## resource recovery plant implementation

# guides for municipal officials

planning and overview technologies risks and contracts markets accounting format financing procurement



This publication is part of a special series of reports prepared by the U.S. Environmental Protection Agency's Office of Solid Waste Management Programs. These reports are designed to assist municipal officials in the planning and implementation of processing plants to recover resources from mixed municipal solid waste.

The title of this series is <u>Resource Recovery Plant Implementation</u>: Guides for Municipal Officials. The parts of the series are as follows:

- 1. Planning and Overview (SW-157.1)
- Technologies (SW-157.2)
   Markets (SW-157.3)
   Financing (SW-157.4)

- Procurement (SW-157.5)
   Accounting Format (SW-157.6)
   Risks and Contracts (SW-157.7)
- 8. Further Assistance (SW-157.8)

An environmental protection publication in the solid waste management series (SW-157.8). Mention of commercial products does not constitute endorsement by the U.S. Government. Editing and technical content of this report were accomplished by the Resource Recovery Division of the Office of Solid Waste Management Programs.

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## RESOURCE RECOVERY PLANT IMPLEMENTATION: GUIDES FOR MUNICIPAL OFFICIALS

#### FURTHER ASSISTANCE

Compiled by Denise Hawkins\*

Since the emerging resource recovery industry is evolving rapidly, statements in this report related to economics, technologies, and risk may quickly become outmoded by the new facts being created daily by innovative public officials, consulting engineers and recovery plant builders throughout the United States. Readers of this Guide are encouraged, therefore, to supplement the information contained herein with the more detailed and more current information obtainable from such sources. For this purpose, the U.S. Environmental Protection Agency has compiled in this section the following resources as a guide to further assistance.

- I. A listing of contacts in localities actively planning resource recovery systems. This list also includes the consultants they have employed, the systems they have selected, and the companies chosen to construct their systems.
- II. A listing of those companies that are marketing resource recovery systems.
- III. A listing of organizations and associations that can provide information about resource recovery.
  - IV. A bibliography of articles and publications, both technical and nontechnical, with pertinent information on resource recovery.

These listings are not intended to be comprehensive, nor does the inclusion of any consultant or company imply the endorsement of the U.S. Environmental Protection Agency.

<sup>\*</sup>Denise Hawkins is an urban planner with the Resource Recovery Division, Office of Solid Waste Management Programs, U.S. Environmental Protection Agency.

## COMMUNITIES AND STATES ACTIVELY SEEKING RESOURCE RECOVERY SYSTEMS

The following list of communities and States that are actively seeking resource recovery systems is presented alphabetically by State and then by community. Unless a private company or special authority is specified in parentheses, the State or community is the legal entity that is interested in procuring a resource recovery plant. Not all communities considering resource recovery are included; the list is restricted to those localities that are judged to be furthest along toward implementation of operational systems.

Following the name of the locality is an abbreviation indicating the type of system it has selected. A (P) indicates oil or gas pyrolysis; (SF) solid fuel, either shredded, pulped, or pelletized; (M) total materials recovery; (W) waterwall incineration to produce steam; and, (U) undecided. The energy recovery systems may also include some recovery of materials, but the major emphasis is on energy recovery.

Consultants and system vendors are listed in column two. The consultants listed are those companies that have provided assistance in the form of financial advice, feasibility studies, legal counsel, preparation of requests for proposals, etc. The letters following the consultant's name indicate his primary contribution to the project: (T) technical, (M) managerial, (F) financial, and (L) legal. Some consultants have provided expertise in more than one field.

System vendors are listed in the same column as consultants and are designated by the symbol (SV). The vendors have been chosen by the entity in column one to design and supervise construction of a resource recovery plant. In some cases, the vendor has also provided financial, managerial or technical assistance to the locality. However, the primary function of the vendor is to design and supervise construction. In many cases, the vendor will also operate the plant upon completion.

#### COMMUNITIES AND STATES ACTIVELY SEEKING RESOURCE RECOVERY SYSTEMS AND THEIR CONSULTANTS AND SYSTEM VENDORS

City, County or State

Consultants and System Vendors

#### California

San Diego County (U.S. Environmental Protection Agency Demonstration Project) (P)\*

Mr. Case Houson, Director
Department of Sanitation and
Flood Control
5555 Overland Avenue
San Diego, California 92123
(714) 565-5329

Garrett Research and
 Development Company, Inc.
 (SV)+

#### Connecticut

Connecticut Resources
Recovery Authority
Mr. Richard P. Chase, President
or Ms. Rita Bowlby
Connecticut Resources
Recovery Authority
60 Washington Street
Suite 1305
Hartford, Connecticut 06106
(203) 549-6390

First Boston Corporation (F)<sup>‡</sup>
Hawkins, Delafield & Wood (L)
Murtha, Cullina, Richter &
Pinney (L)
Haskins & Sells (F)

Bridgeport region (SF) (Connecticut Resources Recovery Authority) (see address above)

Hartford-New Britain region (SF) (Connecticut Resources Recovery Authority) (see address above) Garrett Research and
Development Company,
Inc. (SV)
Burns & Roe (T)

Combustion Equipment Associates with Service Corporation of America and American Metals Climax (SV)

<sup>\*</sup>P, oil or gas pyrolysis; SF, solid fuel, either shredded, pulped, or pelletized; M, total materials recovery; W, waterwall incineration to produce steam; U, undecided.

<sup>+</sup>SV, system vendor. +Contribution to project, mainly: financial (F), legal (L), technical (T), managerial (M).

New Haven region (U) (Connecticut Resources Recovery Authority) (see address above) None

#### Delaware

Wilmington (U.S. Environmental
Protection Agency Demonstration
Project) (P)
(State of Delaware)
Mr. Pasquale S. Canzano
Department of Natural
Resources and Environmental
Control
State of Delaware
Dover, Delaware 19901
(302) 678-4781

Black, Crow & Eidsness, Inc. (T)

#### District of Columbia

Washington (SF)
William McKinney, Director
Department of Environmental
Services
415 Twelfth Street, N.W.
Washington, D.C.
(202) 629-3417

National Center for Resource Recovery (T)

#### Florida

Dade County (U)
Mr. Chris Tyson
Chief Civil Engineer
Public Works Department
Brickell Plaza, 4th floor
909 S.E. First Avenue
Miami, Florida 33131
(305) 358-2700

None

#### Illinois

Chicago (SF)
Mr. Emil Nigro
Department of Streets and
Sanitation
Bureau of Sanitation
City Hall, Room 704
Chicago, Illinois 60602
(312) 744-4583

Ralph M. Parsons Company (T)

#### Iowa

Ames (SF)
Mr. J.R. Castner, City Manager
City Hall
5th and Kelly Streets
Ames, Iowa 50010
(515) 232-7479

Henningson, Durham and Richardson of Omaha, Nebraska (T)

#### Kentucky

Lexington (W)
Mr. William Haskins
City Commissioner
City Hall
Walnut Street
Lexington, Kentucky 40503
(606) 255-5631

Proctor-Davis & Ray (T)

#### Louisiana

New Orleans (M)
Mr. Keith Ingram
Technical Administrator
Administrative Office
City Hall
New Orleans, Louisiana 70112
(504) 586-4224

National Center for Resource Recovery (T) Waldeman S. Nelson Company (T) Waste Management, Inc. (SV)

#### <u>Maryland</u>

Baltimore (U.S. Environmental Monsanto Enviro-Chem Protection Agency Demonstration System, Inc (SV)

Project) (P)

Mr. Elliot Zulver

Project Director

900 Municipal Building

Baltimore, Maryland 21202

(301) 396-3499

#### Massachusetts

Beverly (SF)

(United Shoe Manufacturing
Corporation)

Mr. Philip L. Pattison
Public Works Department
City Hall
Beverly, Massachusetts
(617) 922-0352

Braintree (W)
Mr. John Griffin
Plant Superintendent
Municipal Incinerator
Braintree, Massachusetts 02184
(617) 843-6209

Camp, Dresser & McKee (T)
Metcalf & Eddy (T)
Metcalf & Eddy (T)

Danvers (U)
(Clean Community Corporation)
Mr. Bernard L. Canniff
President
Clean Community Corporation
One Newberry Street
Peabody, Massachusetts 01960
(617) 535-5140

Camp, Dresser & McKee (T)
Raytheon Service
Company (SV)

East Bridgewater (SF)
(East Bridgewater Associates)
East Bridgewater Associates

East Bridgewater Associates

East Bridgewater Associates

East Bridgewater, Massachusetts 02333 Corporation (SV)

(617) 588-2260

Haverhill (U)
(State of Massachusetts)
Mr. Alden Cousins, Director
Bureau of Solid Waste Disposal
Massachusetts Department of
Public Works
100 Nashua Street
Boston, Massachusetts 02114
(617) 727-4293

Raytheon Service Company (SV)

Lowell (U.S. Environmental Protection Agency Demonstration Project) (M) Mr. Paul Sheehy, City Manager City Hall Lowell, Massachusetts (617) 454-8821

Saugus (RESCO) (W)\*
Mr. W.C. Stephens
Energy Systems Division
Wheelabrator-Frye, Inc.
170 Mt. Airy Road
Basking Ridge, New Jersey 07920
(201) 766-7700

Dillon, Reed (F)
MITRE Corporation (M)
Wheelabrator-Frye, Inc. (SV)

#### Minnesota

Hennepin County (U)
Mr. Luther D. Nelson, Chief
Environmental Division
Public Works
320 Washington Avenue, South
Hopkins, Minnesota 55343
(613) 935-3381

Henningson, Durham and Richardson of Minnesota, Inc. (T)

<sup>\*</sup>RESCO is a joint venture of Wheelabrator-Frye, Inc. and the M. DeMatteo Construction Company.

Minneapolis-St. Paul (P)
Mr. Maurice K. Dorton, Director
Governmental Programs
Metropolitan Waste Control
Commission of the Twin Cities
area
350 Metro Square Building
Seventh and Robert Streets
St. Paul, Minnesota 55101
(612) 222-8423

Rust Engineering Company (T)

#### Missouri

St. Louis (U.S. Environmental Protection Agency Demonstration Project) (SF) (with Union Electric Company)

Mr. G. Wayne Sutterfield

Traffic and Transportation

Administrator

4100 South First Street

St. Louis, Missouri 63118

(314) 353-8550

Horner & Shifrin, Inc. (T)

St. Louis area (SF)
(Union Electric Company)
Mr. David L. Klumb
Union Electric Company
P.O. Box 149
St. Louis, Missouri 63166
(314) 621-3222

None

#### New Jersey

Hackensack Meadowlands area (SF)
(Hackensack Meadowlands
Development Corporation)
Mr. George Casino
Chief Engineer
HMDC
1099 Wall Street, West
Lyndhurst, New Jersey 07071
(201) 935-3250

First Boston Corporation (F)
Hawkins, Delafield & Wood (L)
Sullivan & Cromwell (L)

#### New York

Smith & Mahoney (T) Albany (SF) The Honorable Erastus Corning, 2nd Mayor City of Albany Albany, New York 12207 (518) 427-8900 Hempstead (SF) Dillon, Reed (F) Hawkins, Delafield & Wood (L) Mr. William Landman Commissioner of Sanitation 1600 Merrich Road Black Clawson Company (SV) Merrich, New York 15566 (516) 318-4210 Monroe County (SF) Black, Crow & Eidsness, Inc. (T) Mr. Chris Christensen Raytheon Service Company (SV) Director of Solid Waste Department of PUblic Works 200 County Office Building Rochester, New York 14614 (716) 454-7200 Mount Vernon (P) Union Carbide Corporation (SV) Mr. Seymour Lefkowitz Intergovernmental Coordinator City Hall Mt. Vernon, New York (914) 668-0737 New York (SF) Horner & Shifrin (T) Mr. Leonard F. O'Reilly Director Solid Waste Task Force 51 Chambers Street New York, New York (212) 566-0922 Onondaga County (W) Carrier Corporation (T) Mr. Charles R. Stoffel Federal Aid Representative Box 23324 L'Enfant Plaza Station Washington, D.C. 20024 (202) 554-2494

Westchester County (P) Mr. Robert W. Huntington Deputy Commissioner for Solid Waste County Office Building White Plains, New York 11501 (914) 682-2003

Leonard S. Wegman Company. Inc. (T) Hawkins, Delafield & Wood (L) New York State Environmental Facilities Corporation

#### Ohio

Akron (W) Mr. James A. Alkire, Director Department of Planning and Urban Renewal 400 Municipal Building 166 South High Street Akron, Ohio 44308 (216) 375-2771

Glaus, Pyle, Schomer, Burns & DeHaven (T)

Franklin (U.S.Environmental Protection Agency Demonstration Project) (M)

Mr. B. Eichholtz, City Manager P.O. Box 132 Franklin, Ohio 45005 (513) 746-9921

Black Clawson Company (SV)

#### Oregon

Lane County (SF) Mr. Bruce Bailey, Director Solid Waste Division Land County Department of Environmental Management 135 East Sixth Avenue (503) 687-4119

Wilsey & Ham (T) Sandwell International (T) Cornell, Howland, Hayes & Merryfield (T)

#### Pennsylvania

Palmer Township (SF) Elo and Rhodes (T) Mr. H. Robert Daws, Chairman Board of Supervisors Palmer Township Municipal Building 3245 Freemansburg Avenue Easton, Pennsylvania 18042 (215) 253-7191

#### Tennessee

I.C. Thomasson & Knoxville (U) Associates, Inc. (T)
Black, Crow & Eidsness (T) (Tennessee VAlley Authority) Mr. Edward Bales Office of Tributary Development Tennessee Valley Authority Knoxville, Tennessee (615) 637-0101 x2185 Leonard S. Wegman Memphis (SF) Mr. Frank Palumbo, City Engineer Company, Inc. (T) City Hall 125 North Main Street Memphis, Tennessee 38103 (901) 534-9611 I.C. Thomasson & Nashville (W) (Nashville Thermal Transfer Associates, Inc. (T) Corporation) Mr. Carl Avers, General Manager Nashville Thermal Transfer Corporation 110 First Avenue, South Nashville, Tennessee 37201 (615) 255-1460

#### Washington

Seattle (P)
Mr. Robert Sheehan
Seattle Solid Waste Project
Office of Management and
Budget
Seattle Municipal Building
Fourth and Cherry Streets
Seattle, Washington 98104
(206) 583-5792

Mathematical Sciences, Northwest (M)

#### West Virginia

South Charleston (P)\*
(Union Carbide Corporation)
Mr. Thomas Donnegan
Union Carbide Corporation
270 Park Avenue
New York, New York 10017
(212) 551-4267

Union Carbide Corporation (SV)

<sup>\*</sup>Private test facility.

#### Wisconsin

Madison (SF)
Mr. James Retloff
Engineering Department
City-County Building
Madison, Wisconsin 53709
(608) 266-4091

Milwaukee (SF)
Mr. Donald Roethig, Deputy
Commissioner of Public Works
Room 516, Municipal Building
Milwaukee, Wisconsin 53202
(414) 278-3302

Horner & Shifrin, Inc. (T)

De Leuw, Cather
Organization (T)

Americology (SV)

### RESOURCE RECOVERY SYSTEMS MARKETED IN THE UNITED STATES

The following is a list of those companies that are known by EPA to be marketing complete resource recovery systems in the United States. It is intended to be as comprehensive as possible; however, there may be firms that are not known by EPA. These companies and systems are at varying stages of commercial development.

Consultants and those firms which offer only partial systems or components of systems are not included.

This list is provided solely as an information resource for city officials wishing to notify resource recovery companies of their desire to implement resource recovery. Inclusion in this list does not imply endorsement, nor even current information on the part of EPA regarding system development, reliability, economics, or environmental acceptability.

# RESOURCE RECOVERY SYSTEMS MARKETED IN THE UNITED STATES

Name and Address	Process *	Products*
AMERICAN CAN COMPANY Mr. L.C. Bielicki Americology Division American Lane Greenwich, Connecticut 06830 (203) 552-2111	Shredding, air classi- fication, magnetic separation, glass and aluminum separation	Solid fuel, metals, glass
BLACK-CLAWSON COMPANY Mr. Dean H. Kohlhepp 605 Clark Street Middletown, Ohio 45042 (513) 422-4561	Hydrapulping, metals and glass separation	Metals, glass, paper, steam/ electricity
BROWNING-FERRIS INDUSTRIES Mr. John Barineau Vice President Fannin Bank Building Houston, Taxas 77025 (713) 741-1540	Collection, paper picking, shredding, air classification, magnetic separation	Paper, solid fuel, ferrous metals
CARBORUNDUM Mr. Paul G. DaVia Solid Waste Conversion Division P.O. Box 337 Niagara Falls, New York 14302 (716) 278-6105	Pyrolysis, materials recovery	Gaseous fuel, steam, materials
CLEAR AIR, INC. Mr. R.W. Taylor P.O. Box 111 Ogden, Utah 84402 (801) 399-9828	Incineration, shredding white goods	Steam/electricity ferrous metals

<sup>\*</sup>Process and products are general descriptions only. They are subject to change at the company's discretion and without notice.

COMBUSTION EQUIPMENT ASSOCIATION Mr. A.H. Bellac 555 Madison Avenue New York, New York 10022 (212) 980-3700	Shredding, air and magnetic separation	Solid fuel, ferrous metals
CONSERVATION INTERNATIONAL, INC. Mr. Howard G. Burr Director of Technology 3069 E. Commerical Blvd. Ft. Lauderdale, Florida 33308 (305) 771-6152	Composting	Fertilizer
CONTINENTAL CAN COMPANY Mr. M.L. Smith 1200 W. 76th Street Chicago, Illinois 60620 (312) 637-2000	Shredding, magnetic and glass separation	Solid fuel, ferrous metals, glass
DEVCO MANAGEMENT COMPANY Mr. James Savage Director 410 Park Avenue New York, New York 10022 (212) 371-9105	Pyrolysis	Gaseous fuel, steam
ECOLOGENICS, INC. Mr. John M. Nisbet Vice President for Marketing P.O. Box 348 Red Lion, Penn. 17356 (717) 244-8549	Incineration, shredding, air and magnetic separation	Steam/electricity, ferrous metals
ENGINEERED WASTE CONTROL SYSTEMS, LTD. 2126 Logan Avenue Winnipeg, Manitoba Canada R2ROJ2	Shredding, metals and glass separation	Metals, glass, solid fuel
GARRETT RESEARCH AND DEVELOPMENT	Pyrolysis	Liquid fuel, ferrous metals
Dr. George Mallan P.O. Box 310 La Verne, California 90017 (714) 293-5000	Shredding, air, magnetic and glass separation	Metals, glass, solid fuel

GRUMMAN ECOSYSTEMS
CORPORATION
Mr. William Schwindler
President
1111 Stewart Avenue
Bethpage, New York 11714
(516) 575-7960

Cutting, air, magnetic Glass, ferrous and mechanical separa- metals, pulp, tion, pulping, incinera- animal food tion, pelletizing

MONSANTO ENVIRO-CHEM SYSTEMS Mr. Edsel D. Stewart Manager, LANDGARD Systems 800 N. Lindbergh Blvd. St. Louis, Missouri 63166 (314) 694-2151 Pyrolysis Gaseous fuel, steam/electricity

OVITRON CORPORATION P.O. Box 457 East Stroudsburg, Penn. 18301 (717) 424-6000

Waste heat boilers, Steam/electricity incineration

PROCESS SYSTEMS, INC. 112-03 Fourteenth Avenue College Point, New York 11356 (212) 939-6000

Incineration, waste heat recovery

Steam, frit

PYROTEK Mr. George Moore Vice President 1917 St. Andrews Place Santa Ana, Calif. 92705 (714) 835-3880 Pyrolysis Gaseous fuel

RAYTHEON CORPORATION Mr. Robert Schroeder Missile Systems Division Bedford, Massachusetts (617) 272-9300 x472 Shredding, air and mechanical separation, incinerator residue

Solid fuel, metals, glass

RESEARCH-COTTRELL Mr. James C. Anderson Vice President Refuse Processing Bedminster, New Jersey (201) 885-7000 Shredding, air and magnetic separation

Solid fuel, ferrous metals

SCA SERVICES, INC. Mr. J.R. Mohorovic 99 High Street Boston, Mass. 02110 (617) 423-4100

Collection, shredding, air, magnetic and mechanical separation

Paper, metals, solid fuel

SYSTEMS ASSOCIATES, INC. 444 W. Ocean Boulevard 12th Floor Long Beach, Calif. 90802 (213) 435-8282

Shredding, air and magnetic separation Ferrous metals, solid fuel

TITAN ENVIRONMENTAL SERVICES Waterwall incineration Mr. Dwight C. Brown President East 81 State Highway Four Paramus, New Jersey 07652 (201) 843-0040

Steam/electricity

UNION CARBIDE CORPORATION Mr. Richard Pual Linde Division 270 Park Avenue New York, New York 10017 (212) 551-2077

Pyrolysis

Gaseous fuel, steam/electricity

UNIVERSAL OIL PRODUCTS Mr. R.J. Schoeneberger Program Manager 10 UOP Plaza Algonquin & Mt. Prospect Rds. Des Plaines, Ill. 60016 (312) 391-2000

Waterwall incineration

Steam/electricity

VISTA CHEMICAL AND FIBER PRODUCTS, INC. Mr. Howard Stamer 350 Fifth Avenue New York, New York 10001 (212) 594-1870

Shredding, air Metals, glass, classification, magnetic colid fuel and and mechanical separaruel pellets tion, pelletizing

WASTE MANAGEMENT, INC. Mr. Peter Vardy, or Mr. Harold Gershowitz 900 Jorie Boulevard Oak Brook, Ill. 60521 (312) 654-8800

Collection, shredding, magnetic separation, paper picking, air classification, gassification

Ferrous metals, paper, solid fuel

WHEELABRATOR-FRYE Mr. W.C. Stephens President Energy Systems Division 170 Mt. Airy Road Basking Ridge, NJ 07920 (201) 766-7700 Incineration

Steam/electricity, metals

WILLIAMS BROTHERS WASTE CONTROLS, INC. Mr. D.L. Mihelich Industry Manager 6626 South Yale Avenue Tulsa, Oklahoma 74136 (918) 664-4320 Size reduction, pneumatic, mechanical and magnetic separation Solid fuel, metals, glass

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#### ORGANIZATIONS AND ASSOCIATIONS

In addition to consultants and system designers, there are government associations, public interest groups, and trade associations that are interested in resource recovery and that may be consulted for information from the perspective of their constituencies. Listed here are some of those organizations.

#### ORGANIZATIONS AND ASSOCIATIONS THAT CAN PROVIDE RESOURCE RECOVERY INFORMATION

Aluminum Association Dr. William Balgord 750 Third Avenue New York, N. Y. 10017 (212) 972-1800

American Consulting Engineers Council Environmental Action Mr. Larry Spiller 1155 15th Street, N.W. Washington, D. C. 20005 (202) 296-1780

American Iron and Steel Institute Tinplate Producers 150 East 42nd Street New York, N. Y. 10017

American Paper Institute Mr. Richard J. Wiechmann 250 Madison Avenue New York, N. Y. 10016 (212) 883-8014

American Public Works Association Mr. Rodney Fleming 1313 East 60th Street Chicago, Ill. 60637 (312) 947-2520

American Society of Civil Engineers Mr. Timothy Wolfe 345 East 47th Street New York, N. Y. 10017 (212) 752-6800 x505

Bureau of Mines Mr. Charles Kenahan U.S. Department of the Interior Washington, D. C. 20240 (202) 634-1142

Council of State Governments Mr. James Brydhoff Ironworks Pike Lexington, Kentucky 40505 (606) 252-2291

Ms. Pat Taylor 1346 Connecticut Avenue, N.W. Washington, D. C. 20036 (202) 833-1845

Glass Container Manufacturer's Institute Miss Hughes 1800 K Street, N.W. Washington, D. C. 20006 (202) 872-1280

International City Management Association Mr. Robert Bartolotta 1140 Connecticut Avenue, N.W. Washington, D. C. 20036 (202) 293-2200

Institute of Scrap Iron and Steel Mr. Herschel Cutler 1729 H Street, N.W. Washington, D. C. 20006 (202) 298-7660

League of Women Voters Ms. Dana Duxbury 151 Hidden Road Andover, Mass. 01810 (617) 475-8881

National Association of Counties Ms. Kay Stouffer 1735 New York Avenue, N.W. Washington, D. C. (202) 785-9577

(continued)

National Association of Recycling Industries
Mr. Howard Ness
330 Madison Avenue
New York, N. Y. 10017
(212) 867-7330

National Center for Resource Recovery Director of Information 1211 Connecticut Avenue, N.W. Washington, D. C. 20036 (202) 223-6154

National League of Cities/ U.S. Conference of Mayors Ms. Diana Wahl Solid Waste Project 1620 Eye Street, N.W. Washington, D. C. 20006 (202) 293-7177

National Solid Wastes
Management Association
Mr. James Greco
1730 Rhode Island Avenue, N.W.
Suite 800
Washington, D. C. 20036
(202) 659-4613

Office of Solid Waste
Management Programs
Resource Recovery Division
U.S. Environmental
Protection Agency
Washington, D. C. 20460
(202) 254-7840

#### SELECTED BIBLIOGRAPHY ON RESOURCE RECOVERY

#### General Topics

- +Available information; resource recovery and waste reduction. Washington, U.S. Environmental Protection Agency, Office of Solid Waste Management Programs, Jan. 1975. 8 p. (Unpublished report.)
- \*Colonna, R. A., and C. McLaren, <u>comps.</u> Decision-makers guide in solid waste management. Environmental Protection Publication SW-127. Washington, U.S. Government Printing Office, 1974. 157 p.
  - A series of two- to five-page discussions of approximately 20 solid waste management topics including resource recovery and separate collection.
- \*Hopper, R. E. A nationwide survey of resource recovery activities. Environmental Protection Publication SW-142. [Washington], U.S. Environmental Protection Agency, Jan. 1975. 74 p.
  - A summary of progress in resource recovery projects throughout the United States. (Updated periodically.)
- \*Office of Solid Waste Management Programs. Available information materials; solid waste management. Environmental Protection Publication SW-58.24. [Washington], U.S. Environmental Protection Agency, June 1975. 48 p.
- \*Skinner, J. H. Resource recovery: the Federal perspective. <u>Waste Age</u>, 5(1):12-14, 54, Jan./Feb. 1974. Reprinted, [Washington], U.S. Environmental Protection Agency, 1974. 3 p.
  - Examines the material and product composition of solid waste and examines combinations of materials recovery, energy recovery and waste reduction. Makes several recommendations for increased resource recovery.
- \*U.S. Environmental Protection Agency, Office of Solid Waste Management Programs. Resource recovery and source reduction; second report to Congress. Environmental Protection Publication SW-122. Washington, U.S. Government Printing Office, 1974. 112 p.

Presents an exploration of resource recovery as a method of solid waste management and resource conservation. Key findings related to resource recovery are presented and major options outlined. EPA's program activities in resource recovery are discussed. The appendix presents summaries of information about the status of resource recovery by major materials categories and a listing of existing resource recovery facilities.

\*U.S. Environmental Protection Agency, Office of Solid Waste Management Programs. Resource recovery and source reduction; third report to Congress. (In preparation.)

A more recent look at EPA findings and program activities in resource recovery and source reduction.

#### Waste Reduction and Source Separation Issues

+Claussen, E. Source reduction; a new approach to solid waste management, natural resource conservation, and environmental protection. [Washington], U.S. Environmental Protection Agency, June 1974. 12 p. (Unpublished report.)

Discusses the role of source reduction in a resource recovery strategy.

+Hansen, P. A decision guide to paper recovery through municipal separate collection. Washington, U.S. Environmental Protection Agency, Apr. 1974. 14 p. (Unpublished report.)

Discussion of the techniques, procedures and economics of separate collection of paper from residues as a guide to starting a program.

\*Halloway, J. R., and J. H. Skinner. The effect of paper recovery on the characteristics of solid waste as a fuel. Washington, U.S. Environmental Protection Agency, Jan. 1975. 24 p. (Unpublished report.)

Presents estimates of practical paper recovery rates. Estimates the effects of heating value of solid waste as a result of removing paper for recycling.

Lerza, C. Here is a gift horse, Mayor. Don't look it in the mouth. Environmental Action, 4(24):11-13, Apr. 28, 1973.

Discusses source reduction vs. high technology resource recovery from an environmentalist's perspective.

\*Lingle, S. Separating paper at the waste source for recycling. Environmental Protection publication SW-128. Washington, U.S. Government Printing Office, 1974. 16 p.

Discussion of techniques for separate collection of newspaper, corrugated, and office waste paper, as well as associated market, environmental and conservation issues.

SCS Engineers, Inc. Analysis of source separate collection of recyclable solid waste; separate collection studies. Environmental Protection Publication SW-95c.l. U.S. Environmental Protection Agency, 1974. 157 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-239 775.)

- Final report of detailed case studies of separate collection. Discusses economics, equipment, public response and other influencing factors.
- Taylor, P. Source reduction; stemming the tide of trash. <u>Environmental</u> Action, 6(7):8-11, Aug. 17, 1974.

A discussion of source reduction.

#### Resource Recovery Systems - Technology and Economics

Abert, J. G., H. Alter, and J. F. Bernheisel. The economics of resource recovery from municipal solid waste. <u>Science</u>, 183(4129):1052-1058, Mar. 15, 1974.

Presents an accounting framework for the evaluation of recovery system economics.

\*Arella, D. G., and Y. M. Garbe. Mineral recovery from solid wastes; a summary of EPA's Lowell, Massachusetts, demonstration project. Environmental Protection Publication SW-82d.l. [Washington], U.S. Environmental Protection Agency, 1975. 15 p.

This paper is a summary report of the technology to be demonstrated at Lowell, Massachusetts, including equipment description, process flow, and economics.

\*Arella, D. G. Recovering resources from solid waste using wet-processing; EPA's Franklin, Ohio, demonstration project. Environmental Protection Publication SW-47d. Washington, U.S. Government Printing Office, 1974. 26 p.

A summary description of the Franklin, Ohio demonstration project-equipment, process flow, and economics.

\*Hitte, S. J. Anaerobic digestion of solid waste and sewage sludge to methane. Washington, U.S. Environmental Protection Agency. (In preparation.)

A discussion of the biological conversion of solid waste to methane. Discusses markets, current research, benefits, economics and environmental impacts.

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A realistic evaluation is made of markets for secondary materials. The report considers consumption of raw materials and of secondary materials, the structure of the secondary materials industry and the sanitation industry, national trends in recovery of waste materials, salvage operations and operating costs, and legislative and policy matters.

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\*Lingle, S. A. Paper recycling in the United States. <u>Waste Age</u>, 5(8):6-8,10, Nov. 1974.

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  - A speech on procurement problems in general.
- Buhler, F., ed. Municipal solid waste management; resource and energy recovery. Washington, National League of Cities-United States Conference of Mayors, Dec. 1973. 66 p.
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  - Discussion of institutional barriers to resource recovery such as markets, legal restraints, and financing.
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  - Discussion of the effect of procurement laws on resource recovery.
- Suttles, S., R. Bartolotta, and G. Siebert. Managing solid waste. pt.2. Management Information Service Report, 6(9):1-22, Sept, 1974.
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#### Solid Waste Periodicals

NCRR Bulletin
National Center for
Resource Recovery
1211 Connecticut Avenue, N.W.
Washington, D.C. 20036

NSWMA Newsletter/Technical Bulletin National Solid Waste Management Association 1730 Rhode Island Avenue, N.W. Suite 800 Washington, D.C. 20036

Resource Recovery Magazine
Wakeman-Walworth, Inc.
Box 1144
Darien, Connecticut 06820

Reuse/Recycle Exchange Publishing Company 750 Summer Street Stanford, Connecticut 06901 Solid Waste Report
Business Publishers, Inc.
P.O. Box 1067, Blair Station
Silver Spring, Maryland 20910

Solid Waste Systems Magazine
Systems Publishing, Inc.
2333 West Third Street
Los Angeles, California 90057

Solid Wastes Management - Refuse Removal Journal Communication Channels, Inc. 461 Eighth Avenue New York, New York 10001

Waste Age Magazine
Three Sons Publishing Company
6311 Gross Point Road
Niles, Illinois 60648

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<sup>\*</sup>Available from: Solid Waste Information Materials Control Section, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268.

<sup>+</sup>Available from: Resource Recovery Division, Office of Solid Waste Management Programs, U.S. Environmental Protection Agency, Washington, D.C. 20460.

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