bag is labeled "recyclable" without qualification. Because trash bags will ordinarily not be separated out from other trash at the landfill or incinerator for recycling, they are highly unlikely to be used again for any purpose. Even if the bag is technically capable of being recycled, the claim is deceptive since it asserts an environmental benefit where no significant or meaningful benefit exists.

Example 3: A paper grocery sack is labeled "reusable." The sack can be brought back to the store and reused for carrying groceries but will fall apart after two or three reuses, on average. Because reasonable consumers are unlikely to assume that a paper grocery sack is durable, the unqualified claim does not overstate the environmental benefit conveyed to consumers. The claim is not deceptive and does not need to be qualified to indicate the limited reuse of the sack.

4. Comparative Claims: Environmental marketing claims that include a comparative statement should be presented in a manner that makes the basis for the comparison sufficiently clear to avoid consumer deception. In addition, the advertiser should be able to substantiate the comparison.

Example 1: An advertiser notes that its shampoo bottle contains "20% more recycled content." The claim in its context is ambiguous. Depending on contextual factors, it could be a comparison either to the advertiser's immediately preceding product or to a competitor's product. The advertiser should clarify the claim to make the basis for comparison clear, for example, by saying "20% more recycled content than our previous package." Otherwise, the advertiser should be prepared to substantiate whatever comparison is conveyed to reasonable consumers.

Example 2: An advertiser claims that "our plastic diaper liner has the most recycled content." The advertised diaper does have more recycled content, calculated as a percentage of weight, than any other on the market, although it is still well under 100% recycled. Provided the recycled content and the comparative difference between the product and those of competitors are significant and provided the specific comparison can be substantiated, the claim is not deceptive.

Example 3: An ad claims that the advertiser's packaging creates "less waste than the leading national brand." The advertiser's source reduction was implemented sometime ago and is supported by a calculation comparing the relative solid waste contributions of the two packages. The advertiser should be able to substantiate that the comparison remains accurate.

G. ENVIRONMENTAL MARKETING CLAIMS:

Guidance about the use of environmental marketing claims is set forth below. Each guide is followed by several examples that illustrate, but do not provide an exhaustive list of, claims that do and do not comport with the guides. In each case, the general principles set forth in Part F above should also be followed.²

1. General Environmental Benefit Claims: It is deceptive to misrepresent, directly or by implication, that a product or package offers a general environmental benefit. Unqualified general claims of environmental benefit are difficult to interpret, and depending on their context, may convey a wide range of meanings to consumers. In many cases, such claims may convey that the product or package has specific and far-reaching environmental benefits. As explained in the Commission's Ad Substantiation Statement, every express and material, implied claim that the general assertion conveys to reasonable consumers about an objective quality, feature or attribute of a product must be substantiated. Unless this substantiation duty can be met, broad environmental claims should either be avoided or qualified, as necessary, to prevent deception about the specific nature of the environmental benefit being asserted.

² These guides do not address claims based on a "lifecycle" theory of environmental benefit. Such analyses are still in their infancy and thus the Commission lacks sufficient information on which to base guidance at this time.

Example 1: A brand name like "Eco-Safe" would be deceptive if, in the context of the product so named, it leads consumers to believe that the product has environmental benefits which cannot be substantiated by the manufacturer. The claim would not be deceptive if "Eco-Safe" were followed by clear and prominent qualifying language limiting the safety representation to a particular product attribute for which it could be substantiated, and provided that no other deceptive implications were created by the context.

Example 2: A product wrapper is printed with the claim "Environmentally Friendly." Textual comments on the wrapper explain that the wrapper is "Environmentally Friendly because it was not chlorine bleached, a process that has been shown to create harmful substances." The wrapper was, in fact, not bleached with chlorine. However, the production of the wrapper now creates and releases to the environment significant quantities of other harmful substances. Since consumers are likely to interpret the "Environmentally Friendly" claim, in combination with the textual explanation, to mean that no significant harmful substances are currently released to the environment, the "Environmentally Friendly" claim would be deceptive.

Example 3: A pump spray product is labeled "environmentally safe." Most of the product's active ingredients consist of

volatile organic compounds (VOCs) that may cause smog by contributing to ground-level ozone formation. The claim is deceptive because, absent further qualification, it is likely to convey to consumers that use of the product will not result in air pollution or other harm to the environment.

2. *Degradable/Biodegradable/Photodegradable*: It is deceptive to misrepresent, directly or by implication, that a product or package is degradable, biodegradable or photodegradable. An unqualified claim that a product or package is degradable, biodegradable or photodegradable should be substantiated by competent and reliable scientific evidence that the entire product or package will completely break down and return to nature, i.e., decompose into elements found in nature within a reasonably short period of time after customary disposal.

Claims of degradability, biodegradability or photodegradability should be qualified to the extent necessary to avoid consumer deception about: (a) the product or package's ability to degrade in the environment where it is customarily disposed; and (b) the rate and extent of degradation.

Example 1: A trash bag is marketed as "degradable," with no qualification or other disclosure. The marketer relies on soil burial tests to show that the product will decompose in

the presence of water and oxygen. The trash bags are customarily disposed of in incineration facilities or at sanitary landfills that are managed in a way that inhibits degradation by minimizing moisture and oxygen. Degradation will be irrelevant for those trash bags that are incinerated and, for those disposed of in landfills, the marketer does not possess adequate substantiation that the bags will degrade in a reasonably short period of time in a landfill. The claim is therefore deceptive.

Example 2: A commercial agricultural plastic mulch film is advertised as "Photodegradable" and qualified with the phrase, "Will break down into small pieces if left uncovered in sunlight." The claim is supported by competent and reliable scientific evidence that the product will break down in a reasonably short period of time after being exposed to sunlight and into sufficiently small pieces to become part of the soil. The qualified claim is not deceptive. Because the claim is qualified to indicate the limited extent of breakdown, the advertiser need not meet the elements for an unqualified photodegradable claim, i.e., that the product will not only break down, but also will decompose into elements found in nature.

Example 3: A soap or shampoo product is advertised as "biodegradable," with no qualification or other disclosure. The manufacturer has competent and reliable scientific evidence demonstrating that the product, which is customarily disposed of

in sewage systems, will break down and decompose into elements found in nature in a short period of time. The claim is not deceptive.

3. **Compostable:** It is deceptive to misrepresent, directly or by implication, that a product or package is compostable. An unqualified claim that a product or package is compostable should be substantiated by competent and reliable scientific evidence that all the materials in the product or package will break down into, or otherwise become part of, usable compost (e.g., soil-conditioning material, mulch) in a safe and timely manner in an appropriate composting program or facility, or in a home compost pile or device.

Claims of compostability should be qualified to the extent necessary to avoid consumer deception. An unqualified claim may be deceptive: (1) if municipal composting facilities are not available to a substantial majority of consumers or communities where the package is sold; (2) if the claim misleads consumers about the environmental benefit provided when the product is disposed of in a landfill; or (3) if consumers misunderstand the claim to mean that the package can be safely composted in their home compost pile or device, when in fact it cannot.

Example 1: A manufacturer indicates that its unbleached coffee filter is compostable. The unqualified claim

is not deceptive provided the manufacturer can substantiate that the filter can be converted safely to usable compost in a timely manner in a home compost pile or device, as well as in an appropriate composting program or facility.

Example 2: A lawn and leaf bag is labeled as "Compostable in California Municipal Yard Waste Composting Facilities." The bag contains toxic ingredients that are released into the compost material as the bag breaks down. The claim is deceptive if the presence of these toxic ingredients prevents the compost from being usable.

Example 3: A manufacturer indicates that its paper plate is suitable for home composting. If the manufacturer possesses substantiation for claiming that the paper plate can be converted safely to usable compost in a home compost pile or device, this claim is not deceptive even if no municipal composting facilities exist.

Example 4: A manufacturer makes an unqualified claim that its package is compostable. Although municipal composting facilities exist where the product is sold, the package will not break down into usable compost in a home compost pile or device. To avoid deception, the manufacturer should disclose that the package is not suitable for home composting.

Example 5: A nationally marketed lawn and leaf bag is labeled "compostable." Also printed on the bag is a disclosure that the bag is not designed for use in home compost piles. The bags are in fact composted in municipal yard waste composting programs in many communities around the country, but such programs are not available to a substantial majority of consumers where the bag is sold. The claim is deceptive since reasonable consumers living in areas not served by municipal yard waste programs may understand the reference to mean that composting facilities accepting the bags are available in their area. To avoid deception, the claim should be qualified to indicate the limited availability of such programs, for example, by stating, "Appropriate facilities may not exist in your area." Other examples of adequate qualification of the claim include providing the approximate percentage of communities or the population for which such programs are available.

Example 6: A manufacturer sells a disposable diaper that bears the legend, "This diaper can be composted where municipal solid waste composting facilities exist. There are currently [X number of] municipal solid waste composting facilities across the country." The claim is not deceptive, assuming that composting facilities are available as claimed and the manufacturer can substantiate that the diaper can be converted safely to usable compost in municipal solid waste composting facilities.

Example 7: A manufacturer markets yard waste bags only to consumers residing in particular geographic areas served by county yard waste composting programs. The bags meet specifications for these programs and are labeled, "Compostable Yard Waste Bag for County Composting Programs." The claim is not deceptive. Because the bags are compostable where they are sold, no qualification is required to indicate the limited availability of composting facilities.

4. **Recyclable:** It is deceptive to misrepresent, directly or by implication, that a product or package is recyclable. A product or package should not be marketed as recyclable unless it can be collected, separated or otherwise recovered from the solid waste stream for use in the form of raw materials in the manufacture or assembly of a new package or product. Unqualified claims of recyclability for a product or package may be made if the entire product or package, excluding minor incidental components, is recyclable. For products or packages that are made of both recyclable and non-recyclable components, the recyclable claim should be adequately qualified to avoid consumer deception about which portions or components of the product or package are recyclable.

Claims of recyclability should be qualified to the extent necessary to avoid consumer deception about any limited availability of recycling programs and collection sites. If an

incidental component significantly limits the ability to recycle the product, the claim would be deceptive. A product or package that is made from recyclable material, but, because of its shape, size or some other attribute, is not accepted in recycling programs for such material, should not be marketed as recyclable.

Example 1: A packaged product is labeled with an unqualified claim, "recyclable." It is unclear from the type of product and other context whether the claim refers to the product or its package. The unqualified claim is likely to convey to reasonable consumers that all of both the product and its packaging that remain after normal use of the product, except for minor, incidental components, can be recycled. Unless each such message can be substantiated, the claim should be qualified to indicate what portions are recyclable.

Example 2: A plastic package is labeled on the bottom with the Society of the Plastics Industry (SPI) code, consisting of a design of arrows in a triangular shape containing a number and abbreviation identifying the component plastic resin. Without more, the use of the SPI symbol (or similar industry codes) on the bottom of the package, or in a similarly inconspicuous location, does not constitute a claim of recyclability.

Example 3: A container can be burned in incinerator facilities to produce heat and power. It cannot, however, be recycled into new products or packaging. Any claim that the container is recyclable would be deceptive.

Example 4: A nationally marketed bottle bears the unqualified statement that it is "recyclable." Collection sites for recycling the material in question are not available to a substantial majority of consumers or communities, although collection sites are established in a significant percentage of communities or available to a significant percentage of the population. The unqualified claim is deceptive since, unless evidence shows otherwise, reasonable consumers living in communities not served by programs may conclude that recycling programs for the material are available in their area. To avoid deception, the claim should be qualified to indicate the limited availability of programs, for example, by stating, "Check to see if recycling facilities exist in your area." Other examples of adequate qualifications of the claim include providing the approximate percentage of communities or the population to whom programs are available.

Example 5: A soda bottle is marketed nationally and labeled, "Recyclable where facilities exist." Recycling programs for material of this type and size are available in a significant percentage of communities or to a significant percentage of the

population, but are not available to a substantial majority of consumers. The claim is deceptive since, unless evidence shows otherwise, reasonable consumers living in communities not served by programs may understand this phrase to mean that programs are available in their area. To avoid deception, the claim should be further qualified to indicate the limited availability of programs, for example, by using any of the approaches set forth in Example 4 above.

Example 6: A plastic detergent bottle is marketed as follows: "Recyclable in the few communities with facilities for colored HDPE bottles." Collection sites for recycling the container have been established in a half-dozen major metropolitan areas. This disclosure illustrates one approach to qualifying a claim adequately to prevent deception about the limited availability of recycling programs where collection facilities are not established in a significant percentage of communities or available to a significant percentage of the population. Other examples of adequate qualification of the claim include providing the number of communities with programs, or the percentage of communities or the population to which programs are available.

Example 7: A label claims that the package "includes some recyclable material." The package is composed of four layers of different materials, bonded together. One of the

layers is made from the recyclable material, but the others are not. While programs for recycling this type of material are available to a substantial majority of consumers, only a few of those programs have the capability to separate out the recyclable layer. Even though it is technologically possible to separate the layers, the claim is not adequately qualified to avoid consumer deception. An appropriately qualified claim would be, "includes material recyclable in the few communities that collect multi-layer products." Other examples of adequate qualification of the claim include providing the number of communities with programs, or the percentage of communities or the population to which programs are available.

Example 8: A product is marketed as having a "recyclable" container. The product is distributed and advertised only in Missouri. Collection sites for recycling the container are available to a substantial majority of Missouri residents, but are not yet available nationally. Because programs are generally available where the product is marketed, the unqualified claim does not deceive consumers about the limited availability of recycling programs.

5. **Recycled Content:** A recycled content claim may be made only for materials that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing

process (pre-consumer), or after consumer use (post-consumer). To the extent the source of recycled content includes pre-consumer material, the manufacturer or advertiser must have substantiation for concluding that the pre-consumer material would otherwise have entered the solid waste stream. In asserting a recycled content claim, distinctions may be made between pre-consumer and post-consumer materials. Where such distinctions are asserted, any express or implied claim about the specific pre-consumer or post-consumer content of a product or package must be substantiated.

It is deceptive to misrepresent, directly or by implication, that a product or package is made of recycled material. Unqualified claims of recycled content may be made only if the entire product or package, excluding minor, incidental components, is made from recycled material. For products or packages that are only partially made of recycled material, a recycled claim should be adequately qualified to avoid consumer deception about the amount, by weight, of recycled content in the finished product or package.

Example 1: A manufacturer routinely collects spilled raw material and scraps from trimming finished products. After a minimal amount of reprocessing, the manufacturer combines the spills and scraps with virgin material for use in further production of the same product. A claim that the product

contains recycled material is deceptive since the spills and scraps to which the claim refers are normally reused by industry within the original manufacturing process, and would not normally have entered the waste stream.

Example 2: A manufacturer purchases material from a firm that collects discarded material from other manufacturers and resells it. All of the material was diverted from the solid waste stream and is not normally reused by industry within the original manufacturing process. The manufacturer includes the weight of this material in its calculations of the recycled content of its products. A claim of recycled content based on this calculation is not deceptive because, absent the purchase and reuse of this material, it would have entered the waste stream.

Example 3: A greeting card is composed 30% by weight of paper collected from consumers after use of a paper product, and 20% by weight of paper that was generated after completion of the paper-making process, diverted from the solid waste stream, and otherwise would not normally have been reused in the original manufacturing process. The marketer of the card may claim either that the product "contains 50% recycled material," or may identify the specific pre-consumer and/or post-consumer content by stating, for example, that the product "contains 50% total recycled material, 30% of which is post-consumer material."

Example 4: A package with 20% recycled content by weight is labeled as containing "20% recycled paper." Some of the recycled content was composed of material collected from consumers after use of the original product. The rest was composed of overrun newspaper stock never sold to customers. The claim is not deceptive.

Example 5: A product in a multi-component package, such as a paperboard box in a shrink-wrapped plastic cover, indicates that it has recycled packaging. The paperboard box is made entirely of recycled material, but the plastic cover is not. The claim is deceptive since, without qualification, it suggests that both components are recycled. A claim limited to the paperboard box would not be deceptive.

Example 6: A package is made from layers of foil, plastic, and paper laminated together, although the layers are indistinguishable to consumers. The label claims that "one of the three layers of this package is made of recycled plastic." The plastic layer is made entirely of recycled plastic. The claim is not deceptive provided the recycled plastic layer constitutes a significant component of the entire package.

Example 7: A paper product is labeled as containing "100% recycled fiber." The claim is not deceptive if the

advertiser can substantiate the conclusion that 100% by weight of the fiber in the finished product is recycled.

Example 8: A frozen dinner is marketed in a package composed of a cardboard box over a plastic tray. The package bears the legend, "package made from 30% recycled material." Each packaging component amounts to one-half the weight of the total package. The box is 20% recycled content by weight, while the plastic tray is 40% recycled content by weight. The claim is not deceptive, since the average amount of recycled material is 30%.

Example 9: A paper greeting card is labeled as containing 50% by weight recycled content. The seller purchases paper stock from several sources and the amount of recycled material in the stock provided by each source varies. Because the 50% figure is based on the annual weighted average of recycled material purchased from the sources after accounting for fiber loss during the production process, the claim is permissible.

6. Source Reduction: It is deceptive to misrepresent, directly or by implication, that a product or package has been reduced or is lower in weight, volume or toxicity. Source reduction claims should be qualified to the extent necessary to

avoid consumer deception about the amount of the source reduction and about the basis for any comparison asserted.

Example 1: An ad claims that solid waste created by disposal of the advertiser's packaging is "now 10% less than our previous package." The claim is not deceptive if the advertiser has substantiation that shows that disposal of the current package contributes 10% less waste by weight or volume to the solid waste stream when compared with the immediately preceding version of the package.

Example 2: An advertiser notes that disposal of its product generates "10% less waste." The claim is ambiguous. Depending on contextual factors, it could be a comparison either to the immediately preceding product or to a competitor's product. The "10% less waste" reference is deceptive unless the seller clarifies which comparison is intended and substantiates that comparison, or substantiates both possible interpretations of the claim.

7. **Refillable:** It is deceptive to misrepresent, directly or by implication, that a package is refillable. An unqualified refillable claim should not be asserted unless a system is provided for: (1) the collection and return of the package for refill; or (2) the later refill of the package by consumers with product subsequently sold in another package. A package should

not be marketed with an unqualified refillable claim, if it is up to the consumer to find new ways to refill the package.

Example 1: A container is labeled "refillable x times." The manufacturer has the capability to refill returned containers and can show that the container will withstand being refilled at least x times. The manufacturer, however, has established no collection program. The unqualified claim is deceptive because there is no means for collection and return of the container to the manufacturer for refill.

Example 2: A bottle of fabric softener states that it is in a "handy refillable container." The manufacturer also sells a large-sized container that indicates that the consumer is expected to use it to refill the smaller container. The manufacturer sells the large-sized container in the same market areas where it sells the small container. The claim is not deceptive because there is a means for consumers to refill the smaller container from larger containers of the same product.

8. **Ozone Safe and Ozone Friendly:** It is deceptive to misrepresent, directly or by implication, that a product is safe for or "friendly" to the ozone layer. A claim that a product does not harm the ozone layer is deceptive if the product contains an ozone-depleting substance.

Example 1: A product is labeled "ozone friendly." The claim is deceptive if the product contains any ozone-depleting substance, including those substances listed as Class I or Class II chemicals in Title VI of the Clean Air Act Amendments of 1990, Pub. L. No. 101-549, or others subsequently designated by EPA as ozone-depleting substances. Class I chemicals currently listed in Title VI are chlorofluorocarbons (CFCs), halons, carbon tetrachloride and 1,1,1-trichloroethane. Class II chemicals currently listed in Title VI are hydrochlorofluorocarbons (HCFCs).

Example 2: The seller of an aerosol product makes an unqualified claim that its product "Contains no CFCs." Although the product does not contain CFCs, it does contain HCFC-22, another ozone depleting ingredient. Because the claim "Contains no CFCs" may imply to reasonable consumers that the product does not harm the ozone layer, the claim is deceptive.

Example 3: A product is labeled "This product is 95% less damaging to the ozone layer than past formulations that contained CFCs." The manufacturer has substituted HCFCs for CFC-12, and can substantiate that this substitution will result in 95% less ozone depletion. The qualified comparative claim is not likely to be deceptive.

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REPLACING VIRGIN FEEDSTOCK WITH INDUSTRIAL BY-PRODUCTS

-Randall Andrews

Industrial and Agricultural Chemicals, Inc., is a company which is primarily involved in the fertilizer trace element business. Our business includes the manufacturing of products containing Boron, Copper, Iron, Manganese and Zinc.

IAC accepts sludges, dust collector products, and items such as spent catalysts--all containing metallic oxides. IAC can dry sludges. IAC can separate different sized particles by screening. IAC possesses several different grinding devices that grind products from 1 foot in diameter to less than 200 mesh. IAC also uses dry and liquid blenders. IAC cannot receive hazardous wastes. IAC makes products from by-products.

Our company has been most successful at working with numerous companies to create products we can use. Most of these are metallic hydroxides. Instead of shipping away Copper Chloride or Zinc Chloride, we have companies neutralize these by-products. The product then manufactured is shipped to us to be dried, ground and then blended into a fertilizer product.

There are two ways to channel by-products into the fertilizer area. One method is by direct substitution of produced materials. One example of this is where dust collector materials contain concentrations of the previously mentioned metals. There is no work that is required on this type of by-product. Another method is to have the generator perform some work on the by-product. This might include drying or possibly concentrating the product by evaporation of water. It might mean a change in the storage method of the by-product to effect cheaper transportation. Another way in which a change might occur could be a process change. As an example, a Copper and Nickel plating manufacturer was putting all of their sludge through a filter press and dryer. Our company did not want the Nickel, but did want the Copper. They installed storage tanks and separated the Copper and Nickel streams by storing and then campaigning the filter press and dryer. Now they do create a hazardous waste and a nonhazardous by-product. The hazardous waste has a higher Nickel content while the nonhazardous by-product has

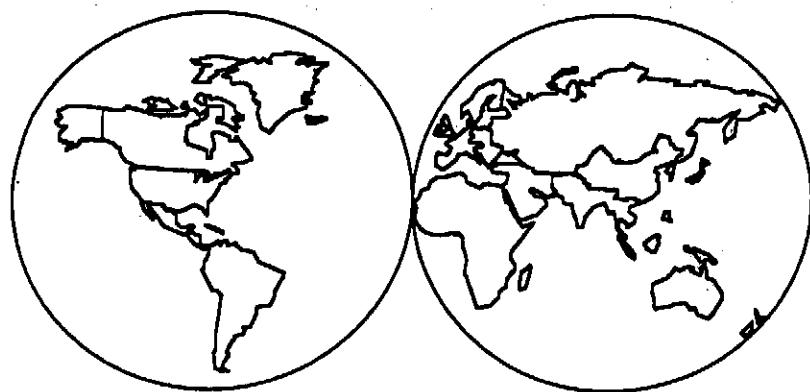
a higher Copper content. Since the F006 hazardous waste has a higher Nickel content, it is cheaper than before to dispose of it.

Another area of change is the new plan for defining a hazardous waste. These proposed regulations were promulgated in May of 1992. These regulations are not even nearly final yet. It is quite possible that some companies have materials which are hazardous wastes at present, but if some of the impurities are reduced, they may be downgraded to simply nonhazardous wastes. Since they would no longer be hazardous, any company in the fertilizer trace element business could process them. In the past, our company has been contacted by numerous companies who have the types of materials we need. The only problem was that because of the process, the product was classified as F006. There were no hazardous constituents. However, because of the cost and time constraints, almost no one wished to go through the delisting procedure. If the new regulation is enacted in the promulgated form, a delisting will be much easier.

In summary, I would say to all to stop thinking of wastes and try to consider everything that is produced as a product. Obviously, some products are more difficult and require more skill to market than other products. This is a challenge that can be accomplished.

Thomas MacDonald
Digital Equipment Corporation
111 Powdermill Road
Maynard, MA 01754

Digital Equipment Corporation Waste Management Initiative



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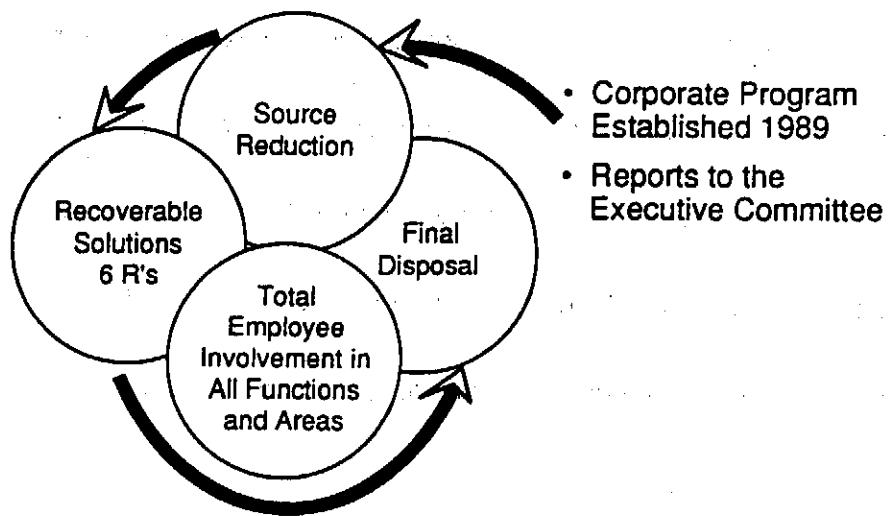
Thomas MacDonald
Digital Equipment Corporation
111 Powdermill Road
Maynard, MA 01754

Digital Equipment Corporation Waste Management Opportunities

We are planning to reduce waste by 50% over the next five years through the programs that I will cover in this presentation. Digital Equipment Corporation's Waste Management Program is worldwide in scope and integrated across all functions.

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Digital Equipment Corporation Waste Management Strategic Initiative



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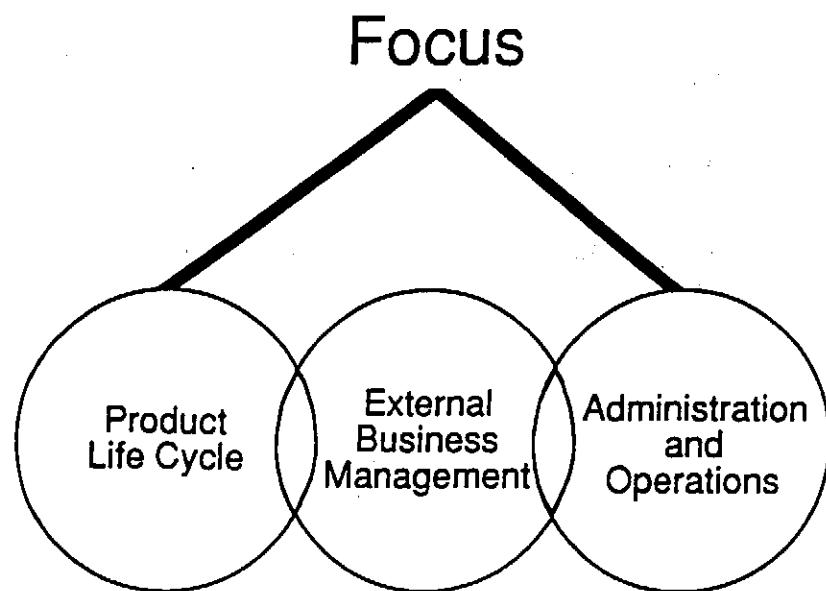
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The Corporate Waste Management office was established on July 1989 with the appointment of John Caulfield as the director of the program reporting to John Sims, Sr. Vice President, who is a member of the Executive Committee. The objective for creating the Waste Management Program was to put in place strategic plans that would change the behavior by shifting the focus from disposal to preferred Waste Management systems within the hierarchy, i.e. source reduction and recoverable solutions, with the involvement of all employees participating across all functions and areas worldwide.

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Focus

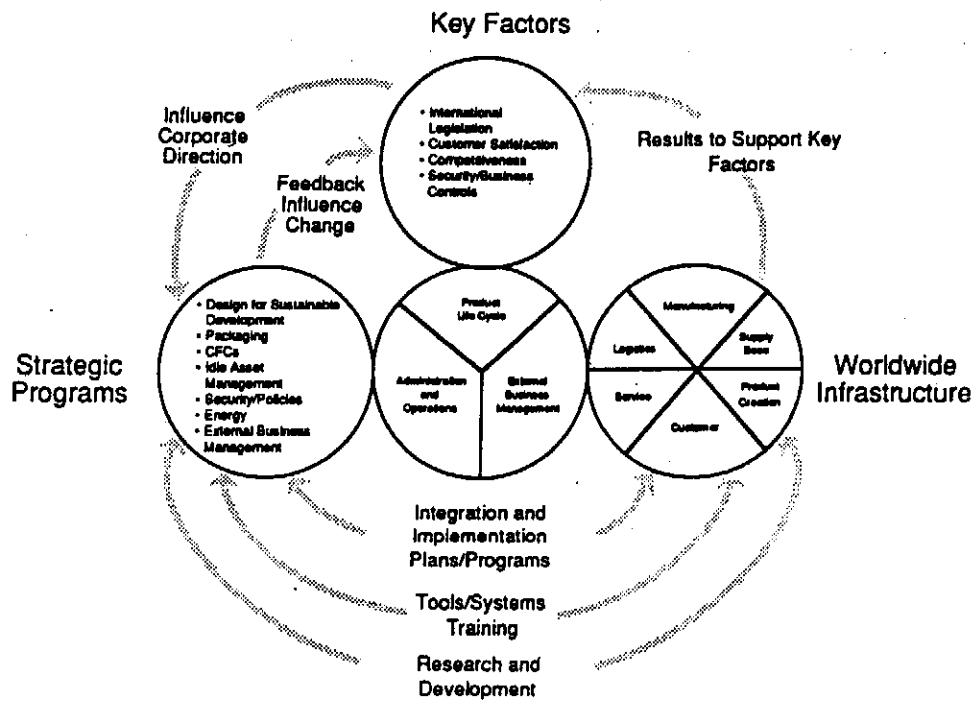
Our focus is directed in three main strategic initiatives.

- Product Life-Cycle
- External Business Management
- Administration/Operations

I will talk in more detail on the above during my presentation.

Digital Equipment Corporation Waste Management Strategic Initiative

Why Implement?



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Why Implement?

The need and importance to address and answer WHY IMPLEMENT the Corporate Waste Management program beyond what is in place today was a key component. It would be the foundation and the justification on which our plans and strategies would be built on. These four key factors are not in any order or priority.

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Digital Equipment Corporation

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Why Implement?

Key Factors

- International Legislation
- Customer Satisfaction
- Competitiveness
- Security/Business Controls

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Key Factors

International Legislation - as an international corporation, Digital procures materials, components, third party buy-outs, manufactures, sells and provides services worldwide. Based on the fact that we are also distributing components from one part of the world to another, legislation has an impact on our current and future business.

Customer Satisfaction - our customers are requesting a more environmentally friendly product. They are requesting information on the waste stream of the components and materials contained within our products.

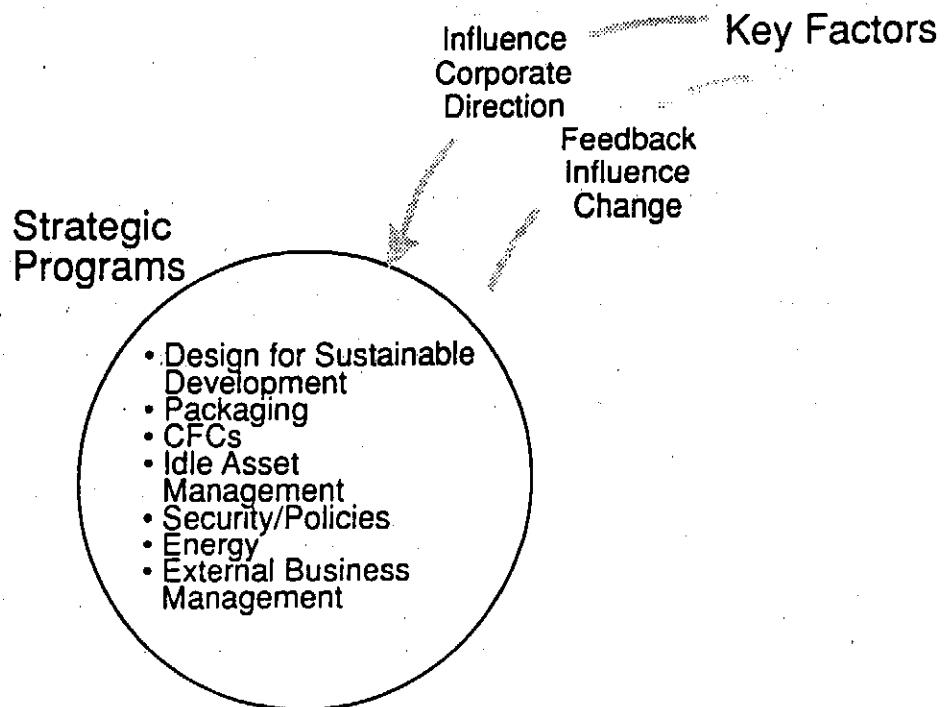
Competitiveness - there is no question we feel our program overall is a cost avoidance/cost savings program. To date, we are proving that to be true.

Security/Business Controls - it is important for us as a corporation to ensure we are securing our assets from illegal diversion into the secondary market place.

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Why Implement?



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Strategic Programs

These four key factors became a foundation for which we started to build and develop our strategic plans. They influence our direction by putting in place the following strategic programs.

Design for Sustainable Development - under this program there are a number of initiatives which support the elements of source reduction, disassembly, recoverable solutions, and pre-life-cycle assessment. I will talk in more detail in the presentation regarding this program.

Packaging - Digital spends approximately \$150M a year on packaging and related costs. We have established a goal to reduce this by \$30 million over the next three years by means of recycling, reuse and redesign of packaging. This will include the interplant shipment of components, inbound shipments from our supply base and outbound shipments to our customers.

CFCs - Digital has a goal to eliminate the use of CFCs in our manufacturing processes by the year 1994. Based on our current status, we are on target to achieve this goal. Later on in this presentation, I will mention some of the research and processes that we have implemented to achieve this goal.

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Strategic Programs (continued)

Idle Asset Management - implemented for the purpose of putting in place strategic programs that would improve our ability to redistribute assets from one organization in Digital to another. We have implemented such programs as the DIAL program (Digital Internal Asset Listing). This past year DIAL redistributed approximately \$70M within the corporation. We are also looking at areas to improve the final disposal of assets through sale, auction and other methods such as bartering, as well as reviewing the security and policies. It is important that we ensure that we have documented control, security and business policies to ensure there is no illegal diversion into the secondary market place.

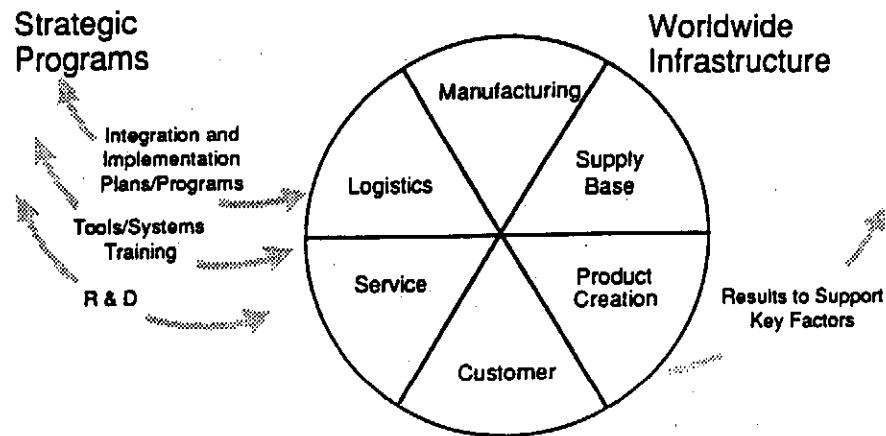
Energy - we have just reviewed this initiative to implement the reduction and waste of energy while improving the quality in the process.

External Business Management - we have established an external business management group with the emphasis on working with our customers providing consultant services and waste management solutions. We are also looking at a number of other external initiatives that are proprietary at this time.

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Integration and Implementation of Strategic Plans and Programs



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Worldwide Infrastructure

Now that we have identified what the key factors are for implementing our program, and what strategic programs are needed in support of those factors, the next important step was to put in place an integration and implementation strategy across all our worldwide infrastructure in terms of organization. To do so, it was important to identify respective managers in each of those disciplines. Working together as a two-by-two team, corporate waste management and the worldwide organization, we began to look at the tools and systems and training required to implement these programs. The communications strategy and what research and development would be required. Also, do these programs compliment those certain areas of the business also needed to be reviewed and evaluated?

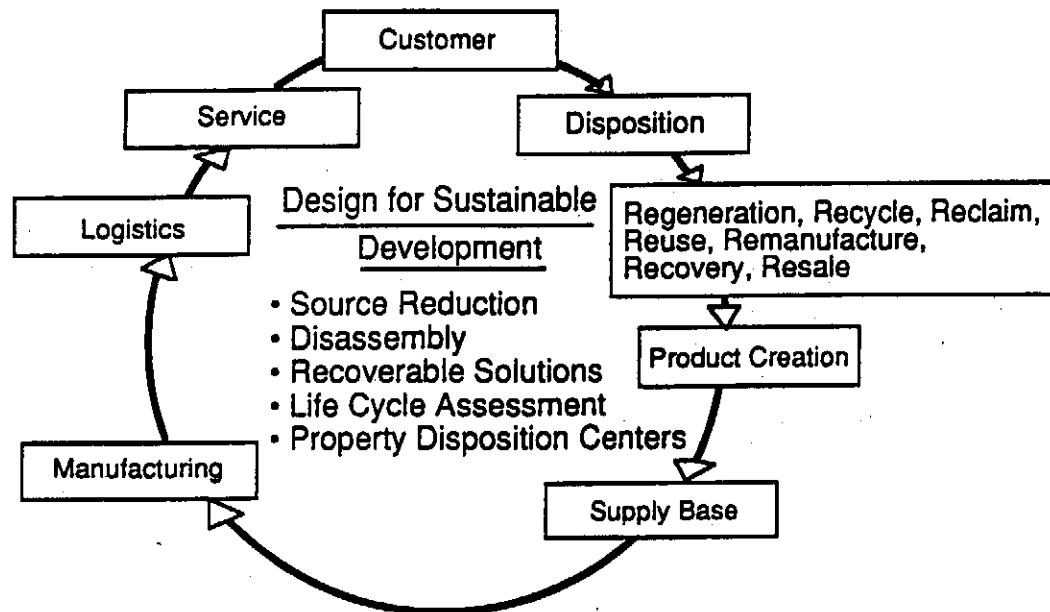
The next important phase was the actual transfer and implementation of these various programs. Although all our programs are not, to this date, fully implemented into the worldwide infrastructure, we are confident on the ones that we have successfully transferred, that we have in place a good model for implementing our current and future programs. It is also significant to point out the importance and key element that our external supply base including our third party buy-out plays. It is important to note that we have a two-way communication process from our worldwide infrastructure back to our strategic programs. This is important not only in the areas I mentioned in regards to tools, systems, training and research and development but also gaining a better understanding of worldwide legislation, understanding of our customers worldwide, understanding of security and business controls in those countries and certainly feedback on improvement of the overall competitiveness.

No program would be a success if there was not a way to measure it. We have established a process of reporting results on an ongoing basis and on a formal quarterly time frame.

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Product Life Cycle Vision



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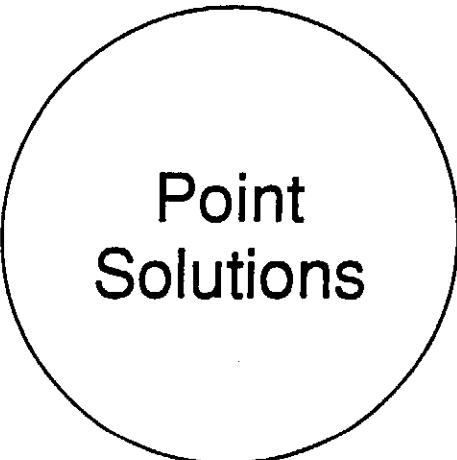
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Product Life-Cycle Vision Initiative

This slide represents the extension of the Product Life-Cycle to include final disposition and regeneration. A key factor for successful integration are the corporate functions listed in the model. Current programs which focus on the elements of design for sustainable development, coupled with our future strategic direction, will ensure we achieve our vision of the Product Life-Cycle Model.

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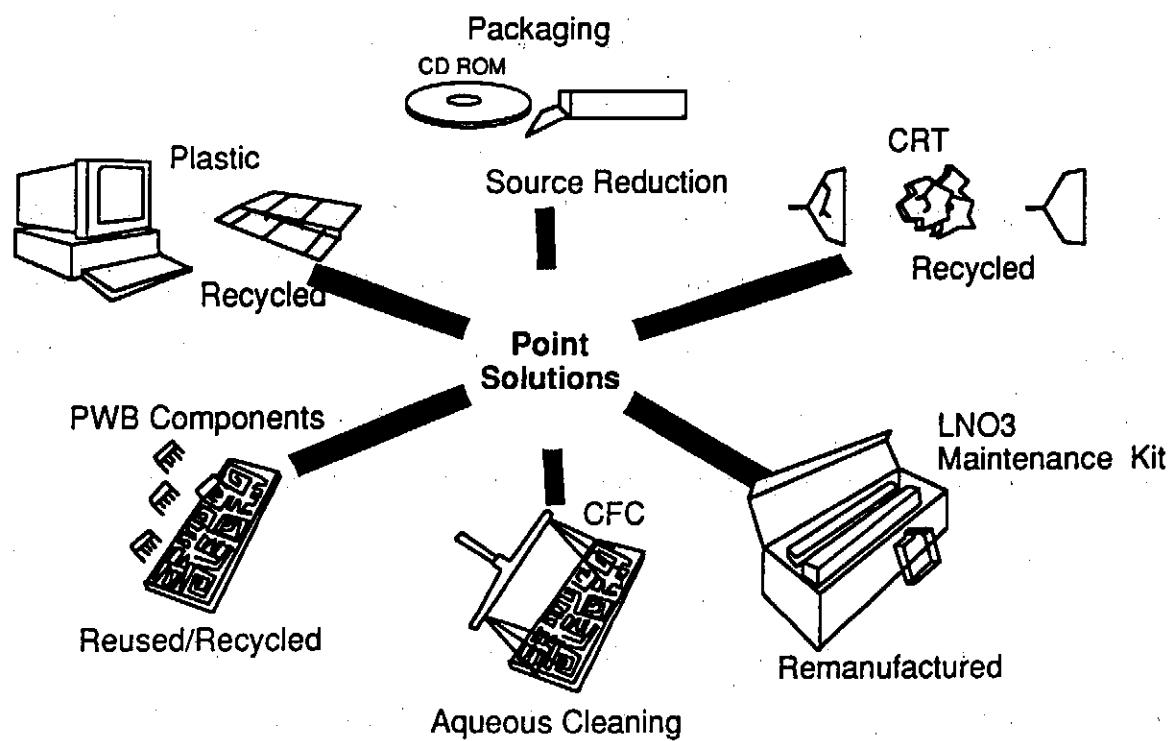


Point
Solutions

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Point Solutions (continued)

LNO3 Maintenance Kit Remanufactured - In keeping with the strategy of managing the total life-cycle of products, one of Digital's areas of focus is laser printer supplies. A pilot program has been designed and implemented with customers internal to the company for collecting the high volume LNO3 User Maintenance Kits. The kits will then be remanufactured and reused which will eliminate up to 75 tons of waste from entering the waste stream each year.

CFC Aqueous Cleaning - Digital perfected and patented a new cleaning process that utilizes limited water droplet size and unique angle of impingement for effectively cleaning rigid leaded surface mount components. The process referred to as "micro-droplet" aqueous cleaning has been made available to users of CFCs worldwide, without any charge as part of Digital's corporate commitment to protect the ozone layer.

PWB Components - Early efforts in New and Used Component Recycling have focused on generic components derived from the disassembly of scrapped printed circuit boards. Based on results of this pilot program, recycling of generic components through secondary markets was identified as preferable to scrapping, landfilling, or incineration. Another result of this program was development of a new, environmentally efficient component removal machine. This machine is now in use at the property disposition center, where Digital sorts, disassembles, and processes materials for disposition.

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Point Solutions

This slide addresses the implementation of point solutions.

CDROM Packaging Source Reduction - the Waste Management Packaging Program emphasizes three main priorities. They are source reduction, reuse, and recycling of packaging materials. The CDROM packaging highlighted on this slide is a good example of the highest program priority, source reduction. In this example, a redesign of the primary packaging for CDROM's (Compact Disc Read Only Memory) resulted in a reduction in the volume of packaging materials used of 88%. Also, the new package is made of paper products which are more readily recycled than the original design made of a combination of plastics. Use of less packaging material and use of packaging material which is more readily recycled are acknowledged as advantageous by many of Digital's customers.

CRT Recycled - Partnering with Corning Asahi, Corning, New York, and Envirocycle, Inc. from Endicott, New York, Digital has pioneered a process for cleaning monochrome Cathode Ray Tubes (CRTs) and using the reclaimed glass for new applications. In parallel, a program for disassembly of the complete monitor by Envirocycle, Inc. was developed. These processes will initially save 43% of Digital's hazardous waste DISPOSAL and disassembly costs.

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Digital Equipment Corporation

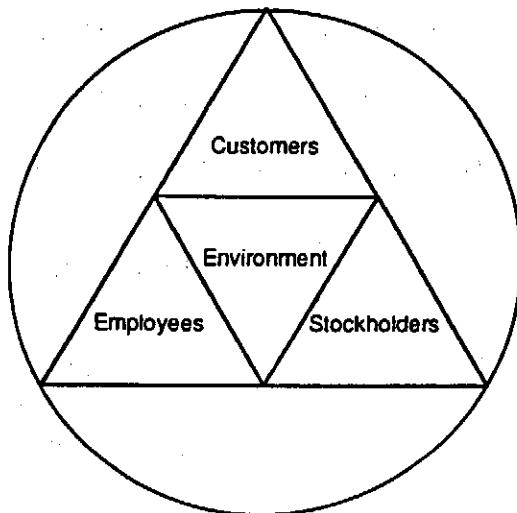
Point Solutions (continued)

Plastic Recycled - With disposal costs for plastic on the rise and reuse opportunities limited by government regulation and material degradation, recycling is the primary focus of an energetic research campaign. In a recent project with General Electric Company, 68,000 pounds of plastic from computers that traded in or returned to Digital were shipped to General Electric for processing. Approximately 30,000 pounds of the processed, recycled plastic was shipped to Nailite International of Miami, Florida where it was molded into roof panels that were used to reroof two McDonald's restaurants. In addition, a new McDonald's restaurant in Pittsfield, Massachusetts recently became the first McDonald's to use recycled plastic for a new roof.

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Waste Management Makes Good Business Sense



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Waste Management Makes Good Business Sense

In this presentation, although brief, I hope I have outlined why we believe implementing this program makes a significant impact to the business and the world environment. As stated earlier, our customers are requiring and asking for more environmentally friendly products. We also believe we will be designing and building better quality products based on these initiatives. Our stockholders certainly want to see improved bottom line results through the elimination of waste. Our employees want to work for a company that is doing something for the environment and a company that values their inputs to achieve these results. Also the environment and the community at large is a big benefactor based on the results of these programs.

Thank you,

Thomas MacDonald
Business Development Manager,
Strategic Waste Management

1992 North American Conference on Industrial Recycling and Waste Exchange

MERCURY RECLAMATION AND RECYCLING FROM INDUSTRIAL MATERIALS

Presented by

Vicki G. Hart

Manager, Internal Operations/Sales
Mercury Refining Company, Inc.

at the

1992 North American Conference on Industrial Recycling
and Waste Exchange

The proper disposal of mercury bearing waste is a growing problem for today's industry. As of May 1992, mercury became subject to federal land disposal restrictions. For the higher mercury subcategory specified by the restrictions, a special roasting process known as retorting is considered to be the Best Demonstrated Available Technology (BDAT). The retorting process reclaims the mercury so it may be purified and recycled. Many mercury bearing materials may be exempt from regulation as hazardous waste if they are recycled in this way.

What is Mercury?

Mercury is the only common metal that is a liquid at room temperature. It has a low boiling point (673°F) and a very high density (113 lbs./gallon). Its unique physical and thermal properties have found it many applications in measurement and control devices such as thermometers, relays and switches. In nature it is rarely found in its liquid state; rather, it is present in the ore cinnabar as mercuric sulfide. A pupil of Aristotle outlined a procedure for the recovery of mercury from cinnabar as early as 288 BC.¹ Today, primary metallic mercury is recovered from the ore by

roasting it in large iron retorts, very similar to the retort process used for mercury reclamation. Today the chief suppliers of primary mercury are Spain, Algeria, Turkey, the former Soviet Union, the People's Republic of China, and Mexico.

Methods for Mercury Recovery and Recycling

Mercury Refining Company, Inc. (MEREKO) was founded in 1955 by Mr. Leo Cohen, who is now known as one of the country's experts on mercury and mercury recovery. At that time, MEREKO primarily purchased spent mercuric oxide hearing aid batteries from dealers across the country. As the toxicity of mercury became known, our business began to change. Users of mercury bearing materials began to look to us for

a safe means of disposal. With the enactment of the Resource Conservation and Recovery Act (RCRA) in 1976, mercury became a regulated material, and facilities handling mercury were required to obtain a permit from the EPA for those activities. As a result, our business expanded to include mercury recovery from all kinds of mercury containing and contaminated materials, such as debris, thermometers, mercury switches, and mercury compounds.

As mentioned earlier, mercury recovery is done in a special oven call a "retort". Retorts have been incorrectly described by some as small scale incinerators. Retorts are used in mercury mining operations to produce mercury from the

ore, cinnabar, which is actually mercuric sulfide. MERECO operates two gas fired Type D retorts, so called because they look like a letter D lying on its flat side. These ovens are indirectly heated, which is the primary difference between a retort and an incinerator. Burning fuel never comes into contact with the materials in the retort, and rarely do the materials in the retort actually burn. Combustion gasses are exhausted separately from the vapors inside the retorts. Materials for reclamation are loaded into pans, which are then placed in the retort, and heated to 1000-1500°F, an operating temperature much less than that of an incinerator. Since mercury vaporizes about 670 degrees, it is all that is needed to vaporize the mercury. It is then condensed and collected, along with other materials that volatilize at retorting temperatures. The mercury is separated and collected, and goes through two additional purification processes before being sold to users as high purity mercury.

Solid residuals left in the pans are sent for stabilization, if needed, and on to a hazardous waste landfill.

Commercially, mercury is sold as either "Prime Virgin" or "Triple Distilled". Prime Virgin grade mercury is normally not less than 99.9% pure, the purity of liquid mercury obtained directly from cinnabar. Triple Distilled mercury is obtained by additional distillation and chemical purification of prime virgin mercury. It ranges from 99.99% to 99.9999% purity.

Both Prime Virgin grade and triple distilled mercury have numerous commercial applications. Prime virgin mercury is commonly used in the production of mercury compounds, in the chlorine-caustic soda industry, mining, and in the making of pesticides and fungicides. Triple distilled mercury is commonly used in mercury-in-glass devices (thermometers, barometers, mercury switches), diffusion pumps, mercury-vapor lamps, fluorescent tubes, dental amalgams and batteries.

When these or other mercury bearing materials have reached the end of their useful commercial lives, the mercury may be reclaimed and reused. Mercury recycling makes both environmental and economic sense. For although there is not an immediate shortage of primary mercury, world resources are limited. The toxicity of mercury, and its ability to bioaccumulate in the environment, dictate that it must be handled properly. Certainly recycling is a better option than permanent disposal, regardless of the quality of the landfill or stabilization methods used.

Types of Materials

What, then, are potential materials for mercury reclamation? Many common everyday items contain mercury. We have already mentioned thermometers. Other common items are the mercury wetted relay and various mercury switches. Mercury is widely used in various types of switching devices because of its excellent electrical conductivity. Being a liquid, it is easily manipulated to connect two or more electrodes to make or break an electrical circuit, as in the

case of the tilt switch, common in portable heaters and washing machines. The largest application for the mercury wetted relay is telecommunications. There are two types of mercury wetted relay: the larger "plug-in" type and the smaller "wired-in" type. When MERECO first began processing the "plug-in" relays, the entire relay was put into the retort, and the casing and other non-volatiles left behind sent to hazardous waste landfill. Now, in the interest of economics and waste minimization, the relay is disassembled in a special booth with vapor control. The aluminum and copper are stripped off and sent for recycling, and only the small mercury containing vial goes into the retort. This process allows over 90% of the relay to be recycled. We are currently researching similar processes for the smaller, wired-in relays.

Another mercury bearing device commonly used by utility companies is the gas regulator found in or just outside many homes with gas service. This round regulator can contain as much as 3 ounces of mercury. These types of regulators are being replaced by mercury-free regulators, and some gas companies are generating as much as 100 units per month. Again, the steel casing, after retorting, mercury-free and can be sold as scrap. Over 98% of the weight of a typical gas regulator can be recycled.

One mercury-bearing item that is receiving a lot of attention recently is the fluorescent tube. These contain many materials. The glass tube itself can be made of lead

glass or soda-lime glass. The end assembly has three parts: an aluminum base, a coated tungsten filament, and glass filament mounts. The tube is filled with either argon gas, or a mixture of argon and krypton, under reduced pressure. The white coating on the inside of the tube is called phosphor powder and is 99% calcium phosphate. The phosphor also contains a substance known as the activator. The activator actually determines the final light color and may be manganese, antimony, chlorine, fluorine, tin, yttrium or titanium. The final ingredient in the fluorescent tube is mercury. The mercury is bombarded with electrons from the filament, and produces ultraviolet energy that is absorbed by the phosphor powder and converted to visible light.

The amount of mercury in a fluorescent tube can vary greatly as the exact quantity is not crucial to the operation of the light. The common 48" tube may contain as little as 15-20 milligrams of mercury, up to as much as 70 milligram and more. When subjected to precise laboratory procedures, all fluorescent tubes will fail the TCLP toxicity characteristic leaching test for mercury and therefore must be handled as hazardous waste when disposed by a regulated generator. The mercury in a fluorescent tube can be recovered by retorting the crushed tube. We have not yet been successful in finding a market for the clean glass; however we are researching new processing techniques that may make the glass more marketable. Other specialized lamps also contain mercury. Among these are mercury vapor lamps, mercury-sodium lamps and

some ultraviolet lamps.

Another common mercury containing item is a battery. Common household batteries have contained mercury for many years as a coating on the zinc electrode to prevent outgassing and increase shelf life. In the past five years, in response to environmental concerns, the battery industry has reduced the amount of mercury in the common alkaline and carbon zinc batteries to well below 0.05% by weight. Other battery types, however, contain much more mercury. The mercuric oxide hearing aid battery, referred to at the beginning of the presentation, can contain as much as 35% mercury by weight. Many states, including New York, have passed legislation banning the mercuric oxide battery from consumer use by 1994. Because of its unique performance properties, however, the mercuric oxide battery will continue in industrial use. Many of its applications are military in nature, but the mercuric oxide battery also has applications in medical and other industrial uses. When subjected to the temperatures in the retort, internal pressures cause the battery actually to "vent" or open. The mercuric oxide is thus exposed, and under retort conditions, breaks down to give metallic mercury and oxygen. The battery casings are currently sent to hazardous waste landfill.

A more specialized mercury containing material comes from analytical testing labs. The Chemical Oxygen Demand, or COD, test, measures the oxygen equivalent of organic material in a sample that can be oxidized by a strong oxidizing agent.

It is an important test for wastewater treatment plants. The COD test reagent, which contains mercuric sulfate, can be made in the lab, or is available in kit form from companies like HACH and OI. The liquid remaining after the test is complete can be processed for mercury recovery. The mercury is precipitated out of the solution, collected as a filter cake, and then processed for mercury recovery in our retort ovens. Other lab reagents that can be processed in this way include Kjeldahl Nitrogen and Nessler's reagent.

Some of the more interesting mercury contaminated materials have resulted from spill clean-up. At various time, MERECO has processed pieces of a Boeing 727, the floor of a tractor-trailer, several vacuum cleaners, and part of a National Gallery of Art exhibit.

Economics

As in the case of most recycling today, mercury reclamation and recycling isn't "free". In fact, the economic value of the mercury recovered is only a fraction of the costs to recover it. For example, recovery costs for a full 55 gallon drum can range from as little as \$900 to over \$3500., depending on the material to be processed. Large units, like meters and regulators, can run from \$10 to over \$300.00 each.

Like many other metals, the value of mercury is determined by a quoted market price. This market price is quoted every Monday and is in terms of 76 pound "flasks". For example, the mercury market price for the week of August

3, 1992 is \$200/flask, or \$2.63/lb. Since this quotation is for prime virgin grade mercury, the scrap price is discounted. Currently, MERECO offers \$150.00 under the market quote for scrap mercury, whether sent to us as scrap or recovered from waste materials. But the economics of recycling go much deeper than out-of-pocket costs. There is the avoided cost of alternative disposal, if that is an option under the current land disposal restrictions in the U.S. There is the further benefit of conserving limited resources, and reusing rather than disposing of a hazardous material. Further, removal of the mercury may make other parts of the waste recyclable, as in the case of the relays and gas regulators. At MERECO, our motto is "Sensible Solutions for Serious Problems". We are committed to working with our customers to find a solution to mercury disposal that makes both environmental and economic sense. Almost all mercury bearing items can have the contained mercury recycled. We urge you to explore all of the options for your mercury bearing wastes.

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**Novel Process for Capturing and Recycling CFCs and
Other Halogenated Hydrocarbons**

by

Dusanka Filipovic, P.Eng.

President: Halozone Recycling Inc.

and

Bob Laughlin, Ph.D., P.Eng.

ORTECH International

Presented at:

'92 North American Conference on Industrial Recycling and Waste Exchange

Session:

Innovative New Technologies for Recycling

ABSTRACT

The problems of ozone layer depletion by refrigerants of the CFC type are discussed, with specific reference to high efficiency adsorption of refrigerant gases using a proprietary zeolite based adsorbent, Silicalite™. The development of the Blue Bottle™ products and the principle characteristics of this new patent protected technology, which facilitates zero emission of CFCs are described. The recycling process of the Blue Bottle™ cylinders to recover 100% of the adsorbed CFCs is discussed, which has also been proven to be applicable to a wide range of refrigerants, including the new substitutes, HCFCs and HFCs, which have less ozone depleting activity and are considerably more expensive than CFCs. The principle applications and commercial opportunities for the Blue Bottle™ technology in the refrigeration, air conditioner and manufacturing market segments is described.

BACKGROUND

High altitude ozone forms a protective layer in the upper atmosphere that shields the earth and all its inhabitants from the harmful effects of ultraviolet radiation from the sun. Excessive exposure to ultraviolet rays is known to cause serious damage to living tissues, causing cancers, suppressing the immune system, and destroying agriculture and aquatic life.

Most of the ozone in the stratosphere is found in a layer about 20 km thick, lying between 15 km and 35 km with the heaviest concentration between 20 km and 30 km above the Earth's surface. At these distances, the ozone is spread so thinly that the equivalent compressed to ground level pressure would form a layer only 3 mm thick. Reduction in the ozone concentration results in less ultraviolet being absorbed, and significantly greater effects from ultraviolet radiation are found on earth from relatively small reductions in the protective ozone layer. Even a 1% reduction can cause an equivalent drop in crop yield and a 4% increase in the incidence of skin cancers. Over the past decade, there has been a measurable decrease in the ozone layer, directly attributable to destruction by chemical entities released into the atmosphere at ground level from man-made sources.

Although some changes in the ozone layer could be contributed by natural causes such as changes in air currents and weather patterns, there is now no doubt that the major cause of the destruction is caused by a family of synthetic man-made chemicals called chlorofluorocarbons, also known as CFCs.

Chlorofluorocarbons (CFCs) are a family of halogenated hydrocarbons used widely in industrial, commercial and domestic situations. They were first introduced in the 1930s as industrial refrigerants, and became popular for a number of diverse applications due to their safety, stability and non reactive properties (here at ground level). There are approximately 1 million tons of CFCs consumed on a world wide basis annually, of which 50% is emitted into the atmosphere, during leakage, routine servicing of equipment or as part of normal manufacturing operations.

CFCs are extremely stable chemicals so that when they are released into the atmosphere they reach the stratosphere by slowly drifting up from the lower layers of the troposphere. This upward drift may take several years, during which time the CFC molecules remain in their natural state.

Eventually, when these compounds reach the ozone layer, the intense ultraviolet radiation splits the CFC molecules releasing chlorine atoms which are extremely reactive, and in turn combine with ozone molecules in a chain reaction. The final outcome of these reactions is that ozone is destroyed and replaced by oxygen molecules, and a free chlorine atom is still available to continue the destructive process. The oxygen does not absorb the ultraviolet rays, thus the net effect is to permit more harmful rays to penetrate through to the earth's surface. Since the chlorine atom persists, it is believed that a single chlorine atom may be able to destroy up to 100,000 ozone molecules during its reactive cycle.

The problem is further compounded by the fact that the CFCs are extremely stable, and may continue to pollute the atmosphere for several decades without being degraded. Thus it is probable that all the CFCs ever produced are still actively contributing to the environmental problems, both by ozone destruction as described above, and as major contributors to the global warming problem.

Recognition of the seriousness of the threat to the ozone layer came at the International Conference held in Montreal in September of 1987. The agreement, at that time signed by 24 nations, pledged to reduce the CFC emissions by 50% by 1999. This agreement became widely accepted on a global basis and known as the Montreal Protocol. The United Nations has taken over the organization and regular update of this agreement, which now has the commitment of some 70 nations, who have agreed to legislate to phase out the emission of CFCs by 1995, the manufacture of CFCs by 1997, and the use in non-contained situations completely by 2000.

The response from both industry and the public sector has been extremely favourable, in many instances individual companies have been very resourceful in finding alternatives and have succeeded in achieving the reduction goals well ahead of the mandated schedules. There has been a strange marriage of industry and publicly concerned organizations such as Greenpeace etc. both recognizing the urgency and importance of the CFC phase out program. In many instances, industrial users who have replaced CFCs in their manufacturing processes have resulted in reducing their costs on a long term basis.

CFCs are however, extremely useful chemicals having unique properties which are ideally suited to the needs of the refrigeration industry and many other segments where it will prove very difficult to find alternatives having similar properties.

Let us not forget that any uncontrolled phase out of CFCs would have a dramatic and severe effect on all our lives, since we rely on refrigeration particularly to maintain one of the cornerstones of our standard of living, specifically in the health care sector and for preservation and transport of fresh food. Air conditioners in cars, which arguably represent the 'luxury' end of the market, actually account for fully half of the emissions of CFCs from the refrigeration sector in North America. Although application of CFC type chemicals in applications such as foam production and as a propellant for aerosols either has been or will be completely replaced within a relatively short time, the need for refrigerants in existing refrigerators and air conditioning equipment will remain constant and the overall demand will actually increase as developing countries improve their standards of living.

CFCs attractiveness has been due largely to their effectiveness as volatile, non-toxic chemicals, which are non-flammable and non-corrosive. Until their negative effect on the ozone layer was discovered, CFCs were considered to be one of the best "environmentally friendly" chemicals in common use.

It must also be remembered that the compulsory phase out of CFCs will prove to be an extremely expensive process, since none of the substitute chemicals is a perfect match in terms of properties, and there are significant prices to pay for replacing the chlorine atom in a CFC molecule by hydrogen. The resulting chemical substitutes are generally much less efficient in terms of heat exchange capacity, are often far more toxic than their CFC equivalents, and have a tendency to be far more flammable as the proportion of hydrogen in the molecule increases.

In all cases, the new substitutes, called HCFCs and HFCs, which have much less ozone depleting activity than CFCs, cannot be used directly in equipment designed for use with CFCs without extensive modification. Retrofits are required to sustain higher operating pressures and compression ratios, new lubricants must be found to be compatible with the new refrigerants and new seals are required to prevent leaks of what is often a 'toxic' chemical, so recently produced on the market that the true 'properties' and dangers to human health are as yet unknown.

The success of the implementation of the Montreal Protocol within the specified time limits depends, to a large degree, on the availability and use of efficient methods for containment and recycling of CFCs.

Strategies outlined by the Montreal Protocol include:

1. Find and use substitute chemicals which have similar properties to CFCs which do not have harmful effects on the ozone layer wherever possible.
2. Eliminate the use of CFCs in all non-essential situations.
3. Improve methods of handling CFCs to ensure that emissions are eliminated and the existing 'pool' is maintained indefinitely for the service of existing equipment.

The decision to phase out CFCs has been taken globally, and is being implemented by all developed countries with the highest possible priority. Engineers in the civilised world are struggling to find innovative solutions to many of the technical problems outlined above, and have produced several substitute chemicals having much less ozone depleting activity than CFCs.

These new chemicals, the HCFCs and HFCs, are far more expensive to produce than CFCs, and will probably cost, to the consumer, some 8 or 10 times more than the \$2-6 per lb for CFCs today.

It is highly likely that the legislation currently being drafted in hundreds of municipalities, regions, counties and at federal level to implement the Montreal Protocol will include the provision that it will be illegal to wilfully emit the HCFCs and HFCs, which will also be controlled by "The Clean Air Act".

One of the best strategies to adopt in order to control emissions of ~~all~~ refrigerants will be to insist that they are collected during service or decommissioning of equipment, and recycled and reprocessed to 'close the loop' and maintain the quantity of available chemicals at a constant level.

We would like to introduce you to a new technology called "the Blue Bottle" process" which is being commercialised by Halozone Recycling Inc. (a wholly owned subsidiary of Halozone Technologies Inc., which is a publicly traded company).

The Blue Bottle" process

The Blue Bottle" technology was developed at Linde Division of Union Carbide (Canada) and licensed to Halozone in January 1992. The process was co-invented by the author, while she was employed by Union Carbide as Manager, New Business Development of Linde. The technology is patent protected on a world-wide basis.

The technology is centred on the capture and adsorption of CFCs and the CFC substitutes, HCFCs and HFCs onto a zeolite based molecular sieve. Each gram of the sieve matrix has billions of microscopic pores all having consistent dimensions and arranged to selectively permit the adsorption into the crystal only those molecules having precisely the correct size and molecular 'shape'. Thus the CFCs are selectively adsorbed in high concentration while the other chemicals present, such as water and air, will pass though and are not adsorbed by the matrix.

This special zeolite is called Silicalite*, produced by UOP, which is a joint venture company established by Union Carbide and Allied Chemical and is proprietary to the Blue Bottle" process for the capture and recovery of halogenated hydrocarbons.

The molecular sieve is used to selectively remove CFCs and their substitutes from refrigerators and air conditioners during service or decommissioning. The crystals of the molecular sieve are commercially available in pellet form, which are packed into a sealed Blue Bottle" cylinder like the one you can see, which is produced with standard fittings to be used directly for service of refrigerators or air conditioners. Instead of venting the refrigerant gas to the atmosphere, the service technician can now exhaust all the volatile vapours through the Blue Bottle" cylinder, and be confident that none of the polluting, ozone-depleting gases are escaping into the atmosphere.

A very practical benefit of the Blue Bottle™ process is its ease of use, and the safety aspect is also of prime importance, since the CFC gas is collected at atmospheric pressure. Thus many of the dangers of handling CFCs and their substitutes using pressurised cylinders are avoided by using the Blue Bottle™ cylinders.

Collection of refrigerant gases using this technique has also been demonstrated to achieve zero emission, when used under the correct working conditions. This is the only process that can guarantee 100% capture efficiency, thus effectively 'closing the loop' to completely contain the refrigerants, which is one of the major strategies of the Montreal Protocol.

The Blue Bottle™ process also includes a recycling operation, which involves desorbing the CFC from the adsorbent matrix in the cylinder. This is achieved using an inert gas to purge the chemical from the cylinder under carefully controlled conditions, which are optimised to facilitate complete removal of adsorbed gas without any thermal decomposition of the target hydrocarbon. Once all of the adsorbed gas has been swept off the matrix, the adsorbent has been regenerated and is ready for use again.

The purge gas containing the desorbed CFC is directed to a high efficiency condenser, which liquifies the hydrocarbon and releases it from the carrier gas, which is recycled back into the system to be used to purge more cylinders. The liquified CFC is collected downstream, in a highly purified state, suitable for direct reuse as a refrigerant without further processing. All components of the process are recycled, and energy is the only commodity consumed during the whole recovery and recycling process.

The efficiency of capture and recycling of different refrigerants was tested extensively during research and development trials carried out at ORTECH International. The following CFCs, HCFCs and HFCs were all found to have similar efficiencies when tested with the Blue Bottle™ process, indicating that it will be extremely practical to use the Blue Bottle™ cylinder for routine service for all situations, now with CFCs and in the future, when most equipment uses exclusively the new substitutes.

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The Blue Bottle™ recovery system was demonstrated to give 100% capture and recovery of all of the following compounds:

CFC 11	CFC 12
CFC 113	HCFC 22
HFC 123	HFC 134a

Adsorption capacities for the various compounds was found to be between 3 to 5 g CFC/100g of molecular sieve, depending on the specifics of the initial concentration of refrigerant. All of the refrigerants was demonstrated to be recovered with 100% efficiency, without thermal degradation during the recycling process.

One of the most significant discoveries was the applicability of the Blue Bottle™ process for capturing CFCs from both concentrated and dilute situations, which in practice means all applications from domestic to commercial and industrial. Decommissioning of a small refrigerator or domestic or car air conditioner, where there will be a 100% concentration of refrigerant is made much easier with a Blue Bottle™ cylinder, and the routine capture of CFCs emitted in dilute

air streams during a manufacturing process can now be made possible using a Blue Bottle™ process, where a complete capture and recovery process will be installed to purify gases normally vented through an air scrubber systems from an industrial site.

The CFC recovered from the decommissioning of old equipment will be required for many years after the production of CFCs has ceased completely, since there will still be tens of millions of refrigerators and other equipment dependent on CFCs for maintenance and repair, long into the 21st century.

TARGET APPLICATIONS

Target markets for the Blue Bottle™ process are global and urgently in need of a product which fills the gap not covered by existing technologies based on liquid transfer or mechanical compression of refrigerant gases.

The market trends are moving simultaneously in three directions, creating a rapidly changing usage pattern of CFCs and related 'ozone depleting' substances.

There is a changing pattern of use of refrigerants in the refrigeration and air conditioning market during the period 1991 to 2005. While the total volume of the refrigerants remains fairly constant, with a shift from CFCs, to HCFCs, to HFCs the dollar value will inevitably increase due to the higher price of the substitutes and the added cost of pollution control procedures to ensure zero emission.

The Blue Bottle™ products from Halozone will make their first significant market penetration in the refrigeration and air conditioner market segments.

There are three distinct market targets within this segment, each of which has clearly defined needs which are not being fully met with existing products. The products and services from Halozone will be complementary to other products available to these customers in this category and will improve their performance to achieve zero emission capabilities without major capital costs.

Primary customer groups for the Blue Bottle™ products will include: Service Technicians and Contractors who service and decommission domestic refrigerators, Contractors and Engineers who install, maintain and service commercial size refrigeration and air conditioning systems, and Service Centres for automobiles, typically organizations with national or international franchise operations.

Halozone will also supply custom designed recovery and recycling plants to contain and eliminate emissions of CFCs in industrial manufacturing sites which use CFCs either in their production processes or as solvents or cleaning agents.

The Blue Bottle™ process will provide 'added value' by facilitating implementation of zero emission strategies at minimum cost and by supplying back to the market 100% of the captured CFCs (or HCFC or HFC) in a ready-to-use form, highly purified and free from contamination with, for example, moisture oil or acid.

The Blue Bottle™ should become the method of choice in small volume applications e.g. domestic refrigerators and air conditioners, where the use of a vampire unit is not practical. In large commercial scale applications, a larger version of the Blue Bottle™ will be used to capture emissions during servicing where it is common to purge equipment. It is estimated that from approximately 15,000 centrifugal air conditioner units used in Canada to cool office towers, there are probably over 500,000 lbs of CFCs vented to the atmosphere annually, with no good methods available on the market to prevent or reduce emissions.

In cases where a vampire unit would normally be used to transfer large quantities of CFCs, e.g. during service or decommissioning of a commercial freezer, the Blue Bottle™ can be incorporated into the system to improve the efficiency of the process to 100%, and guarantee zero emission during service, as the legislation will demand.

It is planned to sell the use of the Blue Bottle™ technology as a service, charging for each time it is used. In this way the costs of operating the distribution network for cylinders will be covered. There will be a central recycling plant serving a region, where cylinders which have been 'used' (i.e. filled with CFC) will be processed to recover the CFC and regenerate Blue Bottles™ ready for reuse. The recovery process will generate profit partly from the volume dependent service costs and partly from the sale of recovered CFCs.

The company will adopt a very progressive expansion policy to implement use of the Blue Bottle™ technology on a global scale. This strategy is driven as much by environmental consciousness as the desire for commercial success. There is considerable government support for the concept of exporting commercial development of this Canadian technology, especially since Canada has taken a strong lead position in implementation of the Montreal Protocol.

Retrofit costs will amount to tens of billions of dollars, e.g. there being some 237 million automobiles currently using CFCs in their air conditioning systems, due for decommissioning or change to non-CFC systems before 1997. A shortage of CFC will become acute after 1996 when production and marketing will be almost completely phased out in most countries.

The company intends to speed up the rate of development of the product use on a global scale by offering franchise opportunities to potential partners who wish to operate their own recycling plants using Halozone's Blue Bottle™ technology under license.

CONCLUSIONS

The patent protected Blue Bottle™ technology has been successfully proven to be a practical solution for service and decommissioning of refrigerators and air conditioners, in domestic, commercial and industrial settings, and for use with CFCs and the new substitutes, HCFCs and HFCs which have less ozone depleting activity. Capturing efficiency has been demonstrated to achieve 100% with both concentrated and dilute samples of refrigerants. The unique aspect of the refrigerant can be recovered in high purity with 100% yield with no degradation due to the gentle conditions of the recovery process. Commercial scale field trials are currently being conducted together with Sears and D'Arcy Sweeney (Trane Service Agency in Toronto, Ontario). Full scale commercial operations are expected to start early in 1993.

ACKNOWLEDGEMENTS

The continuing support of the Ontario Ministry of the Environment is greatly appreciated. The authors would also like to thank Constantine Karayannopoulos of Linde, Glenn Vicevic and staff at ORTECH International for their assistance in the development of the project.

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Section Five: Innovative New Technologies for Recycling

FIBREGLASS RECYCLING: ECONOMICS AND REALITY

**Presented by Randy Bastarache
Vice President, Marketing
Phoenix Fibreglass Inc.**

The following is an overview of the technology innovation of Phoenix Fibreglass Inc., based in Oakville, Ontario, Canada. Phoenix has developed the world's most advanced fibreglass recycling technology, and currently operates North America's first commercial fibreglass recycling facility.

Like many of the organizations represented at this conference, Phoenix Fibreglass is part of a new entrepreneurial wave of companies developing and commercializing technologies that will benefit the environment. But the reality is, saving the planet is not the primary motivation of Phoenix or most other recycling innovators. Our goal is to capitalize on this technological innovation, recoup our R&D investment, and show a profit.

Most people are not aware that fibreglass products are increasingly part of our lives at home, at work and on the road. The type of fibreglass most people visualize is the pink fluffy stuff which insulates our homes. That is not the type of fibreglass that Phoenix deals with. Insulation is in a completely different product category.

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Today fibreglass compounds are found in many transportation vehicles. We all know about Corvette bodies being made of fibreglass, but did you know that all types of components, from bumper frames to engine parts are made of fibreglass? Many people are not aware that many sinks, bathtubs and shower stalls are now being made of fibreglass. And don't forget corrosion equipment, and a wide range of electrical and industrial components.

One of the fibreglass products that many people are aware of is boat hulls. Fibreglass boat hulls are the reason Phoenix Fibreglass exists today, as this document will explain.

The bottom line is that fibreglass is durable, flexible and increasingly in demand by a wide range of manufacturing sectors. And until Phoenix came along, none of it was recyclable.

In North America, the market for saturated polyester resin and glass reinforcements (fibreglass) totals over 1.6 billion pounds. Research indicates that about 10% of fibreglass used in manufacturing ends up as scrap. And countless fibreglass items end up in landfill sites. We know that there are millions of pounds of fibreglass being landfilled and we would like to reduce this amount.

Up until a few years ago, fibreglass waste was not an issue. However, governments have begun to ban certain materials from landfills. Technically, fibreglass comes under the heading "plastics" and it's no secret that the public and legislators think plastic is an environmental disaster. In modern landfills, it just sits there for centuries.

So, as the public and governments got hot about plastics, manufacturers began to feel the heat. And few industries are feeling the heat like the automotive industry. The "Big Three" spread the word to their parts suppliers -- "We want more recyclable and recycled-content products." This presented a challenge to the fibreglass product suppliers to the automotive industry in the U.S. who will be using about 550 million pounds of fibreglass compounds a year by 1995. Phoenix is now helping these manufacturers to meet the challenge and satisfy the demands of the "Big Three."

As the public and governments continue to demand that manufacturers take "cradle to grave" responsibility for their products, other fibreglass manufacturing sectors, in addition to the automotive sector will, begin to look favourably at using recycled fibreglass. But Phoenix can't afford the luxury of waiting until these other markets open up. Instead, the company is working to encourage other manufacturing sectors to choose Phoenix Fibreglass for its price and quality attributes -- not just because it is good for the environment.

It is useful to examine the brief history of Phoenix and the evolution of this recycling technology. Our origins have been popular with the media because it makes for a great human interest story.

Back in 1990, the founder of Phoenix Fibreglass, Bryan Sims, was a respected and innovative yacht designer. The trouble was, as the recession kicked in, the first industry to feel the pinch was the marine sector. Nobody had the money to buy luxury boats. So Bryan set his sights on a new way to be his own boss. Noting all the old boats in the yacht club yard, he wondered whether there would be money in finding a way to recycle the hulls instead of just junking them.

Bryan certainly knew a lot about fibreglass from his boat design experience. So he raised some investment capital and commissioned ORTECH International of Mississauga, Ontario, to try out some fibreglass recycling possibilities. Bryan never set out to revolutionize an industry or develop a technology with global applications, but as luck would have it, that's just what he did.

It's been less than two years since Bryan first started the lab scale research, and only a year since Phoenix was formally incorporated. In July of this year we opened the doors of North America's first commercial fibreglass recycling facility. Not only do we have a technology unique on this continent, our fibreglass recycling process is superior to any existing technology of its kind on the globe.

Once the lab-scale technology proved promising, Phoenix began the process of pilot testing the technology, researching potential markets, launching the technology to North America's business and trade media, and, of course, raising adequate start-up capital. This 24-hour-a-day process is familiar to every environmental technology entrepreneur. And now that we finally have a commercial recycling facility up and running, the real work is just beginning.

Phoenix has developed a mechanical process that is capable of separating the two key components of fibreglass -- glass fibres and plastic resin. Other companies or groups interested in fibreglass recycling here in the U.S. and overseas have been focusing on ways to grind everything up so that you were left with a filler product -- kind of a powder that could be added to the manufacturing process. Some companies had also been looking into pyrolysis of fibreglass waste to recover a type of filler by-product and oil. But we rejected the direction of these technologies. We were searching for a way to "close the recycling loop" so that recycled fibreglass could be used to replace some of the virgin fibreglass used in manufacturing.

We have been successful in developing a process known as "fibre separation technology" that generates glass fibres as well as fillers that perform as well -- or better -- than virgin fibreglass in some manufacturing processes.

Our technology is clean. There are no toxic by-products produced. No chemicals are used. And virtually all the waste shipped to Phoenix's Oakville facility can be recycled. However, all details about how the technology works are proprietary as patents are pending. Retaining a leadership position in the global marketplace is important to Phoenix's future success, and we take great pains to avoid giving hints away to our potential competitors.

It is well known that there is a long list of organizations with recycling technologies that never got off the ground because they were not economically-viable. Despite consumer and government demand for "recycled-content" goods, manufacturers could not afford to purchase recycled material that cost more than its virgin equivalent. Phoenix is fortunate that it does not have that problem. Our cost-effective recycling process allows us to sell recycled fibreglass at prices equal to or lower than virgin fibreglass in similar product categories. That means that manufacturers could use our fibreglass to reduce their raw material costs. With so many manufacturers looking to cut their operating costs, the price advantage of Phoenix's fibreglass has created significant interest.

But the first question manufacturers ask once they hear about the price advantage is "What kind of quality can I expect?". This scepticism about quality is based on misconceptions left from the legacy of some recycled products introduced into the marketplace over the last decade. Recycled products are sometimes regarded as inferior products -- a perception that is generally false and damaging to many companies.

Phoenix is working hard to prove that our products are quality products. The unique properties of one of our recycled filler products makes it better than competing virgin products. And it costs less. Our glass fibres have been proven to match the performance of virgin fibres in specific manufacturing processes and no other company in today's marketplace has the products which we offer.

We back up our quality claims with strict quality control procedures in the Phoenix recycling facility. At our on-site laboratory, samples from each batch of recycled material are carefully analyzed. The data from this lab analysis is submitted to each buyer when their product order is filled.

The "quality" selling points are extremely critical to the long-term success of our company. As we've criss-crossed this continent talking to potential buyers, we've stressed these two points over all others. As mentioned, not every manufacturer out there is under pressure to introduce a recycled-content or recyclable product. So we want them to purchase our material because of the cost and quality advantage. And we hope that these manufacturers discover that the environmental advantage gives them a marketing edge in their competitive sector.

Our new recycling facility, just outside of Toronto, was designed to serve Canadian fibreglass product manufacturers, and to some extent, the U.S. fibreglass industry. We estimate that about 160 million pounds of fibreglass are used by manufacturers in Canada. This includes a wide range of cured, unsaturated polyester resin with or without fibre reinforcements. Potentially, that means that there are about 16 million pounds of waste produced every year.

If you gathered up 16 million pounds of waste fibreglass, you could fill up an entire football field -- to a height equal to a ten story building. The U.S. market for fibreglass is approximately ten times greater than the Canadian market, so there is potentially ten times more waste.

Many manufacturers will gladly ship their fibreglass waste to us. With landfill tipping fees topping the \$100 dollar mark in many areas of Ontario, manufacturers will save by sending it to our plant. But no matter how much waste we take in, process and sell from our Oakville facility, we are left with a significant economic reality: the estimated revenue from this single plant is not enough to justify the research and development investment needed to bring the technology from lab-scale to full commercialization.

We are certain that many technical innovators are in the same boat. Technology development is costly. However, Phoenix has known from the beginning that technology licensing and strategic alliances to develop new manufacturing facilities are the keys to recouping the R&D investment.

Now that we've got our plant doors open and production has begun, we are already setting our sights to the next plant. Phoenix's next move will be to establish a recycling facility here in the U.S., primarily to serve the fibreglass suppliers to the automotive industry. In fact, a group of American fibreglass automotive companies are already shipping some of their waste to our Oakville facility for processing and eventually the recycled waste will find its way back into various new fibreglass automotive parts.

Our international marketing efforts began earlier than expected. Our original intent was to get our North American operations up and running before targeting overseas markets. However, we quickly found that the demand for recycled fibreglass in these foreign markets exceeded existing North American demand.

When we first made a public announcement to the press about our new technology last November and started to make appearances at industry conferences, we caught the attention of key fibreglass recycling industry groups in Europe and South East Asia. We found ourselves responding to phone and fax requests for more details from all over the globe. We are beginning to establish licensing agreements and strategic alliance arrangements that will enable Phoenix to go international.

Within the next five years, we conservatively estimate that there could be half a dozen Phoenix recycling facilities around the globe. The reality is, without the existence of global marketing potential, Phoenix would not be here today. A one-shot recycling facility based in Canada would have helped to reduce fibreglass waste in local landfills, but it would not have been economically-viable over the long run.

The critical challenge to our future success -- and a challenge shared by all companies with new recycling innovations -- is market development. It seems that some significant markets for recycled fibreglass have developed in the automotive industry because of public and government pressure. But we look forward to seeing a wide range of products containing Phoenix fibreglass hit the market over the next few years.

One of the first companies to purchase recycled fibreglass from Phoenix used it to manufacture large recycling "igloos" to collect recyclable pop cans, bottles and newspaper in public outdoor areas. Another company has recently produced a prototype of a bathroom sink made from recycled fibreglass that has a striking -- and highly marketable -- appearance. Basically, we feel that the "green" home of the future could include many recycled-fibreglass products from roofing tiles to shower stalls, and from electrical components to outdoor patio furniture.

Unfortunately, the yachting industry is still in a slump and is expected to stay there for quite some time. So I can't predict whether we will ever set foot in a boat with a hull containing Phoenix fibreglass. But that doesn't mean that we can't fulfil our company founder's original intent of recycling scrap boat hulls into other useful fibreglass items.

Phoenix is proud to have joined the ranks of companies working hard to bring a technological idea to the marketplace and succeed as a viable business. We hope that our combined efforts bring all companies involved economic success as they also benefit our environment.

For more information, contact:

Phoenix Fibreglass Inc.

364 Davis Road, Oakville, Ontario, Canada, L6J 2X1

Phone: (416)844-7678 Fax: (844)845-0778

RECLAIMING CELLULOSE: OVERCOMING THE OBSTACLES

1992 NORTH AMERICAN CONFERENCE ON
INDUSTRIAL RECYCLING AND WASTE EXCHANGE

September 9-10, 1992

This is not meant to be a philosophical discussion outlining why it should be this Country's intention to reclaim more post-consumer cellulose fiber. The media, Greenpeace, and, our own environmental consciousness has already established that. The amount of solid waste generated each day has escalated each year, landfills are filling up and/or shutting down, and, investigations have shown that the paper industry is the worst offender with statistics indicating that paper and paperboard constitutes 40, 50 and even as high as 60% of the bulk in most landfills. So....we need not dwell on these aspects! Rather, this presentation will attempt to focus on:

- (1) what factors have led to this situation,
- (2) with what obstacles we're confronted in alleviating our present problems,
- (3) what must change in order to bring about improvements, and,
- (4) suggestions for implementing these changes.

Before we begin to address these four areas, it should be pointed out that whatever course of action is taken we should endeavor to avoid the problems which have plagued the plastic, newsprint and glass sectors. We are all aware that the amount of material collected has far exceeded demand. There simply does not exist enough outlets to consume all the tons and tons of material being collected by a public that deems it patriotic to deliver this material to a collection yard....only to be told (1) sorry...we don't want it, or (2) that, yes, it would be accepted but would only be thrown onto a large pile in the middle of a field...which is, in effect, another landfill!

Ideally speaking, the end-use application (demand) should first be developed. Supply should be driven by demand, not visa-versa! Creating this ideal situation would eliminate a multitude of problems.



With that as a background, let's get into the meat of the message.....

The American Paper Institute has set for itself a goal that 45% of all paper products be recycled by 1995. By that time per capita consumption of paper/paperboard will be approaching 800#/year. 45% of 800# means, in effect, a goal of reclaiming and recycling 360#/year for every person in America. This goal will probably be realized since we are currently reclaiming 42%. If this figure seems high one need only to look at the two major components of this figure: (1) old newspapers (ONP) and (2) old corrugated containers (OCC). Why have we been so successful in reclaiming/recycling these two grades? A review of the key factors makes the answer obvious:

1. ONP and OCC are easily identifiable and are not easily confused with other grades.
2. Every household and business has them and must dispose of them. Accumulating them is convenient....they're flat, stackable and easily bundled.
3. Best of all, either the municipal garbage service will pick them up, or, at worst, they can be easily transported to a nearby collection point.
4. But, the key ingredient that has made this work, is the paper industry's willingness to make most (if not all) of the corrugating medium (the inside fluted part) out of OCC and to make newsprint (a relatively forgiving grade) out of a high percentage of ONP. In both cases there was a definite demand.

Unfortunately, the "success story" ends here. Running a distant third is paperboard milk containers. Having to remove the plastic coating has made recycling more difficult and has created the need for regional companies who have the technology to routinely separate the plastic coating from the cellulose. The pulp is then pressed to 50% moisture and sold as post-consumer recycled fiber....currently at prices 33% HIGHER than top quality virgin pulp! The demand and technology are in place, now segregation, collection and supply must catch up.

The largest category as yet un-utilized is mixed office waste. The City of Boston, for instance, generates over 800 tons every working day. Office waste is a highly diverse collection of predominantly Kraft (sulphate) cooked and fully bleached cellulose....with very little Unbleached, groundwood or heavily coated paper and paperboard included in the mix. However, office waste does contain both white and colored paper, lightly and heavily printed papers, FAX paper, copier paper, computer print-out, laser printed papers, envelopes and mailers, folding cartons, packaging papers, etc, etc, etc. The problem confronting the paper industry is in removing the Styrene Butadiene resin (SBR) from copier papers and the "ink" from laser printed and desk-top publishing papers. These imaging compounds do not lend themselves to conventional deinking processes.

Apart from Government, commercial, industrial and business offices' waste, the largest source of higher quality waste paper is the home. Here you are apt to find a tremendous variety of papers....ranging from a fully coated magazine like the National Geographic, to envelopes, greeting cards, flyers, stationary, invoices, statements, carbonless papers, frozen food containers, milk cartons, folding boxes (i.e. Avon), FAX copies, white paper, colored paper, lightly and heavily printed papers....all made from Kraft cooked pulps. Add to this the ubiquitous pile of newspapers and old corrugated cartons to be found in every home and you have a mixture of chemically cooked pulps, groundwood, bleached and unbleached, hardwoods and softwoods....as well as clay, titanium chalk, starch, latex, etc. If anything could be described as "a dog's breakfast" this would be it!

Can the Government mandate forced separation of all these grades of paper? Or, can our consciences ever become so overcome with guilt that everyone will want to do it willingly? These are hard questions to answer. But, this much we know for sure. If the public can be convinced that they should segregate all their household paper and paperboard grades, we must then be prepared to assist them by making it easy for them to choose into which category to put all the various papers. Recovering waste paper from the home raises these questions:

Is the homeowner/apartment dweller capable of:

1. developing a system of bins and containers into which to place all the segregated items,
2. knowing into which bin/container each piece of paper is to go,
3. exercising the discipline to religiously separate each of the various categories?

This last item can become a major obstacle in getting the papermills to accept these segregated papers. If different papers are combined, the resulting mixture must then be categorized at the lowest level found in that mixture. For instance, mixing 25% groundwood with 75% of the highest quality Kraft-cooked pulp does not result in a new "blended" grade, but rather, it now all becomes mixed groundwood....selling for the groundwood price.

An additional problem arises when papers with wet strength (i.e. towelling), synthetic coating binders such as Polyvinyl Alcohol (some pressure sensitive release papers), chalk-filled coated papers (Time-Life dull-coated coffee table books) or air-laid/non-woven "papers" containing synthetic fibers and non water-soluble binders are mixed with other papers going directly to the on-site deinking operation at a papermill. These "contaminants" can wreak havoc with the stock prep systems and paper machines!

Now, to quickly summarize what we've discussed up to this point:

1. With paper and paperboard constituting 40-50% of the solid waste in our landfills, we cannot ignore the problem, neither can we eliminate these products from our economy.
2. We have been successful in reclaiming and recycling old newspapers and old corrugated containers....so much so, in fact, that supply has far exceeded demand.
3. Post consumer wood-free (no groundwood) chemical pulp is in demand, but, supplies are extremely limited. Government agencies and businesses have requested paper suppliers to provide minimum and target amounts of recycled fiber in certain paper grades. Paper companies, in response, have had three options:
 - a. comply with this request by paying a premium for post-consumer reclaimed fiber and passing this back to the buyer in the form of higher paper prices,
 - b. turn down the business,
 - c. lie to the customer
4. Householders represent the largest un-utilized source of post-consumer waste paper. However, each home or apartment will have to segregate, save, accumulate and then deliver to a collection point all their discarded paper, paperboard, cartons, etc.
5. Carefully controlled and disciplined segregation is imperative since mixed papers become relegated to the lowest common denominator. Also, contaminating useable mixtures with problem-causing papers will cause the paper mill a variety of problems.

Before moving onto possible solutions, it will prove helpful to those in the audience who are unfamiliar with the paper industry to point out yet another obstacle. This one involves the degree to which large, integrated (papermills having their own on-site pulp mills) will be able to utilize large amounts of reclaimed cellulose fiber. These large southern mills own extensive acreage devoted to managed tree farms. In addition, they have long-term contracts with independent loggers to provide tens of thousands of cords every month. The pulping operations at these large mills depend on an economy of scale....if they were to scale back their costs/ton would escalate and their equipment would cease to operate as smoothly. Lastly, these mills are set up to process all raw materials in a slurry form and have absolutely no means of "dry furnishing" (adding bales of waste paper) to their stock preparation systems. They don't have the unloading docks, warehouse space, materials handling devices or the large mixing tanks (called hydropulpers) needed to slurry reclaimed fiber.

Consequently, in light of all these problem areas, many knowledgeable people in the paper industry insist that large integrated mills will be the last ones to accommodate waste paper or reclaimed fiber. Unfortunately, these mills could be the biggest potential consumers....any one of them being able to process thousands of tons/month of reclaimed fiber.

At this point someone may be tempted to ask "are papermills our only option for the re-use of reclaimed cellulose?" Admittedly there are a number of other options, but, unfortunately those applications are neither large enough to use much cellulose nor their technical requirements forgiving enough. Some examples of other alternatives would be:

1. "Celotex"-type ceiling tiles. They already use shredded newspapers.
2. home insulation. Already using shredded newsprint treated with borax compounds.
3. cellulose derivatives (chemicals) such as hydroxylethyl cellulose (HEC), methyl-ethyl cellulose (MEC) and sodium carboxymethyl cellulose (CMC). Many variations of these three popular chemicals go into pharmaceuticals, food grade products such as meat casings and highly specified products. As a result, high purity-high Alpha pulps are almost always specified.

There are a number of others (some larger than others) but, in most cases, they represent applications that have neither the broad appeal, the desired forgiving nature, nor the economics that would make it a large consumer of reclaimed cellulose.

Having reviewed all the major obstacles, it's time to look at ways to overcome them.

1. We must strive to make the use of reclaimed fiber not only patriotic but profitable. This can only happen if producers are permitted to charge more for papers containing reclaimed fiber. This has already happened with papers containing 30-50% post-consumer waste selling for 25% more than papers made from 100% virgin fiber.
2. More "forgiving" paper grades must be found. We've already learned to accept toilet tissue, paper napkins and paper towels that have high percentages of reclaimed fiber. We must now begin to insist that more forgiving paper grades be made from reclaimed fiber. For instance, why should producers be allowed to make table placemats from virgin fiber? Or commodity offset paper used for hand-outs, flyers or door-hangers? Single use paper grades should all be produced from reclaimed fibers.
3. The public will have to be willing to accept lower quality on commodity grades. Why should 3rd class mail come in envelopes made from bright, clean paper? The public must not only accept but insist on lower brightness/higher dirt count papers. This will encourage the paper producers to put more reclaimed fiber into these grades.

The key word here is "functionality". Each grade of paper must be designed and then evaluated on its ability to do the job. The countries on the southeast Asia sub-continent have already learned this lesson. Their papers have, for many years, been held up to ridicule by U.S. papermakers for their dingy color, numerous dirt specs and other impurities, and, variability. However, we're now coming to realize that those papermakers have learned how to operate a paper machine and to make a functional product out of the widest variety of raw materials imagineable. Consequently they are currently making paper from an unbelievable diverse array of reclaimed cellulose..... a lesson we here in the U.S. must now learn!

This brings us up to the subject of "how do we make available to U.S. papermakers the paper and paperboard now going into our landfills? We will, of course, first have to stop disposing of it. Secondly, we will have to begin segregating it in our homes, offices and factories. Then, it will have to be accumulated and the tonnage built up to the point where it becomes practical to truck it one hundred miles or more. At these processing sites the accumulated materials must be deinked and perhaps bleached up to a commercially acceptable 70-80 GE brightness level. Finally, the pulp must be dried, or, at least pressed to 50% moisture and then delivered to a nearby papermill where there must be sufficient demand to warrant a steady stream of post consumer reclaimed fiber. In other words, this papermill's order pattern cannot be wildly erratic, and, it cannot begin imposing tighter and tighter specifications in order to limit the degree of variability.

Here, then, are some thoughts on how to overcome some of these obstacles.....

1. OFFICE WASTE

Corporate management must be willing to instruct (and then insist that it be done!) their employees to religiously segregate the various office products, into, say, four categories:

- a. white paper/uncoated/lightly printed
- b. colored paper/uncoated/lightly printed
- c. coated paper (i.e. magazines and brochures), FAX paper
- d. brown paper paper/corrugated containers.

At the end of every working day these segregated containers would be sent to the basement for baling/storing until a T/L was accumulated. The bales would be segregated....the magazines going to conventional deinking operations while (a) and (b) would be taken to a processing plant utilizing the new Steam Explosion Technology. MARGRAVE, Inc., a company with which I am affiliated, has developed the technology to lift the resin/imaging materials off the paper by heating the mixture high enough to put these black compounds into the vapor state from which they can then be extracted.

The "purified" paper would then be processed through an Oxygen/Ozone bleaching system to bring it up to an acceptable brightness level (remember, there will be colored papers mixed in with the white). MARGRAVE, Inc expects to build their first plant next year in Minnesota.

2. PAPER AND PAPERBOARD FROM THE HOME.

Rather than try to educate the entire population as to how to identify and then segregate all the various products coming into the home, we would suggest a Government mandated code symbol in the corner of every piece of paper or paperboard. This symbol could be incorporated with the circular "recyclable" symbol now being put on many bags, envelopes, etc. Inside this symbol could be a bold A, B, C or D telling the homeowner into which bin it belongs. These bins would be put out for municipal pick-up, probably twice monthly. A reduced garbage collection fee could be assessed to those homeowners who participate in this program. This would give the homeowner an economic incentive to be a good citizen!

3. WHO WILL PROCESS ALL THIS COLLECTED FIBER?

With all these segregated paper/paperboard products now being accumulated, there must (as a consequence) have to be a proliferation of companies like Ponderosa Fibers. This Company has already built deinking facilities around the country to handle available post-consumer waste. Unfortunately, at present, not too many deinking plants are needed since there is a shortage of acceptable post-consumer waste to process.

4. CAN WE BE CERTAIN ALL THIS RECLAIMED FIBER WILL BE USED?

The next step is to make certain there is a strong/on-going demand for all this reclaimed cellulose. Economics again will be the key to making this happen. To begin with, State, local and Federal Governments must insist that all grades of paper brought with taxpayer's money contain a minimum of 30% post-consumer reclaimed fiber. Getting the paper order will then depend upon the producer's willingness to comply with this guideline. Hopefully the pricing of these products will be high enough to entice the paper producer to go after the order. Buyers of those paper/paperboard grades containing post-consumer recycled fiber might, in the beginning, have to be willing to pay a premium for these papers. In time, though, as supplies increased, these prices will come down. Eventually we might expect reclaimed fiber to cost no more than virgin pulp....and it's possible that it might cost less than virgin pulp as supplies increased.

5. HOW CAN WE BE CERTAIN OF CONSUMER ACCEPTANCE?

This will happen simply because it makes sense, is easy to understand by the average consumer, and, because we have no choice in the matter. Public service advertising through the mass media will speed up acceptance. Organizations who purchase paper from producers will not be able to assign the same physical and aesthetic specification to those paper grades made from recycled fiber as they were previously accustomed to when those grades were made from virgin pulp. Consumers at all levels must be convinced to accept lower brightnesses, higher dirt counts, less strength (ordering slightly higher basis weights will compensate for this in almost all cases), and, more order-to-order variation.

It's reasonable to expect that, when consumers understand the situation, they will be willing to accept all the changes. Of all the obstacles to be overcome, we feel this last one, consumer acceptance, will prove to be the easiest....as long as the program is explained to everyone.

With that we conclude our presentation. We started you off in a landfill half-filled with cellulose products and we finished presenting you, a typical consumer, a rather dingy piece of paper (and hopefully liking it!). We hope this has been helpful and has given you some insight into what must be done to alleviate a crisis situation and how we can overcome the obstacles facing us. Thank you!

Anheuser-Busch's A Pledge and A Promise: 3R's

Lawrence W. Long
Anheuser-Busch Inc.
One Busch Place
St. Louis, MO 63118

There are many ordinary, everyday items around any of our breweries ... a cloth glove, an aluminum can -- Budweiser, of course -- a beechwood chip, and a length of plastic strapping. At first glance, they don't have much in common. But they and other items are exactly the kinds of things we have to manage day to day. By managing the massive quantities of these and other items we handle over a year, we are trying to do our part to help this country get better control over its solid waste disposal problems.

This paper is about some of our environmental goals and the measurement of our results. Please keep in mind that it focuses only on programs we have in place for resource conservation tied to production. Some of our most-recognized achievements actually have taken place in other areas. For example, in 1991, for the first time, our company's recycling subsidiary, Anheuser-Busch Recycling, recycled more than 600 million pounds of aluminum -- or some 17 billion cans.

Anheuser-Busch is a large, diverse corporation, both in its product lines and its environmental efforts. It is well known that Anheuser-Busch is the world's largest brewer -- with 12 operating breweries and a 13th under construction. Brewing is the largest portion of our business, but Anheuser-Busch also operates the second largest bakery company, the largest aluminum can recycling company, an aluminum can manufacturing subsidiary, the second largest family theme park operation, and one of the fastest-growing snack food companies ... among others.

In 1991, the company had sales of \$12.6 billion. Anheuser-Busch accounts for 44.1 percent of the U.S. beer market.

The name Anheuser-Busch has been synonymous with quality for decades ... and our concern for quality has included concern for the environment. More than 20 years ago, our then-chairman, the late August A. Busch, Jr., pledged that our company would commit its resources to work toward solutions to the major environmental problems, particularly litter and solid waste. This was contained in a publication given to all employees, A Pledge and A Promise. That still is the theme of the company's environmental efforts today ... in manufacturing operations, in recycling, in stimulation of citizen involvement ... and in wildlife preservation.

The recycling subsidiary, Anheuser-Busch Recycling, was founded in 1978. It played a major role in creating the infrastructure needed to help consumers recycle and to help scrap dealers handle aluminum and transport it to aluminum companies for remelting and remanufacturing.

Anheuser-Busch also has made longstanding efforts on behalf of wildlife ... helping establish the Busch Wildlife area in Missouri and the Anheuser-Busch Robb Creek Wildlife Management Area in Montana. But since our core business is brewing, this paper will focus on how we in the brewing subsidiary are managing our environmental quality efforts.

For more than 25 years, our breweries have recycled byproducts from our waste stream -- for example, aluminum cans and glass bottles from our lines, and corrugated cardboard.

In 1991, through these efforts, we recycled the following:

- 36,987 tons of glass.
- 24,000 tons of corrugated paper.
- 1,595 tons of aluminum cans.
- 982 tons of scrap metal.

Within the past 18 months or so, we've established a more formal program to address environmental concerns. Our program is implemented with four primary approaches:

- First, we are organized to address the environment.
- Second, we are setting definite goals for the improvements we wish to make.
- Third, we are actively working to involve all employees in our effort to further our environmental agenda.
- Fourth, we are using measurement to ensure we are making progress.

Organization

In the fall of 1990, with the support and encouragement of the brewery's senior management, we established environmental quality committees. First there is an operating committee with representatives from each brewery. This committee is cross-functional, with industrial and environmental engineers, purchasing agents, packaging experts, operations managers and hourly employees. We want every segment of the employee base that can influence the environment to be involved. Also there is a steering committee with representatives from three breweries, brewing, communications, legal, R&D, safety, operations, packaging and shipping, engineering, government affairs and others. All these people are volunteers. Their environmental coordinating work is over and above their other duties.

Open communication is encouraged. On our committees, everyone is equal. All members ... as well as other employees ... are encouraged to share any environmental opportunities they identify and to take part in any solutions that are developed. Teams are being built, not just formed.

Communications is key to what we do. We meet face-to-face from time to time. We communicate extensively by electronic mail, enabling a widespread sharing of information to take place.

Goal-Setting

Our formal environmental mission can be stated this way: "Anheuser-Busch recognizes its responsibility for environmental stewardship. The company remains committed to a process of continuing improvement in seeking ways to minimize the impact on its operations and products on the environment. Our environmental quality effort is dedicated to ensuring the conservation and prudent use of resources."

Thinking visually for a second, here's what that means: Imagine a bubble over a typical Anheuser-Busch brewery. We want to minimize the amount of raw materials and waste materials that pierce the bubble while maximizing the quantity of beer produced.

This concept has been printed in employee newspapers and presented at numerous meetings we have with employees at all of our facilities. The simplicity of the concept makes execution possible. All employees need to understand what the environmental bottom line of their job is.

Beyond that simple statement, however, are some specific goals that Anheuser-Busch is committed to achieving:

- We will reduce our solid waste to the landfill by 40 percent by weight by the end of 1993.
- In the area of water, we will reduce per unit water use by 10 percent, per unit wastewater flow by 15 percent, per unit organic strength by 15 percent, and suspended solids by 10 percent.
- In the area of air quality, we will cut energy use by 20 percent over the remainder of this decade.

These goals were developed after extensive consultation with affected departments. They have the full and unwavering support of senior management.

Employee Involvement

To achieve these or any other environmental goals in a large organization requires employee commitment and participation, which are achieved through education and communication. Some short-term environmental improvements could be achieved by defining a problem, putting some engineers on it and letting them come up with a better process. But to achieve true long-term environmental excellence, employee participation is the key. Our company's accomplishments ... or those of any other company for that matter ... are simply the sum of the many small choices made by each employee each day. We want to convey the message to all employees that environmental stewardship is not something to do in addition to their job ... it's part of the job!

We use a range of tools to communicate our environmental goals and accomplishments with employees, including:

- Face-to-face communication.
- Companywide publications.
- Plant newsletters.
- Employee communications meetings.
- The annual report and annual meeting.

Each spring, the Anheuser-Busch breweries hold "Green Week" -- a week devoted to raising environmental awareness at each facility. Tips are provided to use on the job and at home. Some of our breweries organize groups to engage in such activities as cleanups or tree plantings in their communities. This year, a friendly competition was offered to liven things up -- a coloring contest for children. However, the contest is really aimed at our employees. Children, grandchildren, nieces and nephews were asked to design and color a drawing of what their relative does at work to help the environment. Of course, the only way a child can do this is by talking with the employee. This gives employees an opportunity to think about what they're doing for the environment ... and to explain it.

Environmental quality presentations are being made at each brewery. Representatives of our environmental affairs, legal, and packaging technology departments and I make two-hour talks, with Q&A. When we go to a brewery, we normally do four or five over the course of two days so that all management and supervisory as well as many hourly employees can attend and gain a clear understanding of how we must strive for environmental excellence on the job.

Measurement and Results

The end of all this, of course, is results. We are dedicated to resource conservation, and we have to document that we have achieved it. Our motto in this regard is taken from Lord Kelvin, inventor of the temperature scale that bears his name:

"When you can measure what you're speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind . . ."

We find that by measuring our progress and sharing results, we create the following effects:

- Accomplishments documented and understood.
- Pride, participation, momentum.
- Areas for improvement identified.
- Friendly competition stimulated.
- Need for additional resources justified.
- Organized information for other needs.

In 1991, even though we weren't truly up and running until after the first quarter, we reduced the amount of waste going to landfills by 7,700 tons systemwide. We figure that created enough room in landfills to serve the needs of 3,000 families for one year. Our goal, by the end of 1993, is to reduce the amount of waste by five times that amount. That is a kind of bottom line measure of how well our efforts have worked so far.

To give you an idea of where progress has been made, let's look specifically at our Fort Collins brewery. Of the solid waste sent to the landfill during 1990, this brewery targeted specific materials totaling about one-thousand tons of waste. Last year, that number fell to 530 tons. This year, it will be zero. Major categories of waste were:

- Beechwood chips -- 700 tons.
- Cardboard separators -- 150 tons.
- Wooden pallets -- 100 tons.
- Plastic strapping -- 100 tons.
- Office paper -- 37 tons.
- Other plastics -- 25 tons.
- Drums -- 12 tons.

Stories Behind the Numbers

Contributing to our efforts are dozens of success stories ... many the result of individuals or departments deciding that there has to be a better way of handling waste than sending it to landfills. In some cases, there were decisions that eliminated unneeded materials from being brought into the system in the first place. I'd like to share a few of these with you.

Our breweries receive new cans and bottles on wooden pallets. These containers are held in place during transit by a series of narrow plastic straps ... just like the strapping I showed to you earlier. These straps formerly were thrown away. These straps weigh next to nothing individually, but throughout our 12 breweries, we receive 1,000 tons a year.

The environmental engineer at our Williamsburg brewery began talking with the manufacturer of these straps and determined that the straps could be returned. Now, it is standard practice to separate the straps by color, chop them, and return them to the manufacturer to be made into more strapping. This creates a closed loop recycling system similar to the one for aluminum cans.

One of our biggest recent breakthroughs has been with our beechwood chips. As you may know, beechwood chips are used in the fermentation of all Anheuser-Busch beers. When they were no longer usable, they were landfilled. But last year, in several of our cities other uses were developed for these wooden chips. Sometimes they are composted and made into soil conditioner. Sometimes they are used as landscape mulch. As a result, we have almost completely eliminated the practice of sending used beechwood chips to landfills. Last year that saved 2,200 tons of waste.

Several employees at our brewery in Baldwinsville, New York, spearheaded a 22 percent reduction in solid waste sent to landfills last year. In a systematic way, they simply went through outgoing dumpsters, analyzing what was being discarded.

They found that many items that were thrown away had additional value. They asked the question "Why is this in here?" "Can we recycle it?" Now, if you went to that brewery and looked through a dumpster, you would likely find almost nothing recyclable. We know this because last year the brewery hired a materials reprocessing center to take the dumpsters and remove and sell any recyclable materials. More recently, this center told the brewery that it would no longer take dumpsters from Anheuser-Busch because nothing of value was left inside.

Many brewery workers wear gloves. When these became soiled, they were simply thrown away. But employees at our Columbus, Ohio, brewery located a service that would clean the gloves and sort them, according to quality. Some could be worn again at the brewery. Those that were too worn are sold to other users and again recycled. In some cases, those gloves, which used to be discarded after one wearing, now are washed and worn three or four times in different applications. Purchases of new gloves have been reduced by 80 percent.

What do these observations tell us? I submit the following: We established committees representing a cross-section of employees to set goals that management agreed to. We communicated these goals to all employees through a variety of means. We now have a workforce that, we believe, makes environmental stewardship a part of the daily job. In a short time, we have achieved impressive results that can be measured and communicated back to the employees. They see their work praised, internally and sometimes externally. That inspires them to do more. It lets them look at things like this glove ... this can ... this chip ... and this strap ... and think about how to manage them for the good of the environment. And it is for that reason we think our achievements are only just beginning.

To summarize let me make three observations:

- First, measurement is a key component to drive a program of resource conservation. People are motivated by measurement, and they take pride in seeing the effect they can have on numbers.
- Second, companies need to think, act and communicate that the environment is not a topic separate from our business but rather part of it. The topic must be presented in terms of how environmental responsibility also contributes to the profitability of the business. Among the implications is that there is no need to create new communications vehicles or new suggestion programs specifically for the environment. It should be presented day in and day out as one more component of the business that needs attention.

- Finally, making an impact on environmental concerns requires the commitment and involvement of all employees. If we all are respected, trusted, participate in developing objectives and kept abreast of progress, we will respond ... and will help.

THE ROLE OF PURCHASING IN SUCCESSFUL RECYCLING

Roland T. Kotcamp

Niagara Mohawk Power Corporation

300 Erie Boulevard West

Syracuse, New York 13202

Introduction:

Would you like to reduce your company's operating budget, with little or no capital investment? Many companies have started their waste management programs with this objective in mind, in addition to meeting regulatory requirements. However, they quickly begin to experience marketing problems with accumulated waste materials.

New York State General Municipal Law requires that no later than September 1, 1992, municipalities shall adopt a local law or ordinance to require that solid waste which has been left for collection or which is delivered by the generator of such waste to a solid waste management facility, shall be separated into recyclable, reusable, or other components for which economic markets for alternate uses exist.

Economic markets for alternate uses, as defined in law, exist when the "full avoided costs of proper collection, transportation and disposal of source separated materials are equal to or greater than costs of collection, transportation and sale of the said materials less the amount received from the sale of said materials." Simply put, economic markets for alternate uses exist when it is cheaper to recycle materials than to dispose of them by landfilling, incineration or shipping them out-of-state for disposal.

The purpose of this paper is to comment on the role of the

purchasing function and purchasing departments to create those economic marketing opportunities for non-hazardous solid wastes.

I suggest the purchasing function and purchasing professionals' job performance are key factors to the success of recycling. They must acknowledge and understand the intent and expectations to reduce, reuse and recycle.

Lee and Dobler materials management textbook puts it succinctly: "There is a fundamental distinction... between the purchasing function and purchasing department. They are not necessarily the same. The purchasing function is a basic business function which is common to all types of business enterprise. The purchasing department is an organizational unit of a firm whose duties include some part or all of the purchasing function."

I. Regulations:

In 1976 when the United States Congress first enacted the Resource Conservation and Recovery Act (RCRA), reauthorized in 1984, they directed volume reduction of solid waste by removing materials for reuse and recycling.

They expected waste reduction through a common sense approach of managing resources would create economic markets where supply equals demand. However, experience has taught us this works better in theory than practice.

The country has become so efficient and effective at "waste reduction = source reduction + recycling" that supply significantly exceeds demand. Demand is simply not keeping up with supply. The National Solid Wastes Management Association estimates the number of curbside collection programs has grown from 600 to 3,500 in just three years.

Unfortunately in the United States, the amount of waste generated each year is increasing. The country is fighting against a rising tide of increased population and increase in per capita trash generation.

As recycling and collection programs surge' the markets are shriveling. Examples of the problem are the 6,000 tons of crushed glass piled in Seattle awaiting a buyer, and the dumping or burning of recyclable materials in Minnesota when that state ran out of storage space finding no buyers. Another example is the 13.8 billion pounds of plastic packaging that ended up on the trash heap due to lack of demand according to the Partnership for Plastics Progress.

Without consumers to make use of solid waste collected recycling cannot take place. Consequently, if we want to increase recycling, economic markets must be created, maintained and expanded for products that make use of recycled materials.

II. EXPANDING DEMAND

Sprint Corp. became the first major long distance carrier to produce its bill, remittance envelopes and outer mailing envelopes on recycled paper in a program that expects to use more than 105 tons of recycled paper each month. The company will become one of the nation's largest consumers of 50% recycled paper containing 10 percent post-consumer waste.

In 1990 MacDonald's pledged to purchase \$100 million worth of recycled products each year in packaging, equipment and the construction of new restaurants. In the first two years they purchased \$400 million in recycled goods.

President George Bush signed an Executive Order October 31,

1991 entitled "Federal Agency Recycling and the Council on Federal Recycling and Procurement Policy." This order is aimed at stimulating waste reduction, recycling and procurement of recycled goods in all federal agencies.

Recognizing that such programs depend on strong markets for recycled products, the Presidential Order requires each agency to report on its affirmative procurement programs. These programs will focus on the immense purchasing leverage of the federal government on goods produced from recovered materials, stimulating the markets for recycled products. However, government agencies are not required to buy products containing recycled materials if the products are not comparable in price and quality to alternative goods.

The Environmental Protection Agency has a three-pronged program aimed at market development. Their program proposes to:

1. Establish procurement guidelines for purchases involving federal funds. Guidelines have been established for cement containing flyash, paper, and paper products, lubricating oils, retread tires, and building insulation.
2. Provide information, guidance, and technical assistance to states and localities to assist them in their planning and implementation efforts.
3. Provide recycling information to the public so that individuals can incorporate recycling into their daily lives.

The state of Florida is set to test a new program aimed at expanding the market for recycled trash. The key to the program is the state's commitment to buy back products made from paper, plastic, motor oil, glass and other recyclable materials generated by state agencies and facilities.

III. PROCUREMENT PRACTICES:

DEVELOP A CORPORATE PURCHASING POLICY FOR RECYCLED PRODUCTS:

- A. ESTABLISH COMPANY WIDE PURCHASING RULES FOR RECYCLED PRODUCTS.**
 - 1. Require the purchase of recycled paper for general use
 - 2. Eliminate barriers such as outdated or unnecessary product specifications which do not affect product quality but do impede purchase of recycled products.
- B. ESTABLISH MINIMUM CONTENT STANDARDS AND PRICE PREFERENCES FOR RECYCLED PRODUCTS.**
 - 1. MANUFACTURERS MUST BE CONVINCED TO PRODUCE RECYCLED PRODUCTS AT A COMPETITIVE PRICE.
 - 2. REQUIRING CERTAIN ITEMS HAVE A MINIMUM PERCENTAGE OF RECYCLED CONTENT HELPS CONVINCE MANUFACTURERS YOU WANT PRODUCTS WITH RECYCLED CONTENT.
 - 3. GIVING A 5-10% PRICE PREFERENCE TO PRODUCTS WITH RECYCLED CONTENT SHOWS YOU ARE WILLING TO PAY A LITTLE MORE FOR RECYCLED PRODUCTS.
- C. MODIFY PRODUCT BIDDING PROCEDURES.**
 - 1. ALLOW SEPARATE BIDS FOR ITEMS WHICH HAVE RECYCLED CONTENT.
 - 2. BREAK LARGE ORDERS INTO SMALLER ORDERS TO AVOID SHUTTING OUT MANUFACTURERS OF RECYCLED PRODUCTS WHO MAY BE ABLE TO FILL ONLY PART OF AN ORDER.
 - 3. ALLOW FOR INTRODUCTION OF COMPETITIVELY PRICED RECYCLED PRODUCTS DURING CONTRACT BIDDING.

4. ALLOW FOR "BULK" PURCHASING OF RECYCLED PRODUCTS BEYOND THE NEEDS OF SPECIFIC JOBS TO DECREASE PRICE.

5. BE PERSISTENT:

DO NOT GIVE UP IF YOUR SUPPLIER IS TEMPORARILY OUT OF RECYCLED PRODUCTS.

1992 North American Conference on Industrial Recycling and Waste Exchange

VENTURE CAPITAL FINANCING OF INDUSTRIAL RECYCLING COMPANIES

BY
RICHARD J. DEFIEUX
GENERAL PARTNER
EDISON VENTURE FUND

INTRODUCTION

The environmental industry has caught the attention of the institutional venture capital community over the last several years, and for good reason. The scale of the business, somewhere near 2% of the GNP, is hard to ignore. Growth rates, although somewhat subdued in 1991 and early 1992, are also attractive and compare respectably to mainstream venture-capital markets. A particularly friendly public market in 1988-1989 also gave private investors the prospects of attractive exit opportunities. Other, more subtle, factors have also attracted investors to this market. For example, the change and commotion that characterize this market creates opportunities for superior managers with the skill or luck to accurately predict the future. Also, regulatory targets can, at least in theory, provide a road map to future market opportunities. All this has landed the environmental business on venture capitalists' radar screens. However, firms engaged in the recovery of industrial waste face certain obstacles to venture funding. Among these are (1) concerns about environmental liability (2) an uncertain regulatory framework (3) recent investment community caution toward environmental companies. Ventures with a strong economic basis (i.e. insulated from regulatory and political uncertainties) will be the most attractive to investors in the current climate.

OVERVIEW OF VENTURE CAPITAL

Venture capital is a sizable business but environmental venture capital is still a relatively small piece. On the order of \$2 billion of venture capital is invested annually but probably only \$50-100 million into environmental firms (See Table 1). In general, venture capitalists are looking for companies with an "unfair" advantage over competitors (in the form of technological superiority or positioning), access to a large, growing and definable market, and management with excellent credentials. A requirement is that prospects exist for liquidating their investment within a reasonable period, say 3 to 7 years. Capital gains in excess of 25% per year is the goal; each investment must have the potential for higher returns to offset some failures.

Over 500 active venture firms exist today. I estimate that as many as 100 of these have investments or at least serious interest in expansion stage environmental opportunities. Once introduced to a venture fund, the process may take three to six months to complete. Some time is spent developing an understanding of your industry or segment, your strategy and the advantages of your technology or business approach. Financial modeling will be a significant part of the process. Most importantly, prospective investors will want to get to know the management team and appreciate their style, strengths and weaknesses. The above applies to all types of companies. In addition, environmental firms will probably have to address certain

appreciate their style, strengths and weaknesses. The above applies to all types of companies. In addition, environmental firms will probably have to address certain special issues. First, investors will want to know if the nature of your business implies extraordinary liabilities to their firm, to them as individuals or to their investors. This factor has kept many potential investors on the sidelines. Second, there may be questions as to the sustainability of an environmental business; is it predicated upon regulations that could change, is it a fad, or is it vulnerable to political change? In addition, the environmental field is viewed by many, not entirely incorrectly, as largely comprised of commodity services and low-tech equipment. Breakthrough technologies and high gross margins are often required to excite venture capital investors. Finally, you may encounter a bias against a very common feature of the business - engineer/managers. I don't share this particular bias but it is widespread.

INDUSTRY FUNDAMENTALS and their INVESTMENT IMPLICATIONS

The environmental industry is characterized by some unique features, which have important implications to investors. Most striking is the complexity of the problems that the industry is addressing. The diversity is overwhelming! Any single technology capable of addressing a multitude of waste management problems would likely be overkill (and thus uneconomic) on most of them. The problem of treating or recovering wastes at the point of generation is enormously diverse - requirements vary, not just from industry to industry, but from site to site and may even vary with time. The major implication of this is that the mainstay of venture capital investing in other industries is of limited use - the "silver-bullet" breakthrough technology. Instead, investors might do well to look for the homogeneous niche markets where it is possible to develop a cookie-cutter solution.

Another noteworthy characteristic of this industry is its extreme dependence upon the content and timing of regulations. This moving target adds another substantial risk to the long list already faced by technology-oriented expansion-stage companies. Somehow it always seems to take an extra year or two for environmental regulatory deadlines to translate into commercial opportunities. Even more importantly, it is often impossible to predict the final requirements of the regulations and the overall context at the time they are to become effective. Consider the case of a category of waste scheduled to be banned from landfills, thus creating an opportunity for new technology to treat or recover these wastes at the source. An entrepreneur with a potential solution and his or her would-be investors must consider a host of uncertainties. Will the deadline be delayed and then will it be enforced rigorously? What treatment targets will the new technology be subject to at the final date of implementation? Will developing regulations make it easier or harder for indirectly competitive solutions to the same problem? Venture capitalists are used to taking technology risk (will it work and will we be there first?). However, these cumulative risks can be an obstacle to venture funding especially if the target market is not overwhelmingly large. The unfortunate result is that, to date, venture capital has not played a major role in what it has done best in other industries: fund the development of breakthrough technologies.

A third issue that affects the potential for venture funding of environmental enterprises relates to barriers to entry; the ease or difficulty with which new entrants can compete effectively with you once you have established yourself in this market. Many of the service segments of the market afford modest to no barriers to entry. "People" businesses are generally easy to start and don't require much capital. Yet, there are clearly barriers to success in these businesses and venture capitalists will seek to find companies that can utilize these to minimize competition. They may come in the form of long standing client relationships, superior management, uniquely efficient operational approaches, unique specialties or a host of others. One large segment of the industry is characterized by very high barriers to entry -treatment, storage and disposal. A valid permit can lead to extraordinary profits and this will attract venture investors. In this case, prospective investors will focus on liability issues, site suitability, diversification of risk and similar issues. For industrial recycling firms, long term contracts afford the most obvious barrier to competition.

INDUSTRY CONDITIONS and their INVESTMENT IMPLICATIONS

One important consideration to a venture capitalist is the receptiveness of the public market to good companies in a particular industry. The last year has not been a good one for environmental stocks. Environmental firms have underperformed the market as a whole and particularly trailed the average NASDAQ stocks. Most, if not all, environmentally-oriented mutual funds underperformed in 1991. In addition, following several robust years for environmental initial public offerings ("IPO's"), only a handful of firms came public in 1991 and the first half of 1992. The primary factor behind this trend has been industry growth rates and earnings levels that consistently fell short of analysts' projections. The market was disappointed that the industry showed itself to be other than recession-proof. Waste volumes have been directly affected by the recession and the economy has further delayed many long-awaited remediation programs and environmentally-oriented capital purchases. All this has probably produced a commensurate decrease in venture capital interest, particularly on the part of firms with secondary or marginal interest to begin with. However, many outstanding investment opportunities continue to exist in this industry and investor interest will rebound, particularly with a stronger economy.

Another current market trend of interest to investors is the increasing gap between the good and bad performers in each major market segment. In former times, investors focused on the huge market opportunity and simply looked for vehicles that could participate in the industry-wide robust growth rates. In a maturing industry, top performers are separating themselves from the pack. As a result, prospective investors are likely to take a more sophisticated approach to the market. Evaluation of financing opportunities now places greater emphasis on such things as management quality, strategy and execution.

The environmental industry remains fragmented despite years of substantial growth. Small to medium size firms still dominate this large market. However, several trends favor large to very large firms. First, projects are becoming larger, often with requirements for manpower, technical breadth, or bonding beyond the reach of most

firms. Second, there are increasing advantages to integrated companies that can address all phases of an environmental project. Thirdly, as penalties for non-compliance become more severe, customers are less willing to entrust their cleanups, treatment, or monitoring needs to small or undercapitalized firms. For these reasons, the industry is undergoing consolidation and venture capital has funded a number of these acquisition programs.

A final industry trend of great interest to industry participants and investors alike, is that environmental spending is coming under closer and closer scrutiny. In a weak economy, questions arise as to the effect of environmental regulations on jobs and on global competitiveness. In addition, the huge recent estimates of the cost to complete known remediation projects have raised concerns. Thus, investors must differentiate between bona fide health and economic issues and those environmental issues that may not survive rigorous cost-benefit analysis.

EDISON VENTURE FUND'S INVESTMENT PROGRAM

Edison's environmental investment activities are summarized in Table 2. Although one of the more active venture funds in the environmental sector, Edison also focuses on the software, health care and communications industries. Most, but not all, of Edison's portfolio companies are expansion-stage and located in the Mid-Atlantic region, within a reasonable distance of our Lawrenceville, New Jersey office. Like most venture firms, Edison's typical investment is structured as a minority equity position.

Edison's environmental investments to date have fallen into three categories: Engineering/consulting, environmental products, and acquisitions. The engineering/consulting companies that have attracted our investment are ones with some distinguishing proprietary technology or approach. A good example is Remediation Technologies, Inc. ("ReTeC"), a respected engineering/consulting base business that has used venture capital from Edison and several individuals to develop a leadership position in field bioremediation programs and a proprietary thermal desorption technology for refinery wastes.

Environmental product companies in Edison's portfolio focus on proprietary technology-driven standard products aimed at existing or expected requirements imposed by Federal regulations. Most have a complimentary base business or a diversified product line to mitigate the regulatory risk noted previously. For example, Enviroplan of Roseland, New Jersey has a longstanding air quality consulting and ambient monitoring business but has utilized venture capital to enhance its continuous emission monitoring (CEM) offerings in anticipation of Clean Air Act requirements and to develop air toxics technologies.

Finally, we believe that the fragmented and rapidly-changing nature of the environmental business creates opportunities for consolidation strategies. Since 1988, we have been investors in Summit Environmental Group, a Canton Ohio based company that acquires high-quality engineering/consulting companies with the goal

of building a leading national player in this sector. In addition, Edison has invested in two acquisition programs in the solid waste industry. Of all the environmental segments, solid waste management has been the most profoundly altered by new regulations and public concern. As a result, many of the existing 10,000 operators lack the interest, know-how or access to capital to compete effectively in this increasingly sophisticated business. Venture capital has allowed some superior management teams to acquire and upgrade small to medium size regional operations and meet stringent, new disposal requirements and develop sophisticated recycling operations.

Edison welcomes inquiries from environmental firms. In addition to the above type firms, we are interested in expansion stage companies with promising solutions in the areas of waste recovery, sludge management, composting, remediation, air toxics, water treatment, chemical substitutes, environmental databases and infrastructure.

TABLE 1
WHERE VENTURE CAPITAL IS INVESTED

<u>Industry</u>	<u>1990 Disbursement in \$ millions</u>
Medical/Biotech	\$ 468
Software & Services	302
Communications	291
Other Products/Services*	238
Other Electronics	218
Computer Hardware	216
Consumer Related	189
Total	\$1,922

* includes environmental

Source: Venture Economics

TABLE 2

EDISON VENTURE FUND'S ENVIRONMENTAL INVESTMENT PROGRAM

Edison

- o Located in Lawrenceville, New Jersey
- o \$103 million under management
- o Expansion stage
- o Mostly, but not exclusively, Mid-Atlantic region
- o \$0.5 to 5.0 million per investment
- o Not exclusively an environmental fund - other specialties include software, health care and communications.

Environmental Activities

- o 9 environmental companies since 1987
- o Investments to date fall into 3 categories
 - Engineering/consulting companies with some proprietary edge
 - Technology oriented products serving markets created by existing or developing regulations
 - Acquisition programs

Current Areas of Interest

- o Waste recovery, sludge management, select solid waste and remediation opportunities, air toxics, water treatment, chemical substitutes, database companies, infrastructure.

**A Case Study in Financing a Start-Up:
FulCircle Ballast Recyclers**

by Mitchell L. Dong
FulCircle Ballast Recyclers
509 Manida Street
Bronx, New York 10474

Introduction

Financing a start-up is particularly challenging because of the high risk of failure inherent in starting up a new company. However, an enterprising founder can succeed by assembling a good management team, minimizing his/her initial cash requirements, obtaining customer financing, and being lucky. Here is the story of the first year of FulCircle Ballast Recyclers.

The Ballast Disposal Market

PCB ballasts from fluorescent light fixtures are being removed by the millions as a direct result of electric utility rebate programs. These energy conservation programs often include lighting retrofit projects which involve the installation of high-efficiency lamps and ballasts. The accelerated retirement of pre-1979 ballasts poses a disposal problem because they contain PCBs.

There are an estimated 400 million to 1.6 billion ballasts currently in service in this country. Because of the long life of a typical ballast, approximately half of these were made before 1979 and contain PCBs. Since a PCB ballast contains roughly 1 ounce of virtually pure PCB dielectric fluid, there are 10 to 40 million pounds of PCBs in our buildings today.

A typical 100,000-ft.² building will contain 2000-3000 ballasts. If they were installed prior to 1979, this building would have 125-200 pounds of PCB oil, equivalent to 10-15 gallons of dielectric fluid.

Current disposal options are inadequate. Some generators dispose of the PCB ballasts with their regular commercial garbage because of the low cost. Unfortunately, it is permissible under the Toxic

Only 15 states have more stringent regulations which ban PCB ballasts from their landfills.

More conservative waste generators use secure chemical waste landfills, which are also relatively inexpensive. However, each ballast contains liquid PCB oil which may eventually leak out of its steel can and could contaminate landfill leachate or even the groundwater. Some hazardous waste landfills are not willing to accept PCB ballasts for this reason.

The most conservative generators prefer whole ballast incineration. However, this is very expensive because ballasts are heavy and incinerators charge by the pound (\$1.50-\$2.00/lb.). Also, 80% of the ballast is solid material -- copper wire and steel laminations -- which are difficult and slow to shred and burn.

FulCircle's Niche

The solution developed by FulCircle Ballast Recyclers (Bronx, NY and Cambridge, MA) is to "demanufacture" the ballast and separate its original components. Only the PCB capacitor and contaminated asphalt potting material are sent off for incineration. The remaining material is recovered and sent to copper smelters, aluminum mills and steel mills where it is used in lieu of their virgin counterparts. Over 80% of the ballast by weight can be recycled.

The "demanufacturing" process is a very exacting and critical process, designed to ensure that no PCB leaks are created. FulCircle does not use saws or guillotines to open the ballast, which is considered dangerous. Instead, FulCircle uses a largely manual process and specially designed tools to disassemble the ballast economically and safely.

FulCircle maintains that QA/QC is a critical asset of the process. All PCB-contaminated material must be identified and segregated. All contaminated metals must be cleaned prior to reclamation. FulCircle also has an on-site laboratory and uses a modified EPA Method 8080 for quantifying levels of PCBs.

The advantages of the recycling process are very compelling. First, compared to landfilling, there are no potential Superfund liabilities because the PCBs are totally destroyed by high temperature incineration. Nothing is landfilled in the FullCircle process.

The second major advantage is the 80% weight reduction prior to disposal. Compared to incinerating the whole ballast, it is much cheaper to burn $\frac{1}{2}$ to $\frac{1}{3}$ of a pound of contaminated material rather than 3.5 to 4 pounds of whole ballast. This also means less ash, less fuel consumption, and less air pollution.

The final advantage of this solution is the recycling of copper and steel. These are valuable resources which can and should be re-used, instead of mining and refining virgin materials, thereby conserving energy and natural resources.

Lessons Learned

The lessons learned will be discussed in the verbal presentation.

FulCircle Ballast Recyclers

168 Brattle Street
Cambridge, MA 02138
(617) 876-2229
(617) 876-6655 fax

509 Manida Street
Bronx, NY 10474
(212) 328-4667
fax (212) 328-4462

Financing A Start-Up:

FulCircle Ballast Recyclers

Presented At:

**1992 North American Conference on
Industrial Recycling and Waste Exchange**

By
Mitchell Dong
FulCircle Ballast Recyclers

September 9, 1992

AGENDA

- FulCircle's Market
- FulCircle's Niche
- Lessons Learned

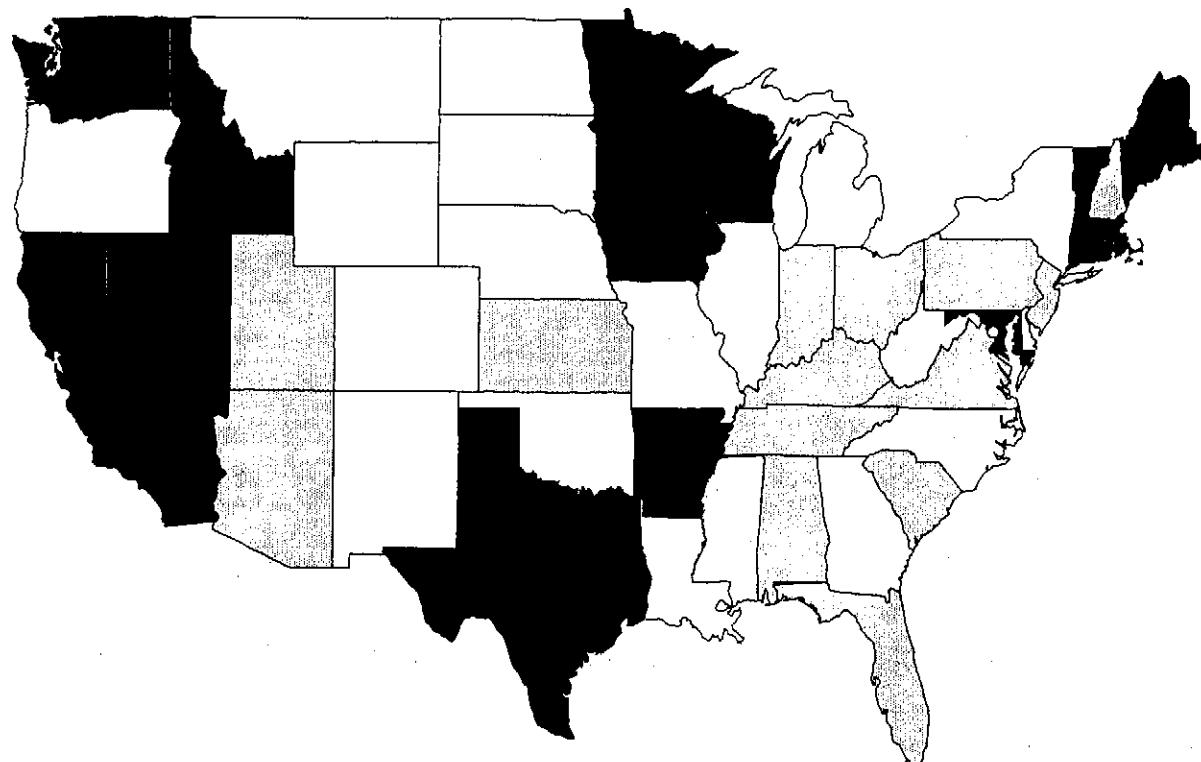
Large Quantity of PCBs

- Installed base of ballasts in U.S.:
 - 400 million ballasts
(Lighting Research Center)
 - 1.6 billion ballasts
(MagneTek 1990 Annual Report)
- 1979 was last year with PCBs
- 1/2 contain PCBs
- One ounce PCBs per ballast
- Quantity of PCBs in U.S.:
 - 10 to 40 million lbs. PCBs

Lax and Conflicting Regulations

- Toxic Substances Control Act (TSCA) - sanitary landfills OK for non-leaking ballasts
- Superfund law - over one lb. of PCBs (16 ballasts) in landfill must be reported and cleaned up
- 15 states have more stringent regulations

States which ban PCB ballasts from sanitary landfills



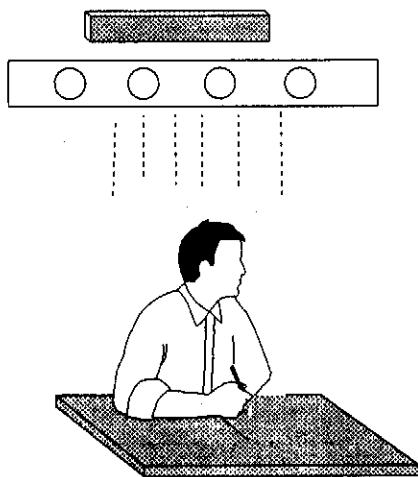
States which ban PCB ballasts from sanitary landfills

States which may have special policies or requirements regarding disposal of PCB ballasts

Source: FullCircle Ballast Recyclers

CURRENT PCB DISPOSAL OPTIONS

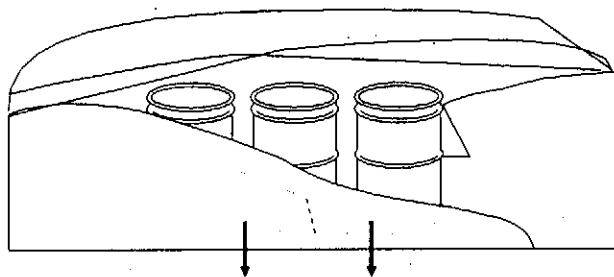
Option A. Leave Disconnected PCB Ballasts in Ceiling



Disadvantages:

**Possibility of PCB fires
Future disposal liability**

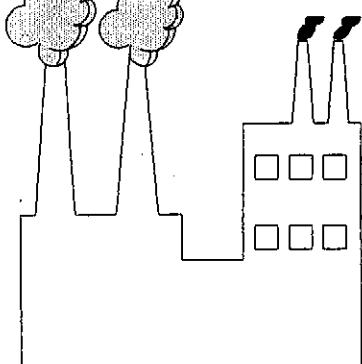
Option B: Landfilling



Disadvantages:

**Possible contamination
of groundwater and soil
Potential Superfund liability**

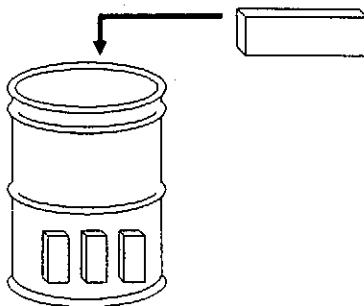
Option C: Whole Ballast Incineration



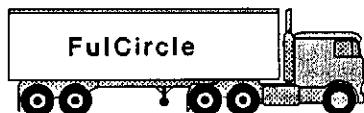
Disadvantages:

**Air pollution, hazardous ash
high fuel usage, high cost
Wasteful of valuable
commodities**

The FulCircle Process



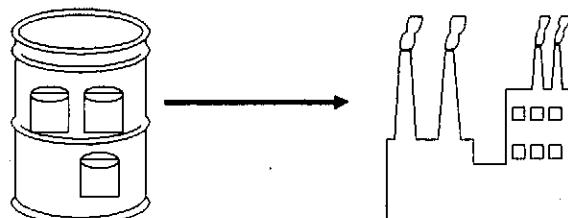
Ballasts are removed from light fixtures and placed in drums.



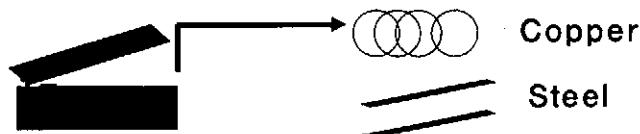
Drums are transported to FulCircle's facility.



At FulCircle's facility, the ballast is dismantled, and the PCB capacitor is removed.



Capacitors are sent offsite for incineration



All remaining materials recycled after testing for PCBs

Disposition of Materials

Incineration

- PCB capacitor
- Contaminated asphalt
- Cardboard, plastic, etc.

Foundries

- Sheet metal housing
- Silicon steel
- Copper coils
- Aluminum coils

FulCircle Permits and Approvals

TSCA: Commercial Storer
(less than 500 gallons)

RCRA: EPA Generator I.D. No.
NYD986980233

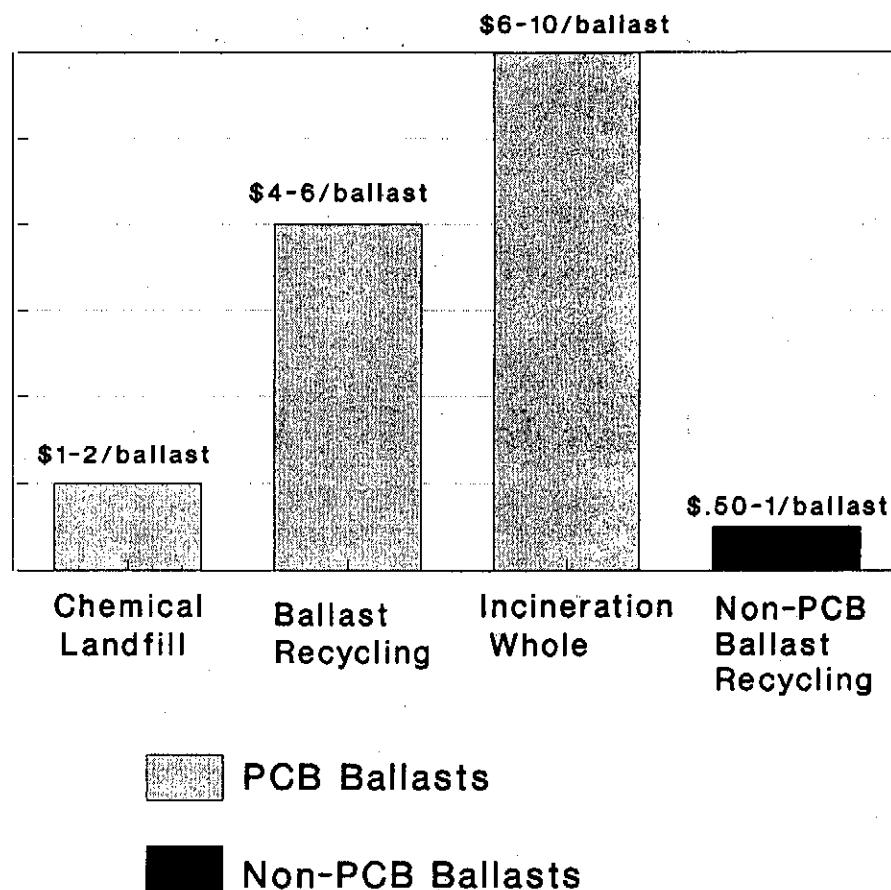
NYS DEC: Part 360 - 12
Scrap Metal Processing Facility
NYS DEC Facility ID # 00044

NYC:
Second Hand Dealer License
M - 3 Zoning (Heavy Industrial)

FulCircle's Manifesting Procedures

- Pickup Manifest
- Fax confirmation of receipt
in 24 hours
- Receipt Manifest
- Certificate of Destruction
- Bill of Lading

Short-Term Cost of Ballast Disposal (*excludes environmental cost*)



INCENTIVES INFLUENCING PARTICIPATION IN A WASTE EXCHANGE PROGRAM

E. B. Jones, R. C. Herndon, and J. E. Moerlins
Southern Waste Information Exchange
Post Office Box 960
Tallahassee, Florida 32302

INTRODUCTION

For many firms, particularly for those firms generating solid and hazardous wastes, practical solutions to waste management problems typically require a multi-faceted approach. Due to the costs resulting from compliance with federal, state and local regulations, many companies that generate solid and hazardous wastes are utilizing alternatives to landfilling such as waste reduction, recycling, and resource recovery through the services of a waste exchange.

Within the last decade, waste exchanges in North America have played an important role in assisting waste generators and others in the identification of recycling and waste minimization opportunities. Within approximately the last five years, a variety of factors has created significant incentives for firms, agencies and associations to participate in the activities of waste exchange operations. The increased levels of participation experienced by most waste exchange operations have occurred for a number

reasons. To some extent, the client base of a typical waste exchange has expanded as a result of a change in focus away from "strictly dealing with hazardous waste exchange" to broader waste management issues including, small quantity generator issues, municipal waste combustion issues, medical waste disposal issues, and other RCRA-related issues. In addition, the tools which waste exchanges typically use have become more sophisticated and, as a result, waste exchanges can provide a broader range of services to an expanded base of clients who are involved with a variety of waste management issues. In the past, a waste exchange would typically publish a periodic newsletter or catalog which would list wastes that were available for re-use. Today, some waste exchanges publish relatively extensive catalogs that include: display advertising; listings of environmental consultants, manufacturers, legal assistance; regulatory information; lists of conferences, training courses, workshops; and other forms of useful information. In addition, some waste exchanges utilize toll-free "hotlines", conduct training courses, operate 24-hour, computer-accessed networks (e.g., bulletin boards) and work closely with agencies and associations to provide services to these clients as well.

It is important to understand that there are essentially five groups that typically participate in waste exchange operations and, while some overlap exists, each of these groups of participants may be influenced by a different set of incentives. The five groups of waste exchange participants are the following:

- waste generators (e.g., firms and agencies producing both solid and hazardous wastes);
- waste demanders or re-users (e.g., direct users, recyclers, brokers);
- providers of environmental goods and services (e.g., manufacturers, consultants);
- federal, state and local agencies (e.g., regulatory, commerce-oriented); and
- associations (e.g., trade associations and Chambers of Commerce).

While the primary participants of a waste exchange are waste generators and waste demanders, there has been relatively rapid growth of participation by the other three groups of participants over the last five years, particularly with waste exchanges that publish catalogs containing display advertising, regulatory information and other pertinent information that is of use to waste generators.

There are two basic types of waste exchanges: information exchanges (or clearinghouses) and material exchanges. The function of the

clearinghouse type of exchange is to inform and bring together waste generators and waste users. An information exchange will typically function as a non-profit organization. The material exchange differs from the clearinghouse in that it either operates as a broker between waste generators and waste users or it will take possession of the material and perform whatever functions (e.g., reprocessing, packaging, marketing) are required in order to successfully market the material. A material exchange will typically function as a for-profit organization.

There are twenty-one waste exchanges currently operating in North America. Twenty of these exchanges are non-profit waste information exchanges and one is a for-profit waste material exchange. Table 1 contains a list of the waste exchanges operating in North America.

WASTE MATERIALS SUITABLE FOR EXCHANGE

Although the title of this section emphasizes waste materials, the recycling of other commodities is also a potential resource. A more broader title might be "Materials Suitable for Investment Recovery" because the concept of resource reuse can also be applied to surplus equipment, unused supplies, and discontinued products as well as wastes requiring disposal.

Increasing the amount of knowledge concerning waste management alternatives is necessary in order to encourage waste generators and users to transfer or exchange wastes for their mutual benefit. Waste exchange operators have played a major role in increasing the awareness of the benefits of waste re-use. It is possible to view each segment of the materials transfer continuum as either a catalyst or an inhibitor. The optimal situation is one in which all parties (including generators, waste exchanges, brokers, governmental agencies and users) serve as a catalyst to encourage successful transfers of waste for re-use.

The universe of potentially transferable materials is large. As a result, waste exchanges throughout North America have cooperatively established eleven standard categories for the listing of the universe of potentially transferable materials in both "materials available" and "materials wanted". These eleven categories are:

- acids;
- alkalis;
- other inorganic chemicals,
- solvents;
- other organic chemicals;

- oils and waxes;
- plastics and rubber;
- textiles and leather;
- wood and paper;
- metal and metal sludges; and
- miscellaneous.

Waste materials which have had the greatest exchange success include: solvents; used oils; mercury; caustic wastes, acids, spent plating solutions, organic and inorganic chemicals (off-grade, obsolete or in leading containers), ethylene glycol, plastics, paper, and precious metals solutions.

Waste exchanges have expended a great deal of effort in identifying materials which may have opportunities for resource reuse. For this reason, education and information dissemination are key components in assisting waste generators. Waste exchanges play an important role in educating generators concerning the benefits of energy recovery, material recovery, substitution of raw materials or processes which provide generators with cost-effective alternatives for recycling waste materials.

SERVICES OF THE TYPICAL WASTE EXCHANGE

The typical waste exchange informs waste generators and waste users through the use of publications and other means of communication such as telephone, facsimile transmission, and on-line computer networks.

The waste exchange publications have typically been the main source of information and are referred to as waste exchange catalogs. Table 2 contains a listing of waste exchanges currently publishing catalogs. The waste exchange catalog includes waste materials that are "available" from and "wanted" by both privately-owned firms and public agencies. An entity wishing to obtain information on the waste materials included in a catalog will typically either write a letter, contact by telephone, or complete and return an inquiry form which is located in the waste exchange catalog. This inquiry is then sent to the appropriate firm or agency that has placed the listing in the catalog. The firm or agency receiving the inquiry then decides whether to contact the firm or agency who initiated the inquiry. The negotiations associated with any subsequent transfers are handled directly by the two entities. Using such an approach, the waste exchange functions only to initiate and facilitate a potential transfer.

In addition to providing information on the availability of and demand for waste materials, some waste exchanges provide information on waste management goods and services that are available to waste generator and waste users. Such services include: recycling; equipment and supplies; environmental consulting; legal and health-related services; tank management; collection and transportation; storage, treatment and disposal; emergency response/cleanup; laboratory analysis; waste minimization; and miscellaneous services. Some waste exchanges also provide information on federal, state, and local waste management regulations. Table 3 represents a summary of waste exchanges providing material available, material wanted and services available listings.

Several waste exchanges offer display advertising in their catalogs as a marketing mechanism for firms that compete in the waste management arena. Table 4 represents a summary of waste exchanges offering display advertising through their waste exchange catalogs.

INCENTIVES INFLUENCING PARTICIPATION IN A WASTE EXCHANGE PROGRAM

There are many incentives which can influence participation in a waste exchange program. These incentives are related to both economic and non-economic factors and will vary, entity by entity, depending on how the entity operates and how it can benefit by participating in a waste exchange operation. The driving factors or incentives which influence participation are those related to cost, relative prices, profit potential and market share (i.e., economic factors). The economic factors include: cost-savings (either from using lower cost raw materials by avoiding often high waste management costs via waste re-use); revenue stream or profit source (through the sale or brokerage of waste materials); and increased market share (via display advertising and other forms of advertising in a waste exchange catalog). The non-economic factors influencing participation in a waste exchange operation include: regulatory compliance (the use of waste exchange can often allow a waste generator to comply with RCRA regulations particularly for hazardous wastes that are recycled or otherwise re-used); controlling generator liability (the re-use of hazardous wastes through a waste exchange can assist generators in minimizing liability associated with waste mismanagement); the acquisition of technical assistance on waste management issues (waste exchanges, either through publications or direct contact via toll-free telephone communication, disseminate information to waste generators on a variety of issues including the technical aspects of waste management); and protection of human health and the environment (an important incentive for using the services of a waste exchange operation include the beneficial re-use of waste materials which, in turn, protects the environment as well as human health). The Argonne National Laboratory report entitle Industrial Waste Exchange: A Mechanism for Savings Energy and Money (July, 1992),

reported that the energy and other costs required to produce raw materials could be saved, and costs for disposal of these wastes could be avoided through waste exchange. The most obvious incentive in participant in a waste exchange program is the savings in cost over the cost of disposal.

Other incentives influencing participation in a waste exchange program concern regulatory requirements. For example, under Section 3002(b)(1) of the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments (HSWA), waste generators must have a program in place to reduce the volume or quantity and toxicity of the waste. The United States Environmental Protection Agency has stated that "where participation in a waste exchange program affects a generator's efforts to reduce the volume or toxicity of hazardous waste, such participation may be used to satisfy Section 3002 (B)(1) of RCRA".

It is sometimes said that one company's waste is another's gold. This is often true, as waste exchanges, such as the Southern Waste Information eXchange, have helped generate profits for a variety of firms when these firms have sold or exchanged their wastes as by-products to other firms which use them as raw materials.

In summary, millions of dollars are being saved, not just in reduced disposal costs, but in reduced expenditures on energy, fuel, water, and raw materials. A successful waste exchange program can help to reduce the amount of money spent on treating, transporting, and disposing of hazardous wastes as well as increase profits, market share and compliance with regulatory requirements facing waste generators.

CONCLUSION

In addition to helping meet the requirements of federal, state and local regulations, participation in a waste exchange program provides the waste generator and waste user with an opportunity to explore alternative waste management options that may result in reduced operating cost, increased profits, reduced liability, as well as increased protection of the environment. Waste exchanges represent an important waste management opportunity for both the private and public sectors as a cost-effective means to protect human health and the environment through waste recycling and reuse.

TABLE 1
Waste Exchanges Operating in North America

Alberta Waste Materials Exchange Mr. Jim Renick Red Deer ARC Provincial Building, #303A 4920-51 Street Edmonton, Alberta CANADA T6H 5X2 (403) 340-7980 FAX: (403) 340-7982	Canadian Waste Materials Exchange ORTECH International Dr. Robert Laughlin 2395 Speakman Drive Mississauga, Ontario CANADA L5K 1B3 (416) 822-4111 (Ext. 265) FAX: (416) 823-1446
B.A.R.T.E.R. Waste Exchange Mr. William Nynas MPIRG 2512 Delaware Street SE Minneapolis, MN 55414 (612) 627-6811	Industrial Materials Exchange Mr. Bill Lawrence 172 20th Avenue Seattle, WA 98122 (206) 296-4633 FAX: (206) 296-0188
British Columbia Waste Exchange Ms. Jill Gillett 1525 West 8th Avenue Suite 102 Vancouver, B.C. V6J 1T5 (604) 731-7222	Industrial Materials Exchange Service Ms. Diane Shockey Post Office Box 19276 Springfield, IL 62794-9276 (217) 782-0450 FAX: (217) 524-4193
California Materials Exchange Mr. Dave Sparrow Local Government Commission 909 12th St., Suite 205 Sacramento, CA 95814 (916) 448-1198 FAX: (916) 448-8246	Iowa Waste Reduction Center By-product Waste Search Service Ms. Susan Salterberg 75 BRC University of Northern Iowa Cedar Falls, IA 50614-0185 (800) 422-3109 (319) 273-2079 FAX: (319) 273-2893
California Waste Exchange Mr. Leif Peterson Alternative Technology Section Department of Toxic Substances Control Post Office Box 806 Sacramento, CA 94212-0806 (916) 322-3670	Louisiana/Gulf Coast Waste Exchange Ms. Rita Czek 1419 CEBA Baton Rouge, LA 70803 (504) 388-8650 FAX: (504) 388-4945
Canadian Chemical Exchange * Mr. Philippe LaRoche P. O. Box 1135 Ste-Adele, Quebec CANADA J0R 1L0 (514) 229-6511	(Continued on Next Page)

Manitoba Waste Exchange
Ms. Beth Candlish
c/o Biomass Energy Institute, Inc.
1329 Niakwa Road
Winnipeg, Manitoba
CANADA R2J 3T4
(204) 257-3891

Montana Industrial Waste Exchange
Manager
Montana Chamber of Commerce
P. O. Box 1730
Helena, MT 59624
(406) 442-2405

Northeast Industrial Waste Exchange, Inc.
Mr. Lewis Cutler
90 Presidential Plaza, Suite 122
Syracuse, NY 13202
(315) 422-6572
FAX: (315) 422-9051

Ontario Waste Exchange
ORTECH International
Ms. Mary Jane Hanley
2395 Speakman Drive
Mississauga, Ontario
CANADA L5K 1B3
(416) 822-4111 (Ext. 512)
FAX: (416) 823-1446

Pacific Materials Exchange
Mr. Bob Smee
1522 North Washington
Suite 202
Spokane, WA 99205
(509) 325-0551
FAX: (309) 325-2086

RENEW
Ms. Hope Castillo
Texas Water Commission
Post Office Box 13087
Austin, TX 78711-3087
(512) 463-7773
FAX: (512) 463-8317

Southeast Waste Exchange
Ms. Maxie May
Urban Institute
UNCC Station
Charlotte, NC 28223
(704) 547-2307

Southern Waste Information Exchange
Mr. Eugene B. Jones
Post Office Box 960
Tallahassee, FL 32302
(800) 441-SWIX (7949)
(904) 644-5516
FAX: (904) 574-6704

Wastelink, Division of Tencon, Inc.
Ms. Mary E. Malotke
140 Wooster Pike
Milford, OH 45150
(513) 248-0012
FAX: (513) 248-1094

* For-Profit Material Waste Exchange

TABLE 2
Summary of Waste Exchange Catalogs

Waste Exchange	Catalog Publication	Distribution	Frequency	Subscription Fee
Alberta Waste Materials Exchange	YES	1,000	4	\$35.00 ^a
B.A.R.T.E.R. Waste Exchange	YES	30,000	1	NC
British Columbia Waste Exchange	YES	500	1	NC
California Materials Exchange	YES	19,000	4	NC
California Waste Exchange	YES	5,000	2	NC
Canadian Chemical Exchange	YES	2,200	12	NC
Canadian Waste Materials Exchange	YES	3,500	6	\$70.00 ^a
Industrial Materials Exchange	YES	6,000	6	NC
Industrial Materials Exchange Service	YES	13,000	6	NC
Iowa Waste Reduction Center	YES	2,500	4	NC
Louisiana/Gulf Coast Waste Exchange	YES	16,000	6	\$15.00
Manitoba Waste Exchange	YES	100	12	\$25.00 ^a
Montana Industrial Waste Exchange	YES	700	4	NC
Northeast Industrial Waste Exchange, Inc.	YES	21,000	4	\$30.00 ^b
Ontario Waste Exchange	NO ^c	—	—	—
Pacific Materials Exchange	YES	1,000	6	\$48.00
RENEW	YES	3,000	6	NC
Southeast Waste Exchange	YES	5,000	6	\$25.00
Southern Waste Information Exchange	YES	12,000	2	NC
Wastelink, Division of Tencon, Inc.	YES	1,500	4	\$23.00

NC = No Charge
a Canadian Dollars

b \$150.00 for non-sponsoring states.

c Publishes listings in the Canadian Waste Materials Exchange.

TABLE 3
Summary of Types of Listings Available in Waste Exchange Catalogs

Waste Exchange	Materials Available	Materials Wanted	Services Available
Alberta Waste Materials Exchange	NC	NC	—
B.A.R.T.E.R. Waste Exchange	NC	NC	—
British Columbia Waste Exchange	NC	NC	—
California Materials Exchange	NC	NC	—
California Waste Exchange	NC	NC	—
Canadian Chemical Exchange	NC	NC	—
Canadian Waste Materials Exchange	NC	NC	—
Industrial Materials Exchange	NC	NC	—
Industrial Materials Exchange Service	NC	NC	—
Iowa Waste Reduction Center	NC	NC	—
Louisiana/Gulf Coast Waste Exchange	NC	NC	—
Manitoba Waste Exchange	NC	NC	—
Montana Industrial Waste Exchange	NC	NC	—
Northeast Industrial Waste Exchange, Inc.	\$75.00 ^a	NC	—
Ontario Waste Exchange	NC	NC	—
Pacific Materials Exchange	NC	NC	—
RENEW	NC	NC	—
Southeast Waste Exchange	\$50.00	NC	\$150.00
Southern Waste Information Exchange	NC	NC	\$75.00
WasteLink, Division of Tencon, Inc.	NC	NC	—

NC = No Charge
^a \$150.00 for non-sponsoring states.

TABLE 4
Summary of Display Advertising Available in Catalogs

Waste Exchange	Full Page Price ^a	Half Page Price ^a	Quarter Page Price ^a	Business Card Price ^a
Alberta Waste Materials Exchange	--	--	--	--
B.A.R.T.E.R. Waste Exchange	--	--	--	--
British Columbia Waste Exchange	--	--	--	--
California Materials Exchange	--	--	--	--
California Waste Exchange	--	--	--	--
Canadian Chemical Exchange	--	--	--	--
Canadian Waste Materials Exchange	--	--	--	--
Industrial Materials Exchange	--	--	--	--
Industrial Materials Exchange Service	--	--	--	--
Iowa Waste Reduction Center	--	--	--	--
Louisiana/Gulf Coast Waste Exchange	--	--	--	--
Manitoba Waste Exchange	--	--	--	--
Montana Industrial Waste Exchange	--	--	--	--
Northeast Industrial Waste Exchange, Inc.	\$500.00	\$270.00	\$180.00	\$110.00
Ontario Waste Exchange	--	--	--	--
Pacific Materials Exchange	--	--	--	--
RENEW	\$100.00	\$70.00	\$35.00	\$25.00
Southeast Waste Exchange	\$150.00	\$100.00	\$50.00	\$25.00
Southern Waste Information Exchange	\$500.00	\$250.00	\$125.00	--
Wastelink, Division of Tencon, Inc.	--	--	--	--

a Price per issue.

USING ON-LINE DATABASES TO IDENTIFY MARKETS

Robert W. Smee
Pacific Materials Exchange
1522 N. Washington, Suite 202
Spokane, WA 99201-2454

An important pollution prevention strategy that industry is strongly encouraged to implement is to use industrial waste exchange. Waste by-product, off-spec, overstock, obsolete, and damaged materials from one industry can be usable resources to another industry. A waste exchange is an information clearinghouse that publicizes these used and virgin materials to potential users for reuse and recycling. Listed are resources available and wanted, including both solid and hazardous materials.

Significant environmental and economic benefits can be realized by participating in an industrial waste exchange. The reuse and recycling of materials conserves resources and energy, protects the environment, decreases requirements for traditional disposal, and reduces disposal costs for industry. Currently, it is estimated that industry saves \$27 million and the energy equivalent of 100,000 barrels of oil annually, by using waste exchange.

Successful exchanges occur between companies within the same metropolitan area, as well as

between companies separated by thousands of miles. Transportation distance is no longer the barrier to waste exchange it once was, and recycling opportunities are significantly increased with a large network. Further, the greater the number of materials identified, and the more people reviewing them, the greater the probability of recycling occurring. For these reasons, there has been considerable interest in the development of on-line computer systems to facilitate waste exchange.

On-line capabilities have been developed to augment print materials, increase opportunities, and speed information transfer. To increase effectiveness exchanges must be able to provide customers with a database of sufficient size and scope to increase the ability to "match" need and demand, and to reach beyond local and regional boundaries.

Further, a nationwide automated network would provide cooperation between existing waste exchanges, more participation from waste generators, broader exposure for material listings, higher speed information flow, and reduced costs of information handling; making information readily available and more widely used throughout all states of the nation. A consistent, integrated, high quality, automated waste exchange network readily available would increase the utilization and effectiveness of waste exchanges, and would enhance and further develop their operation.

The availability of an nationwide network will significantly increase the number of materials listed and dramatically broaden their exposure to potential users, which will greatly increase recycling. This increase in utilization and effectiveness and the capturing of pertinent data by the computer, will be a definite advantage to the waste exchange community by providing information on effectiveness.

The information produced by the network regarding the types, volumes, and location of waste materials nationwide will encourage technological innovation and entrepreneurial interest to develop uses and markets. It will encourage new business by helping identify unused applications for waste materials, stimulate innovation in technology through publicizing opportunities, provide business development for waste professionals, and profit industry by reducing raw material costs and providing an inexpensive disposal alternative. The network will

provide market outlets for industrial and municipal solid and hazardous waste, or otherwise unwanted materials that would be landfilled or incinerated.

The network will assist industry in compliance with waste management regulations and the fostering of waste minimization, also the recycling of waste materials can reduce the exposure to liability. The economic benefits to industry will further demonstrate that recycling is good business, while benefiting consumers by keeping product costs down. These benefits and exchange success stories will be publicized via the network, adding further incentives to participate. The network will provide corporate leaders an opportunity to network and communicate beyond their particular industry regarding issues of waste management and environmental protection. This opportunity is viewed by many as a great advantage.

In addition to industry, this network will provide assistance to waste management professionals, consultants, waste brokers, recyclers, testing labs, government officials, processing and disposal facilities, and researchers. Municipal recycling programs and the recycling industry will be assisted in the development of markets for recycling materials by the availability of information provided by this national automated network.

There are on-line systems for waste exchange presently operated by the Northeast Industrial Waste Exchange, Inc., Syracuse, New York; the Southeast Waste Exchange, Charlotte, North Carolina; and the Southern Waste Information Exchange, Tallahassee, Florida.

The following is a demonstration of the National Materials Exchange Network developed through the cooperation of 12 of the nations industrial waste exchanges. The service is offered free of charge with participation in your local waste exchange. For further information and log on instructions call 509-325-0507.

1. National Material Exchange Network
2. Electronic Mail
3. Teleconferencing
- X. Exit (terminate session)

Please Enter Your Selection: 1

1. General information
2. Scan or read listings
3. Place a listing
4. Edit a listing
5. Delete a listing
6. Check user referrals
- X. Exit to Main Menu

Please Enter Your Selection: 2

1. Material Available (831)
2. Material Wanted (174)
X. Exit

Please Enter Your Selection: 1

1. Acid	11. Laboratory Chemicals
2. Alkali	12. Construction Material
3. Other Inorganic Chemicals	13. Container & Pallet
4. Solvent	14. Durable & Electronic
5. Other Organic Chemicals	15. Glass
6. Oil & Wax	16. Paint & Coating
7. Plastic & Rubber	17. Miscellaneous
8. Textile & Leather	X. Exit
9. Wood & Paper	
10. Metal & Metal Sludge	

Please Enter Your Selection: 7

- 1. Phone Area
- 2. State/Province
- 3. EPA Region
- 4. Country
- X. Exit
- ? . Help

Please Enter Your Selection: 3

- 1. Phone Area
- 2. State/Province
- 3. EPA Region
- 4. Country
- X. Exit
- ? . Help

Please Enter Your Selection: 3

Enter selection criteria: 9

GENERAL DESCRIPTION		DATE	LINE
RUBBER	Natural & Synthetic	05/22	1
FIBERGLASS	100% Fiberglass	05/22	2
PLASTIC	50% LDPE, 50% PP, co-mingled pellets	06/11	3
DELRON, TEFILON, ULTEM	Delron, Teflon, Ultem	06/11	4
HDPE	HDPE powder and pellets	06/11	5
VARIOUS PLASTIC	PP, LDPE, EVA, Nucrel, etc.	06/11	6
PLASTIC CHOPPINGS	PE, PVC, mixed blends, 1% copper	06/11	7
POLYETHYLENE FOAM	PE foam	06/11	8

Scan forward (F), Scan backwards (B), Line # for more info, exit (X): 2

Materials Listing VIEW

Description: Woven roving matte, 10" wide rolls, use: fiber reinforced plastic production

Quantity: 7,000 lbs

City: San Jose

State:CA

Do you wish contact information (Y) Yes (N) No: Y

© 1990 MicroView, Inc. All rights reserved.
Contact Information VIEW

Code : PE:A07/651

Company: Quazite

Contact: Neil McQueen

Phone : 408-923-5333 Ext.:

© 1990 MicroView, Inc. All rights reserved.

Press (C) to continue scan or (X) to return to menu:

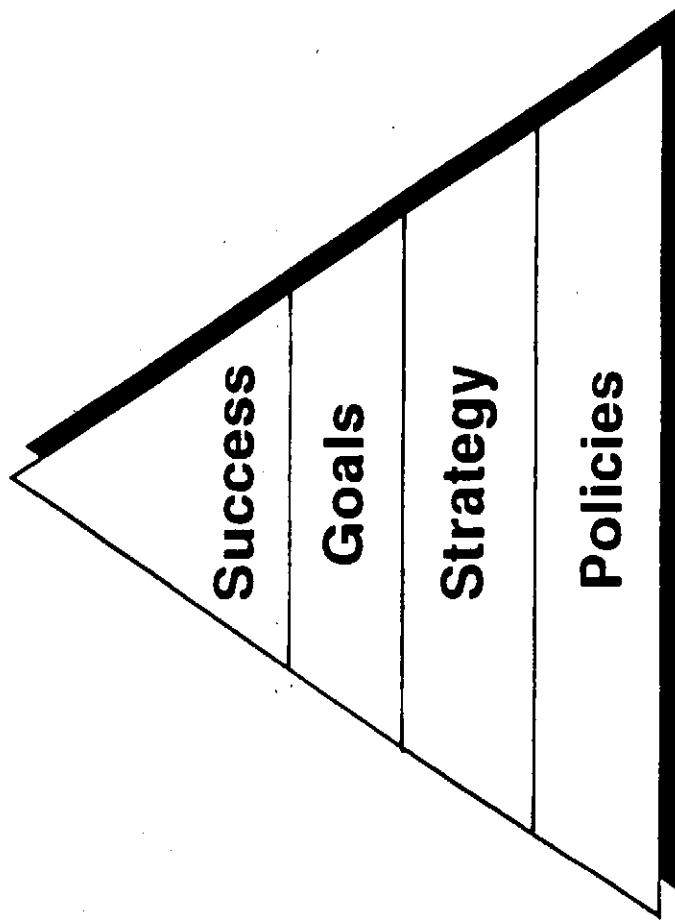
**MANAGEMENT SYSTEMS FOR EFFECTIVE
POLLUTION PREVENTION IN
RECYCLING PROGRAMS**

September 9, 1992

**John S. Howell, Jr.
Galson Corporation
East Syracuse, NY
1-800-950-0506**

Pollution Prevention is one of the highest priorities at EPA

- Establishment of central office for pollution prevention OPPE
- OPPE responsible for establishing policy and strategy and for setting goals and measuring success



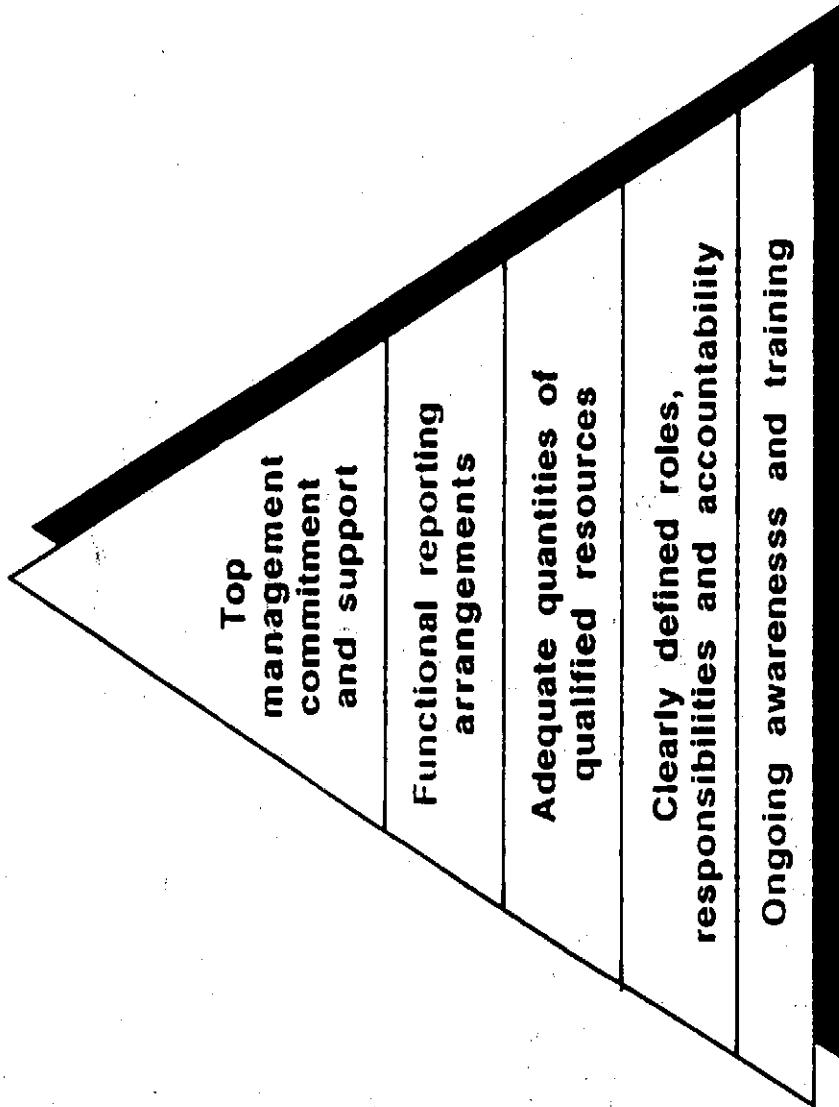
Pollution Prevention

Pollution Prevention Act of 1990 established pollution prevention as the method of choice for addressing environmental problems

Hierarchy of Environmental Protection Priorities

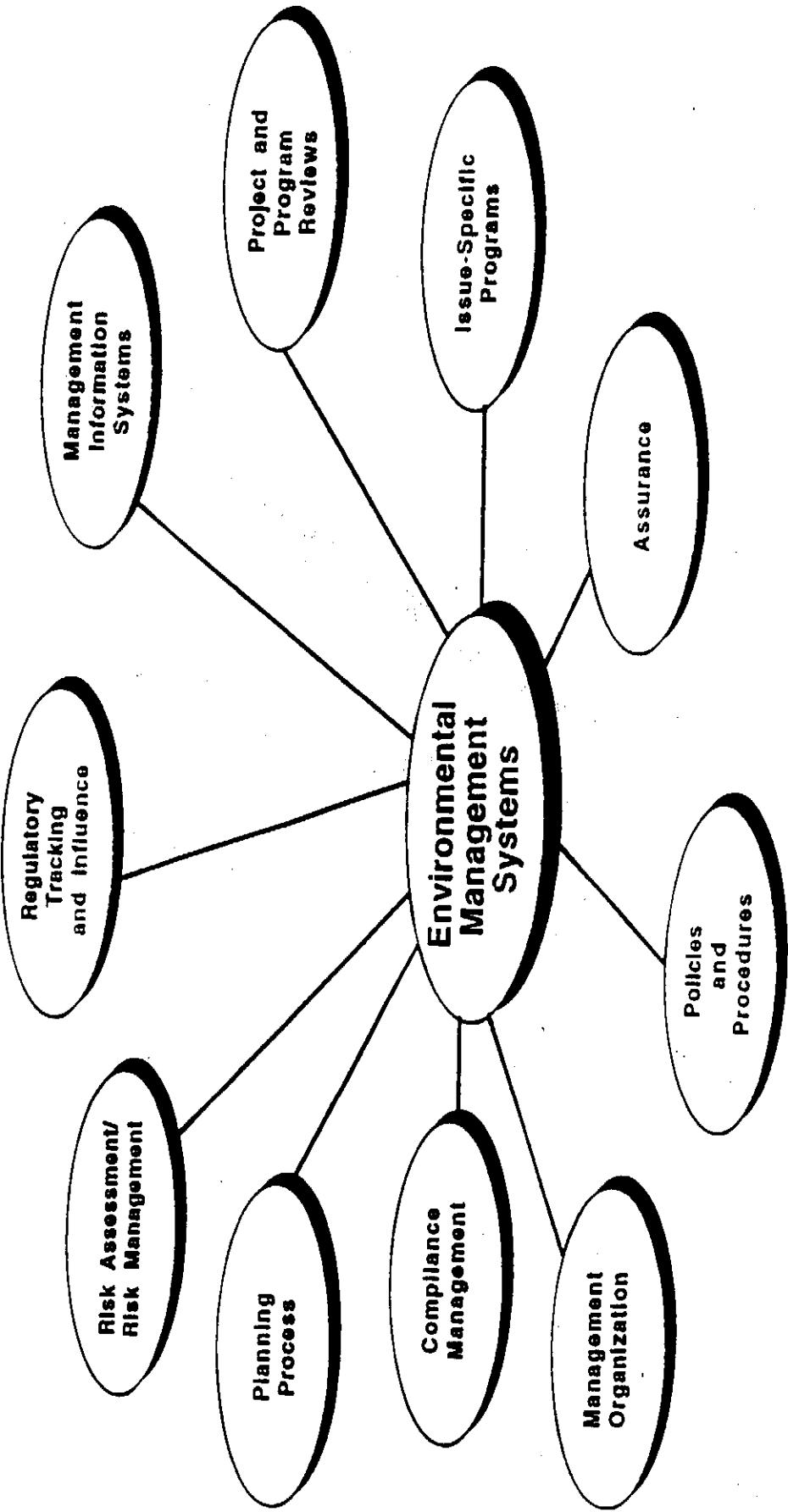
1. Prevented or reduced at source
2. Recycled in environmentally safe manner
3. Pollution treated if recycling unfeasible
4. Disposal - last resort

There are five essential characteristics of effective environmental management systems

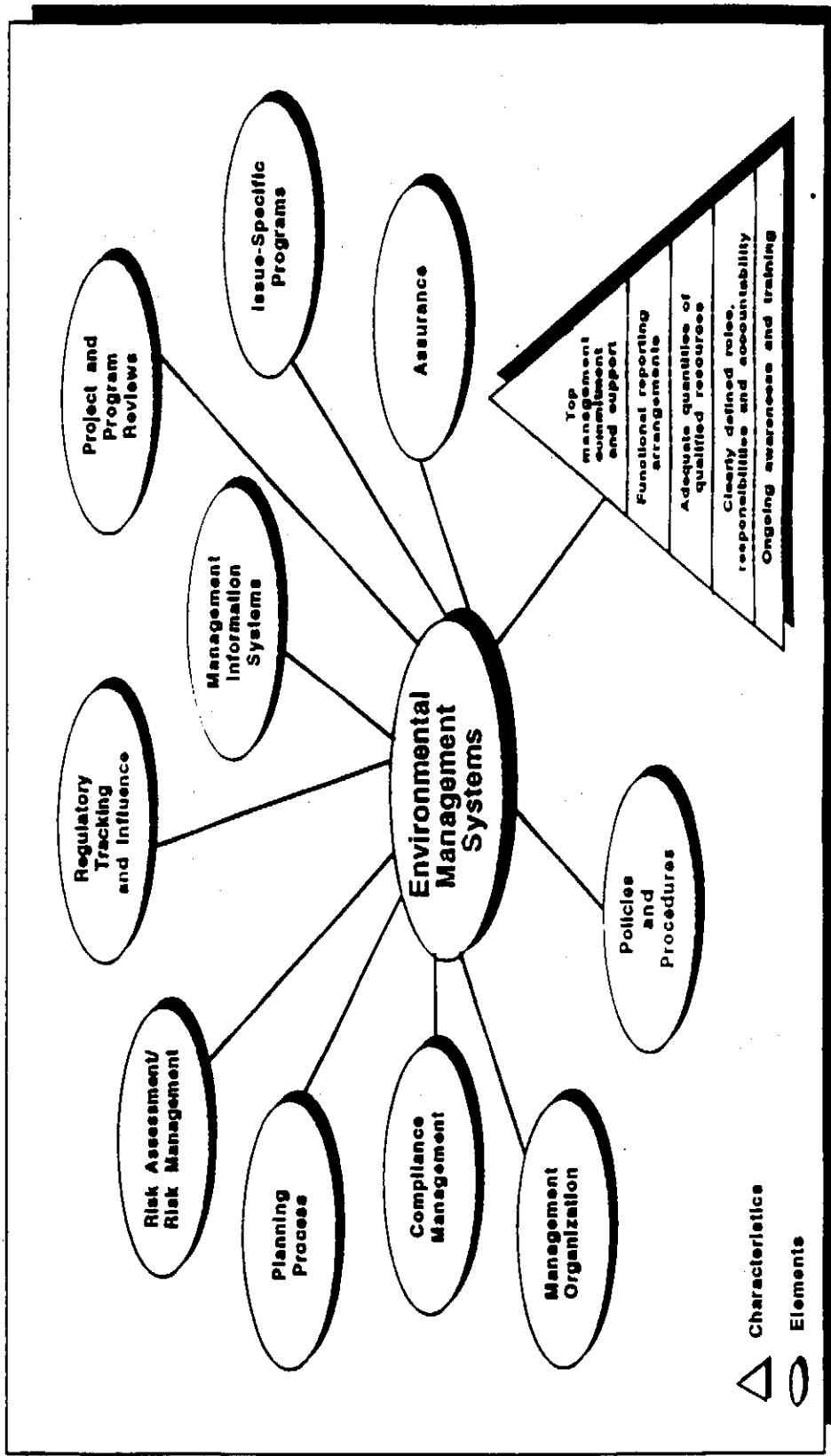


Environmental Management Systems

There are ten essential elements of effective environmental management programs



State-of-the-art environmental management systems fully integrate key management systems characteristics with essential program elements



Environmental Management Systems

In conducting an environmental management systems assessment basic steps are followed

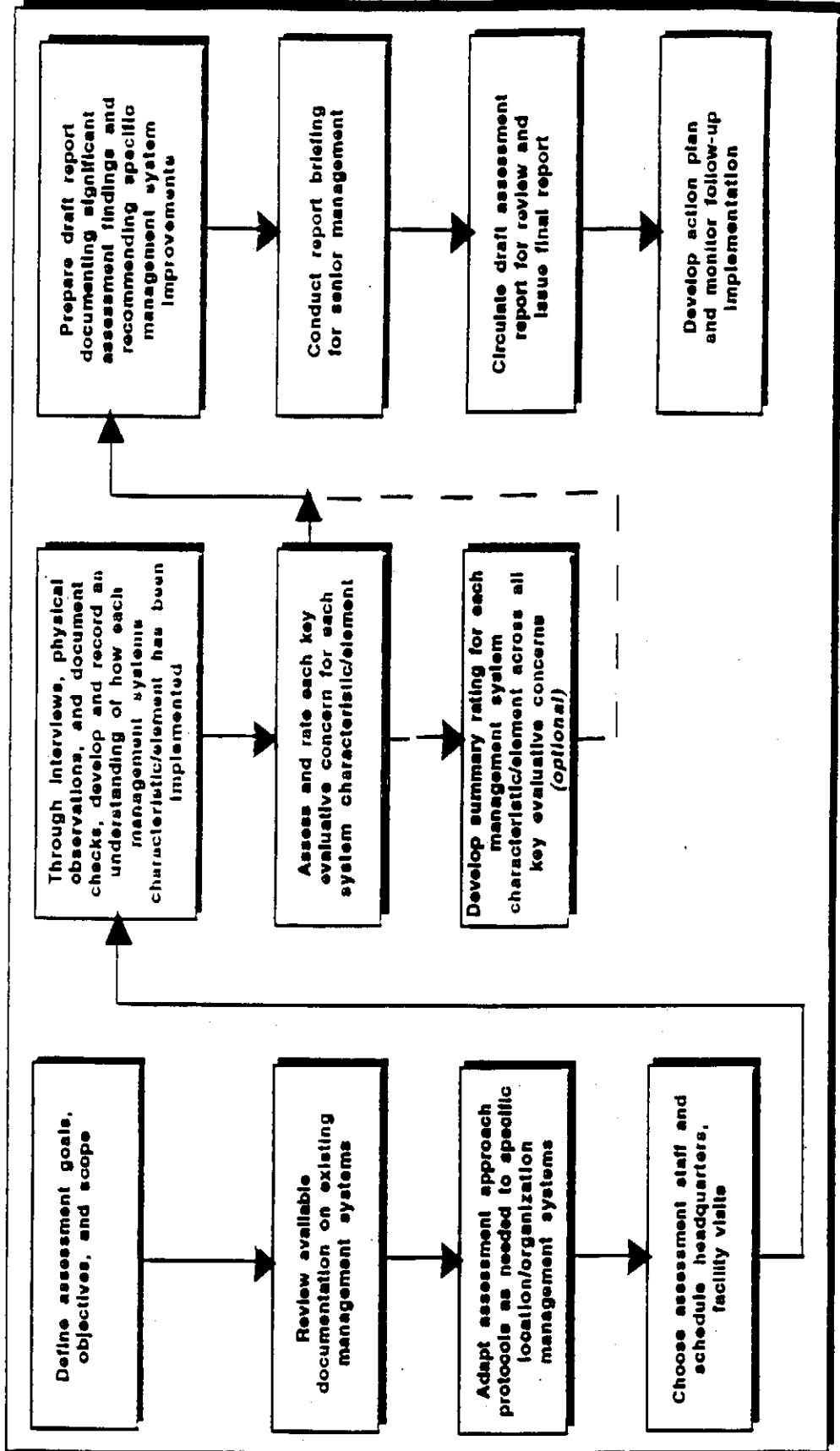
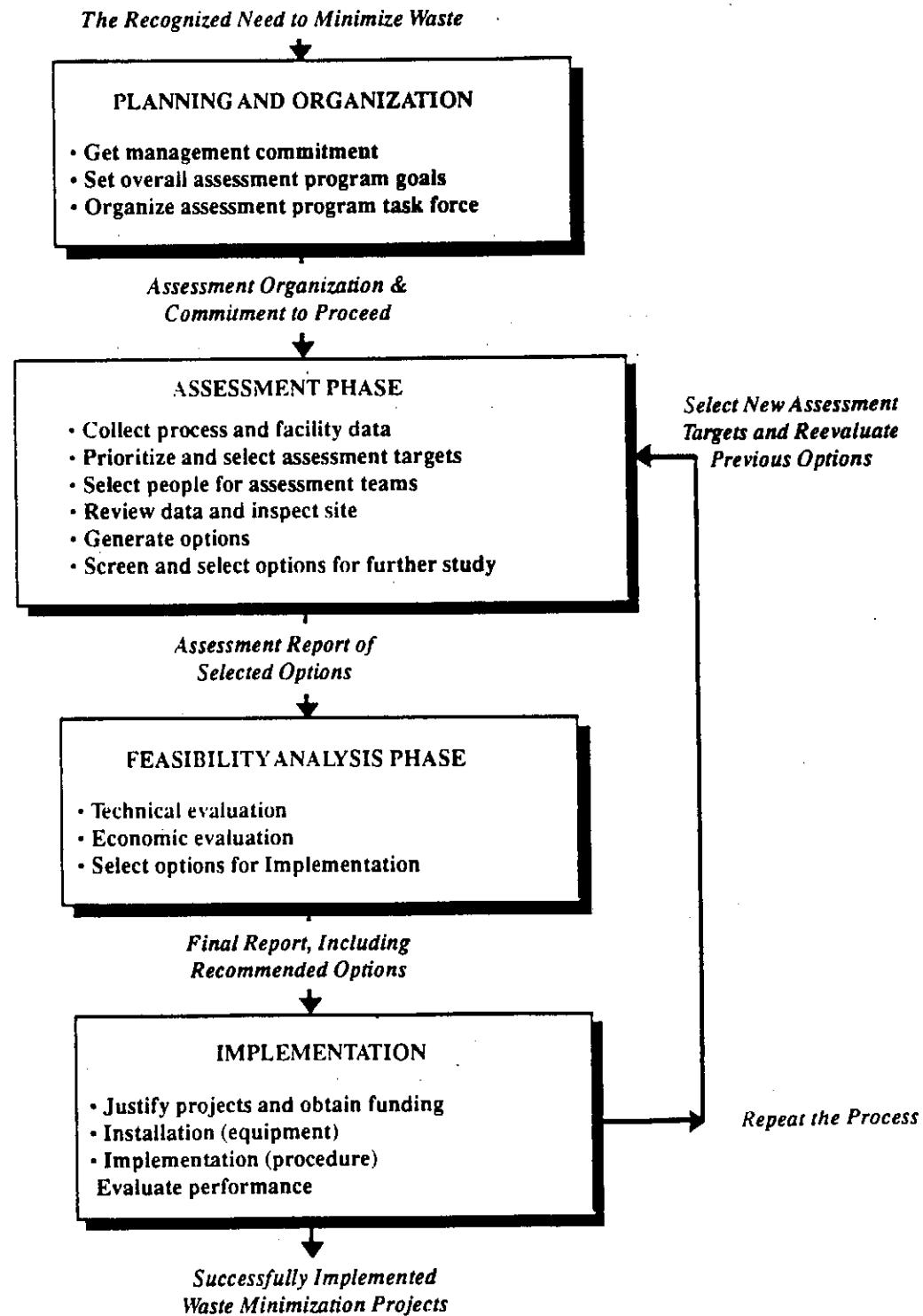


Figure The Waste Minimization Assessment Procedure



1992 North American Conference on Industrial Recycling and Waste Exchange

Environmental Compliance Auditing Programs: What You Don't Know Can Hurt You

By:

Allan E. Floro, Esq.
Nixon, Hargrave, Devans & Doyle
Clinton Square - Post Office Box 1051
Rochester, New York 14603
(716) 263-1603

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**Environmental Compliance Auditing Programs: What You Don't
Know Can Hurt You**

By

Allan E. Floro, Esq.
Nixon, Hargrave, Devans & Doyle
Rochester, New York

I. INTRODUCTION AND BASIC PRINCIPLES:

- An Environmental Compliance Audit is a comprehensive and systematic comparison of a facility's operations against the applicable environmental regulatory requirements (and any policies or industry standards, if appropriate) to evaluate compliance status and the effectiveness of management systems in implementing environmental procedures designed to achieve and maintain compliance.
- There are various types of audits, and it is important to establish an appropriate scope of work in reference to the goals for the audit and to ensure that the audit is tailored to the unique needs of the facility being audited.
- Audit findings can be reported in a variety of ways and before embarking on an audit or auditing program it is important to consider the objectives in reporting audit findings within the corporate structure, and perhaps outside it.
- The desire to attach confidentiality to audit findings should be taken into account during the planning stages of the audit. Procedures designed to take advantage of the various types of privileges to protect audit findings must be instituted from the outset of the program. These privileges include:
 - 1) Attorney-client communications;
 - 2) Attorney work product doctrine;
 - 3) Critical self-evaluation privilege.
- There must be a commitment from management to devote the resources necessary to address the findings of the audit. This means that audit findings must be prioritized and implemented, with subsequent

verification. In addition, periodic audit programs must be designed so that corrective action can keep pace with the findings that are being generated.

Criminal penalties are frequently tied to "knowing and willful" violations and an audit report documents the requisite knowledge and intent if recommendations are not implemented in a timely fashion.

The mitigative effect of audits in civil and administrative penalty situations is frequently tied to the perception of an effective commitment to implementing recommendations.

- Environmental compliance audit reports can be prosecutorial roadmaps in an enforcement context so the decision to embark on a self-policing program must be made only after careful consideration of all of the consequences.

III. FEDERAL ENVIRONMENTAL ENFORCEMENT AUDITING POLICIES & LEGISLATION

- U.S. EPA announced in 1986 that it intended to foster the practice of self-evaluation and thus determined that it would seek environmental audit reports only where they were put into issue by the corporations themselves, where the reports were material to criminal investigations, or where systematic non-compliance was suspected. 51 Fed. Reg. 25004.
- The FAA and U.S. DOT issued a Compliance/Enforcement Bulletin (No. 90-6) on March 29, 1990, which announced that its enforcement policy henceforth would be not to seek criminal penalties in cases where certificate holders (i.e., airlines) voluntarily and promptly disclosed to the FAA any compliance failures before the violations are uncovered in inspections, the failure is not deliberate or intentional, and remedial steps are being implemented. The reasoning was that public safety was enhanced significantly if there is an incentive for companies to put into place programs to identify deficiencies and promptly correct them and where top management is informed of the company's operations, compliance and safety record.
- On July 1, 1991, the U.S. Department of Justice (DOJ) issued a policy statement entitled: "Factors in Decisions on Criminal Prosecutions for Environmental Violations in the Context of Significant Voluntary Compliance or Disclosure Efforts by the Violator." The statement announced DOJ's policy to encourage self-auditing, self-policing and voluntary disclosure of environmental violations by the regulated community by indicating that these activities are viewed as mitigating factors in the Department's exercise of criminal environmental enforcement discretion.

The policy calls for the DOJ attorney to consider the ". . . existence and scope of any regularized, intensive, and comprehensive environmental compliance program . . ." (including management audits) with particular consideration being given to whether the compliance audit program ". . . includes sufficient measures to identify and prevent future noncompliance, and whether the program was adopted in good faith and in a timely manner . . ." as part of the penalty mitigation calculation.

The following questions are to be asked:

Was there a strong institutional policy to comply with all environmental requirements?

Had safeguards beyond those required by existing law been developed and implemented to prevent noncompliance from occurring?

Were there regular procedures, including internal or external compliance and management audits, to evaluate, detect and prevent and remedy circumstances like those that led to noncompliance?

Were there procedures and safeguards to ensure the integrity of any audit conducted?

Did the audit evaluate all sources of pollution (i.e., all media), including the possibility of cross-media transfers of pollutants?

Were the auditor's recommendations implemented in a timely fashion?

Were adequate resources committed to the auditing program and to implementing its recommendations?

Was environmental compliance a standard by which employee and corporate departmental performance was judged?

III. STATE ENFORCEMENT POLICIES RELATING TO AUDITING

- On June 20, 1990, the New York State Department of Environmental Conservation (DEC) issued its "Civil Penalty Policy" designed to demonstrate to the regulated community and the public that DEC uses a systematic approach to evaluating and pursuing violations and is

vigorously enforcing the environmental laws. Two elements of the policy pertain to auditing, both of which are found in the "penalty adjustments" section:

"Violator cooperation" allows for the penalty to be adjusted downward if "there has been prompt reporting of non-compliance and the cooperation of the violator is manifested by the violator's self-reporting, if such self reporting was not otherwise required by law" and "if the violator has promptly corrected the environmental problems caused by the violation."

"History of non-compliance" will also be taken into account in deciding how large upward adjustments should be, including with respect to "the violator's response to previous violations in regard to correction of the previous problem and attempts to avoid repeat violations."

Note: DEC intends to look at the non-compliance history of the corporation as a whole in the case of large corporations, as well as the non-compliance history of the offending division or subsidiary.

- On July 15, 1991, DEC revised its "Record of Compliance Enforcement Guidance Memorandum" which ties the issuance of permits (including permit renewals) to a history of compliance. The so-called "Bad Actor" policy states:

"Persistent or significant violators of the Environmental Conservation Law should not have permits renewed or be allowed to obtain new permits after committing breaches of the law directly relating to their ability to carry out the authorized activities in a lawful and environmentally responsible manner. If a permit is issued to a prior violator, it may be appropriate to impose strict reporting or monitoring conditions on such permits or to require an environmental monitor on-site."

V. FUTURE TRENDS

- Failing to have environmental compliance assessment procedures in place is becoming a thing of the past.
- The Clean Air Act Amendments require "certification" of a facility's compliance with all air permits and air-related laws and regulations, subject to criminal penalty for false certification.
- Enforcement consent orders are beginning to contain environmental auditing requirements forcing public disclosure of the findings.

- Citizen suit groups and toxic tort plaintiffs are waking up to the importance of environmental auditing reports as tools for litigation against corporations.
- Industry trade groups are establishing voluntary environmental compliance programs (i.e., Chemical Manufacturers Association's "Responsible Care" Program).
- The financial community is evaluating environmental compliance as a means of determining whether a particular industry represents an appropriate investment opportunity (i.e., the Valdez Principles), or as a condition to lending.

V. CONCLUSIONS

- Be pro-active rather than reactive, so that as a company, you control the decisions that go into determining the appropriate scope and implementation of auditing programs.
- Get the environmental house in order before the above-described programs result in permit and enforcement decisions adverse to your company.
- Use knowledgeable audit consultants and experienced environmental counsel to structure the programs to ensure that they achieve the intended goals in today's aggressive enforcement context.

**RESPONDING TO GOVERNMENT INVESTIGATIONS
AND EXERCISING YOUR RIGHTS**

Allan E. Floro, Esq. and Michael R. Wolford, Esq.

Nixon, Hargrave, Devans & Doyle
Clinton Square
P. O. Box 1051
Rochester, New York 14603

RESPONDING TO GOVERNMENT INVESTIGATIONS
AND EXERCISING YOUR RIGHTS

by Allan E. Floro, Esq. and Michael R. Wolford, Esq.

Nixon, Hargrave, Devans & Doyle
Rochester, New York

I. INTRODUCTION - THREAT OF CRIMINAL PROSECUTION IS REAL
II. GOVERNMENT CONTACTS WITH THE COMPANY AND ITS EMPLOYEES AND
CONSULTANTS

A. Company Management

1. Government agents often contact company prior to initiation of formal investigation. Corporate manager should carefully weigh the pros and cons of talking with investigator.
 - a. While a sufficient explanation may avoid a criminal investigation, an inadequate explanation may provide investigator with all the information necessary for indictment or conviction of company or individuals.
 - b. If company official decides to talk he cannot provide misleading or intentionally inaccurate statements. False or misleading statements to public official can subject individual to criminal charges.

B. Employees - usually the focus of government's investigation

1. Government investigators will attempt to meet with employees after business hours and at their homes; often suggest employee has civic duty to talk and that attorney representation is not necessary.
2. The propriety of government's interviews with employees of corporation under criminal investigation is not clear.

- a. Ethical rules for lawyers prohibit contact with party to litigation whom opposing counsel knows to be represented. Disciplinary Rule 7-104(A)(1). While a corporation is considered a "party" under the rule, it is not clear whether all employees are encompassed by the representation.
- b. Niesiq v. Team I, 76 NY2d 363 (1990) - New York Court of Appeals held in civil case that opposing counsel may interview present employees of company except (1) employees whose acts or omissions are binding on corporation (2) employees whose acts or omissions are imputed to corporation to determine its liability, (3) employees implementing the advice of corporate counsel. Implications of this case on criminal investigation are not clear, but suggest that courts will permit opposing counsel to interview some company employees.
- c. U.S. Department of Justice and New York Attorney General's Office take the position that interviews of employees of represented company are permitted.
- d. Company should nevertheless inform prosecutor in writing that it is represented by counsel and that it objects to the prosecutor's (investigator's) attempts to interview company witnesses. Objection may have chilling effect.

2. Employees should be notified of government's investigation and advised of the following rights and obligations.
 - a. Employee has right to refuse to be interviewed. If he chooses not to be interviewed he should politely advise investigator of his decision.

- b. Anything employee says can be used against him and the company. Speaking with investigator would be waiver of employee's 5th Amendment privilege against self incrimination and employee could be prosecuted based on statements to investigator if it later turns out that he was involved in illegal conduct.
 - c. Employee is entitled to counsel retained by company/dual representation issue.
 - d. If employee chooses to speak with investigator, he should be truthful.
- 3. Company advice to employee must avoid appearance that company is attempting to tamper with or unlawfully influence witness or obstruct justice.
 - a. It is unethical, if not illegal, for counsel or the company to order employees to refuse to be interviewed. The Victim and Witness Protection Act of 1982 (18 USC § 1512 et seq).
 - b. Consider putting any advice to employees on this issue in writing to avoid any question of propriety of advice. Memorandum should be carefully prepared since it may be leaked to or subpoenaed by the prosecutor.
- 4. Counsel should thoroughly debrief any employee who chooses to be interviewed by government in order to keep abreast of government's investigation.

C. Consultants

- 1. In environmental investigation, consultant may be key witness on several issues including company's knowledge of environmental problems, unreported spills, and company's compliance/non-compliance with applicable regulations.
- 2. Company should pre-empt government's attempt to interview consultants. Company should contact consultants as soon as it becomes aware of government's investigation and request that consultant not divulge any confidential company information to prosecutor without receipt of subpoena or other legal process.

- a. Again, company must be sensitive to witness tampering and obstruction of justice issues.
3. Government may ask consultant for reports or other documents in the consultant's possession. Company properly may request consultant to refuse to provide confidential material.
4. The consultant's contract with company should contain a provision making the consultant's work product confidential, prohibiting disclosure of the work product to any third party in the absence of a subpoena, search warrant, or some other legal process, and requiring the consultant to give company timely notice of receipt of legal process.

III. INTERNAL INVESTIGATION

A. Purposes for Investigation

1. Generally an internal investigation should be conducted whenever a company has reason to believe it might be the subject of a criminal investigation. The investigation should be conducted immediately to allow company to determine the nature of the problem and develop a strategy for dealing with it.
 - a. should company cooperate or take adversarial position
 - b. knowledge of facts are critical to company's ability to intelligently and credibly negotiate with prosecutor
 - c. results of investigation allows company to fully prepare witnesses for grand jury testimony or government interviews

B. Indications that investigation is appropriate

1. Government initiates investigation.
2. Information from environmental audit suggests criminal activity at company facility.

3. Environmental incident occurs with criminal overtones.
4. Employee complaints about activity with criminal implications.

C. If conducted properly, investigation results are immune from disclosure.

1. Upjohn Company v. United States, 449 U.S. 383 (1981) Attorney-client privilege not only applies to advice given by attorney to client but also to communications made to the attorney to allow him to analyze situation and provide legal advice. Guidelines to assure results are privileged:
 - a. Senior management should commission investigation to secure legal advice. This is particularly important when investigation undertaken before litigation is overtly threatened; i.e. in response to environmental incident. If it appears the investigation was conducted for business reasons, results will not be privileged even though investigation was conducted by counsel.
 - b. Results must be kept confidential within the company.
 - c. Company should obtain report from attorneys containing analysis of company's legal rights and obligations.

D. Structure of investigation

1. Interviews must be conducted by counsel to assure attorney-client privilege attaches to results. Other persons present during interviews must either be protected by privilege or part of the internal investigation team.
2. Environmental consultants and other experts used in investigation should be retained and supervised by counsel to maintain attorney-client privilege.
 - a. Consultant should not have any prior contact with matter under investigation.

E. Collecting and Reviewing Documents

1. Document management program relating to relevant documents should be suspended. This avoids any charge by government that documents have been destroyed to avoid production.
2. Attorney-client privilege does not apply to documents collected during investigation. Nonetheless, documents should be collected immediately because they are critical to full understanding of the facts.
3. If time permits, documents should be collected and reviewed before employee interviews begin.
 - a. Documents will identify key individuals
 - b. Understanding of documents by counsel is critical to effective interviews of witness

F. Interviewing Employees

1. Present and former employees will be the primary source of relevant information.
2. Employees should be advised that counsel represents company and not employee individually and that the substance of the interview may be disclosed to company management. This is to avoid problems later if company decides to take disciplinary action against employee or to report his conduct to government.
3. Counsel must be careful not to make statements or take action which can be construed as attempting to improperly influence employee's potential testimony, including selective review of documents. The Victim and Witness Protection Act of 1982 (18 USC § 1512) contains broad prohibitions against influencing witness testimony and obstructing justice.
4. Counsel must be sensitive to conflict of interest issues when dealing with an employee whose interests may ultimately vary from the company's.
5. Content of interview should be preserved in memorandum which contains counsel's impressions and

legal analysis; original notes should be destroyed.

IV. REACTING TO SEARCH WARRANT

- A. Often the execution of a search warrant is the first indication that a company is the target of a criminal investigation. The search is executed by a "team" of investigators, armed police officers and technical people. On most occasions, the company will be required to respond to warrant without assistance of counsel.
- B. Search warrant is order of the court directing law enforcement officers to search designated area, property or person for purposes of seizing specifically designated property. Does not permit fishing expedition on company property. It does not authorize interviews of employees.
 - 1. Generally warrant may order seizure of evidence of crime, contraband or fruits of crime and property used in commission of crime.
 - 2. Warrant must describe with particularity the places to be searched and items to be seized. Absent extraordinary circumstances, officers may not search other areas or seize other items. Fruits of unauthorized search may be suppressed on motion before trial.
- C. Company personnel should have awareness of "do's and "don't's when search warrant is executed.
 - 1. Call counsel immediately and ask officer to wait until counsel arrives. If officer refuses, do not obstruct search. Criminal procedure law permits officer to use force if obstructed; obstruction could lead to criminal charges.
 - 2. Officer required to present search warrant to property owner or facility manager. Review warrant carefully for places authorized to be searched and items authorized to be seized.
 - 3. Follow officers during search and record all places searched and all items seized. Officer is required to give receipt for items seized but it is often very general.
 - 4. Object if officer exceeds authority of warrant by entering places not designated or seizing items not

identified in warrant.

5. Do not give consent to search areas beyond that which is allowed by warrant.
6. Search warrant cannot authorize interviews of employees and company may advise employees of right to decline to be interviewed.
7. If officers seize samples of soil, water, chemicals, etc., ask for split sample. If officer refuses, company should immediately take its own sample.

V. INSPECTION OF THE COMPANY FACILITIES - DEMAND FOR ACCESS

- A. Both state and federal constitutions prohibit unreasonable government searches and seizures. (N.Y. Constitution, Article I, § 12; U.S. Constitution, Amendment IV).
 1. A search of private property without proper consent is unreasonable unless authorized by a valid search warrant.
 2. The exception to a warrant is the administrative inspection of a pervasively regulated industry. This exception is carefully limited. Marshall v. Barlow's, Inc., 436 U.S. 307, 313, 98 S.Ct. 1816, 1821 (1978).
 - a. Three-part test must be met: (i) substantial government interest; (ii) warrantless inspections are necessary to detect violations; and (iii) search is conducted pursuant to a statute containing a specific inspection program which provides a "constitutionally adequate substitute for a warrant". New York v. Burger, 482 U.S. 691 107 S.Ct. 2636, 2644 (1987); People v. Burger, 67 NY2d 338, 343 (1986).

- b. The U.S. Supreme Court has only recognized four pervasively regulated industries: the liquor industry, Colonnade Catering Corp. v. United States, 397 U.S. 72; 90 S.Ct. 774 (1970), the firearms industry, United States v. Biswell, 406 U.S. 311; 92 S.Ct. 1593 (1972), the mining industry, Donovan v. Dewey, 452 U.S. 594, 101 S.Ct. 2534 (1981); and the automobile dismantling industry, New York v. Burger, 482 U.S. 691, 107 S.Ct. 2636 (1987).
- c. The Court is influenced in its determination by the amount of government oversight (i.e. the extent of government regulations) and whether there is any reasonable expectation of privacy.

- 3. Even if an administrative inspection is authorized by statute and it involves a pervasively regulated industry, it cannot be used to gather evidence of criminal activity. People v. Pace, 101 AD2d 336 (2d Dept. 1984), aff'd 65 NY2d 684 (1983).
- 4. If the inspection is truly civil in nature and evidence of criminal conduct was discovered, the evidence would be admissible if the seizure was otherwise reasonable.
- 5. There are a number of federal and state statutes which authorize the government to inspect a company's facilities and seize evidence without the consent of the owner and without a warrant. Toxic Substances Control Act, 15 U.S.C. §§ 2610, 2614 and 2615 and Environmental Conservation Law, §§ 3-0301, 15-0313 and 33-0501.
 - a. Under TSCA, § 2610, the EPA is authorized to inspect any establishment in which chemical substances are manufactured, processed or held by merely presenting credentials and a written notice to the owner.
 - b. If access is refused, §§ 2614 and 2615 of TSCA provide for criminal penalties.
 - c. Notwithstanding the mandates of these statutes, the U.S. Supreme Court in Marshall v. Barlow's, Inc., supra, held that such an

inspection without the owner's consent or a warrant is not lawful.

- (i) The Department of Justice and the EPA have publicly announced that they would not seek sanctions against an owner who refuses access.
- (ii) If an owner gives permission to inspect, it constitutes a waiver of his Fourth Amendment rights and the ability to object to the admissibility of the evidence on Fourth Amendment grounds.

B. Regardless of the absence of authority to conduct the warrantless inspection, the company may conclude that it is appropriate to permit the inspection and cooperate with the government inspector. That decision should be made with the full realization of the company's rights and the consequences of the waiver.

C. In lieu of an inspection, a government agency may obtain vital information through the issuance of an administrative subpoena.

- 1. The federal environmental statute authorizing the issuance of the administrative subpoena is contained in TSCA at 15 USC § 2610. The comparable state statute is contained at ECL § 71-0503.
- 2. Neither statute is self-enforcing and, therefore, the agency must proceed to Court in order to obtain enforcement of the subpoena.
- 3. A Court will enforce the subpoena unless the material sought by the subpoena is "incompetent or irrelevant to any lawful purpose of the agency". United States v. Alyeska Pipeline, 836 F2d 443 (9th Cir. 1988).

VI. RESPONSE TO A GRAND JURY INVESTIGATION

- A. All felony prosecutions in federal court must be brought by Grand Jury indictment.
- B. Grand Jury subpoena duces tecum to the company.
 - 1. Attempt to negotiate a reduction in the terms and scope of the subpoena.

2. If unable to agree on reduction, motion to quash may be necessary.
3. Burden on subpoenaed party is significant, Difficult to challenge scope on the ground of burdensomeness.
4. Compliance with terms of subpoena or risk obstruction of justice charge or contempt.
5. Fifth Amendment privilege may not be invoked by corporation but it may be asserted by individuals.

C. Immunity

Under federal law, a witness may be granted use immunity (18 USC § 6002) which precludes the prosecution from using the testimony before a Grand Jury against the witness.

Under New York law, the witness who is subpoenaed to a State Grand Jury is granted transactional immunity at the time of his appearance which precludes the witness from being prosecuted for the matters testified by the witness except perjury. CPL §§ 50.10, 190.40.

D. Multiple Representations

Whether the company counsel may properly represent employees depends on a number of factors including the identity of the targets of the investigation and whether counsel has a conflict of interest in representing both company and employees.

The government will normally object to dual representation and it may even move to disqualify the representation of both or even prevent the counsel from representing either party.

E. Debriefing

Interviewing of witnesses after their appearance before the Grand Jury is important in determining the scope of the investigation and its direction. Care in the use of the debriefing materials should be exercised.

VII. RECOMMENDATIONS

- A. Education and training of employees.
- B. Record management program.
- C. Environmental audits.
- D. Security program.
- E. Be prepared to undertake remedial work.
- F. Don't be intimidated by law enforcement, but don't obstruct.
- G. Consider the environmental consequences of business decisions.
- H. Enforcement of the company-wide policy of environmental compliance.
- I. Seek advice of counsel at first notice of investigation.

1992 North American Conference on
Industrial Recycling and Waste Exchange
Syracuse, NY; September 9-10, 1992

Wrap up and final discussion— background paper

MEETING THE RECYCLING CHALLENGE NOW AND IN THE FUTURE

What is the challenge?

Who is issuing it?

To whom?

The wrapup panel of the conference will be assembled from speakers and conferees. This background paper comes from the experience of the Northeast Industrial Waste Exchange, Inc., other waste exchanges, and from independent studies of in-plant industrial waste management. The paper begins with the vision of corporate and public recycling culture that NIWE's Board of Directors adopted in 1990.

— William M. Sloan

THE VISION

- An industrial community where source reduction and recycling are part of corporate culture ■ where recycling is automatically considered for byproducts that might become "waste" ■ where buyers normally consider secondary materials of both industrial and municipal origin.
- An industrial environment in which recycling is routine business practice based on its proven ecological and economic benefits ■ where services exist to make recycling an ordinary business transaction ■ where precautions commensurate with the character of the recycled material are conventional practice ■ where economic and regulatory policy encourage recycling.
- Emergence of a robust recycling industry capable of serving local and regional markets with transcontinental and international ties ■ a leadership role for NIWE in developing and fostering recycling and reuse of secondary materials ■ through knowledgeable, reliable and efficient business practice ■ through informational and educational activities.
- NIWE as a service ■ with an effective system for transfer of information on secondary materials and extensive knowledge of their markets ■ that assists in finding takers for low-value byproducts for the industries that generate them ■ that assists in finding secondary materials for use by

Industries that can use them • that can advise and assist business, government and the public through its educational function.

Perhaps, sharing this broad a statement at this conference is preaching to the choir. Yet I hope that this choir itself will preach to others— that is one way the word is spread— and share both the knowhow and the optimism that brought you here in the first place. Only a tiny fraction of manufacturing or service industries now think of recycling low-value byproducts; "wastes" are more frequently defined by how people think of them than by the potential of the material. Recycling desperately needs advocacy and visibility.

FREE LUNCH

Environmental policy-making has assumed that any improvement in the environment has to be paid for— a profound bias against win-win situations. Yet statistics from NIWE show 284 different byproducts worth \$8.6 million recycled in the period 1987-90, with a top exchange value of \$2 million and more than half worth over \$10,000. We know that NIWE is not the only recycler that saves money for producing industry.

Indeed, the modern chemical industry began with recycling, with the discovery in the late 1800s of uses for coal tar, the residue from coke and coal gas production, which by the standards of the time could have been dumped on the nearest empty lot. The niche of the waste exchange and most modern industrial recyclers is the bewildering variety of lower-valued process residues, off-spec product, surplus or spoiled material and miscellaneous scrap. Being low-value, these materials are even more subject to the swervings of the market than most commodities— yet experience shows that thousands of them do have economic value. Perhaps, had more emphasis been put on using low-value byproducts— and on minimizing losses from industrial processes in the first place— a clean environment would not have been seen for so long as a drag on the economy. The near-automatic alternatives in industrial pollution control, however, have been landfill or waste treatment that is expensive, destructive of material resources, and less desirable environmentally than at-source reduction and recycling.

Savings through recycling are also a measure of decreased reliance on treatment and landfill facilities— hence of environmental benefits. And, these savings represent direct market competition for the companies that operate waste facilities. Besides the cost savings, the producers of the former "wastes" often earned a cash return. The companies that used the waste decreased their purchases of virgin materials.

UNTAPPED MARKETS

The market for industrial waste recycling is much larger than today's business activity would indicate. We know, for instance, that NIWE's primary market area accounts for roughly a third of U.S. manufacturing plants, employment, and payroll with a manufacturing employment of about six million in more than 120,000 plants. Total industrial waste generation in the U.S. is very large, though the figure is not established. Recent estimates that put total industrial waste (including hazardous, non-hazardous and mineral-industry fractions) above ten billion tons annually do not account for the diversity in form and management. Even a small fraction of ten billion, however, is a large number. NIWE calculates the market value of trading low-value industrial byproducts in the northeast U.S. as well upwards of half a billion dollars annually.

FLEXIBILITY IS A VIRTUE

Waste reduction at-source is the most efficient and effective method of pollution prevention. NIWE's board, for instance, recommends that a plant look for ways to reduce waste before trying recycling. Experience shows, however, that a plant will find ways to do both. Pollution prevention studies by NIWE staff in 94 central New York plants uncovered a million dollars worth of combined waste reduction and recycling opportunities. Since waste reduction and recycling are so closely twined with more efficient use of treatment and disposal facilities; manufacturing process; plant operations; and employee motivation it's often hard to tell pollution prevention and productivity studies apart.

The purist view that at-source reduction is the only truly valid technique ignores the environmental, economic and motivational benefits of comprehensive waste management. Focusing narrowly on toxics reduction as the reason for source reduction paradoxically links source reduction with policies of the past that based reductions in emissions on the capabilities of technologies rather than human motivation. How can we tell a task manager or a total-quality circle that the only thing that counts is slicing generation when they may find benefits that defy bureaucratic classification?

ENVIRONMENTAL SAFETY

A number of companies over the decades have taken waste, and money, for "recycling" while actually doing no more (at best) than warehousing the material. Other more good-willed companies saw business opportunities in recycling but did not have the expertise or markets to execute it. Some of these operations became superfund sites. "Sham" recycling became an environmental issue. The evidence most-cited "evidence" —superfund statistics— that industrial recycling is risky today is not convincing. Ninety-eight percent of the 240-odd sites loosely represented as "recycling" went

into operation before 1980. More than half of them precede the mid-1960s and at least six of them date from the last century.

NIWE has not experienced faked or illegal recycling nor are they typical of industrial recycling today. Any industrial material, hazardous or non-hazardous, recycled or virgin commodity, demands handling precautions appropriate to its nature and the circumstances. Compliance with state and federal regulations is, of course, absolutely fundamental.

MAKING IT PAY

Most waste exchanges get their support mainly from state and federal government (in NIWE's case with substantial help at the start from four central New York counties). With a fixed budget, however, the more recycling NIWE did the tighter its budget became. (Advertising and subscription fees didn't make up the difference.) An effective slice of the market was beyond reach. NIWE became a private, non-profit, tax-exempt corporation and this year began a charge-for-results policy, charging finders' fees on successful exchanges to pay for the services that led to the results. Contributions could then be used to enhance or tailor activities in areas of special interest. Putting the finder's-fee collections into effect takes time, however; despite its track record NIWE still operates on a shoestring. NIWE is the only waste exchange to take this bold a step, which is viewed with enthusiasm by its new clients.

Panelists will certainly raise other challenges and other opportunities. These are some that we have encountered at NIWE and elsewhere. We hope that you find the conference exciting and rewarding.

The views in this paper are those of the author and do not necessarily represent those of his employer, the Maryland Environmental Service, or of the State of Maryland

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KEY ENVIRONMENTAL ACRONYMS

ACL	Alternative Concentration Limit	MTU	Mobile Treatment Unit
AHERA	Asbestos Hazard Emergency Response Act (1986)	NAAQS	National Ambient Air Quality Standard
ARAR	Applicable or Relevant & Appropriate Requirement	NCP	National Contingency Plan
ARCS	Alternative Remedial Contracting System	NEPA	National Environmental Policy Act
ATSDR	Agency for Toxic Substances & Disease (Federal)	NESHAP	National Emission Standards for Hazardous Air Pollutants
BACT	Best Available Control Technology	NIMBY	"Not In My Backyard" Syndrome
BAT	Best Available Technology (Economically Available)	NIOSH	National Institute for Occupational Safety and Health
BCT	Best Conventional Technology (Pollutant Control)	NOV	Notice of Violation
BDAT	Best Demonstrated Available Technology	NPDES	National Pollutant Discharge Elimination System
CAA	Clean Air Act	NPL	National Priority List (Superfund)
CEPA	Conscientious Employee Protection Act	NRC	National Response Center or Nuclear Regulatory Commission
CEQ	Council on Environmental Quality	NSPS	New Source Performance Standards (CWA)
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act (1980) -- The Superfund	OSHA	Occupational Safety & Health Act
CE-SQG	Conditionally Exempt Small Quantity Generators	OSW	Office of Solid Waste (EPA)
CFR	Code of Federal Regulations	PMN	Premanufacture Notification (TSCA)
CWA	Clean Water Act	POTW	Publicly Owned Treatment Works
DOD	Department of Defense	PPE	Personal Protective Equipment
DOE	Department of Energy	PRP	Potentially Responsible Party (in a Superfund site)
DOT	Department of Transportation	PSD	Prevention of Significant Deterioration
DRE	Destruction and Removal Efficiency	RAP	Remedial Action Plan
ECRA	Environmental Cleanup Responsibility Act (NJ)	RCRA	Resource Conservation & Recovery Act
EHS	Extremely Hazardous Substance	RI/FS	Remedial Investigation and Feasibility Study
EIS	Environmental Impact Statement	ROD	Record of Decision
EPA	Environmental Protection Agency	RTK	Right to Know (Vernacular of HCS)
EPCRA	Emergency Planning & Community Right-to-Know Act (1986)	RQ	Reportable Quantity
ERA	Environmental Risk Assessment	RQG	Reduced Quantity Generator
ERRIS	Emergency & Remedial Response Inventory System	SARA	Superfund Amendments & Reauthorization Act of 1986
FDA	Food and Drug Administration	SDWA	Safe Drinking Water Act
FIFRA	Federal Insecticide, Fungicide & Rodenticide Act	SNUR	Significant New Use Rule (TSCA)
FR	Federal Register	SQG	Small Quantity Generator
GI	Government Institutes, Inc.	SWA	Solid Waste Act
GWPS	Ground Water Protection Standard	TCLP	Toxicity Characteristic Leaching Procedure
HCS	Hazard Communication Standard	TPQ	Threshold Planning Quantity
HH&E	Human Health & Environment	TSCA	Toxic Substances Control Act
HSWA	Hazardous & Solid Waste Amendments to RCRA (1984)	TSDF	Treatment, Storage and Disposal Facility
ID#	Identification Number (RCRA)	UST	Underground Storage Tanks
IS	Interim Status (For a TSDF)	VOC	Volatile Organic Compound
LD50	Lethal Dose Level 50%	WQA	Water Quality Act of 1987
LEPC	Local Emergency Planning Committee		
LOIS	Loss of Interim Status		
LUST	Leaking Underground Storage Tank		
MCL	Maximum Contaminant Level		
MSDS	Material Safety Data Sheet		

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