

A C T I V I T I E S

of the

OFFICE OF SOLID WASTE MANAGEMENT PROGRAMS

FISCAL YEAR 1975

Annual Report

ACTIVITIES
of the
OFFICE OF SOLID WASTE MANAGEMENT PROGRAMS
FISCAL YEAR 1975
Annual Report

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U.S. ENVIRONMENTAL PROTECTION AGENCY

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I. INTRODUCTION

The United States generated approximately 134×10^6 (122×10^6 metric tons) tons of municipal solid waste in 1974. Additionally, sludges from municipal wastewater treatment systems contributed 7×10^6 tons (6.45×10^6 metric tons) in 1974. Sludges from industry contributed 260×10^6 tons (235×10^6 metric tons) in 1974. Municipal solid waste is expected to increase at an annual rate of 3-5%. Because of increasing regulation of industry air and water effluents under the authorities of the Clean Air Act and Federal Water Pollution Control Act, sludges from industry are expected to increase 100% by 1983.

The vast majority of all solid waste is disposed of on the land. Virtually no concrete data exists to really quantify much less qualify current management practices. Data does indicate, however, that well over 90 percent of municipal and industrial solid wastes are disposed of in an environmentally unacceptable way on the land. These poor disposal practices result in air pollution from open burning, health impacts from disease vectors and water/land pollution from leachates formed in improperly sited, designed and operated sites.

Because of the problems of land disposal, incineration, inefficient and costly collection service, and increasing generations rate of solid waste, other means are being sought to reduce management costs. In 1971 municipal solid wastes alone contained:

- 67% of paper produced in the U. S.
- 81% of glass produced in the U. S.
- 12% of steel produced in the U. S.
- 16% of aluminum produced in the U. S.
- 42% of plastic produced in the U. S.

These large amounts of resources in our nation's solid waste stream make it obvious why the concept of resource recovery is receiving such intense attention in the United States today. Materials recovery can occur in two principal ways: separate collection for recycling, or central processing of collected wastes to separate various materials for recycling.

Various reasons exist for the lack of markets for secondary materials. The principal reason is the fact that there are so many legal and institutional barriers affecting the recovery of materials from a waste stream that it is generally cheaper to prepare a product from virgin materials. Factors which drive up the cost of secondary materials and hold down the cost of virgin materials include discriminatory freight rates, tax incentives, procurement and labelling practices.

Recovery of energy from solid waste is another opportunity now under intense consideration in the United States. About 1% of the U.S. energy needs is available in the municipal solid waste stream alone. Studies to determine the opportunities for energy recovery from other waste streams such as industrial and agricultural waste are only now beginning. Major difficulties that need to be overcome to make this option more attractive are the financing of systems, the conservative nature of utility companies, the lack of business acumen of local government, and data on technology to allow "routine" design, construction, and operation.

Reducing the amount of wastes generated is another approach to dealing with the problems of solid waste management. Waste reduction concepts include such approaches of the reduction of packaging materials, extension of life products. Waste reduction is probably the most difficult to achieve because almost any initiative tends to affect established production, marketing and distribution practices. Further, data to deal with such concepts as product life do not exist at this time.

Hazardous wastes, generated primarily by industry, exceeds 10×10^6 tons ($4 \times 1 \times 10^6$ metric tons) per year. Contaminants such as mercury, arsenic, lead, etc. exist in industrial process wastes. After air/water pollution treatment occurs these materials are concentrated into waste sludges, slurries, and semi-solid wastes. Technology to deal with many of these wastes in an environmentally acceptable approach is available. However, because of the ability to land dispose unacceptably, acceptable methods, which cost more, are not practiced.

Health and environmental impacts of improper solid waste management practices are not adequately documented. Much of the data is antidotal in nature.

The picture is not as bleak as this discussion might lead one to believe. The awareness of the magnitude and significance of the solid waste management problem in the U.S. is growing and reaching a high level of sophistication. This awareness is bringing about many changes by government, industry, and the public alike. Employment in State government for solid waste management has risen from 10 to over 400 people in the last 9 years. The understanding of leachate generation phenomena, from land disposal of wastes, how to minimize its development and treat that which is generated is increasing. While leachate collection and treatment technology is not fully understood, there are options available. Research, development effort by EPA's ORD, and demonstration efforts by EPA's OSWMP are underway to develop improved methods to collect and treat leachate. Further, natural attenuation characteristics are under study to provide greater flexibility for disposal site selection.

Techniques to improve collection efficiencies are now available. As these techniques are more widely applied, efficiencies will improve, manpower requirements will be less, costs will reduce, injuries will become less and collection services will improve.

EPA has a variety of fullscale resource/energy demonstration projects now in various stages of design, construction, and operation. These projects include:

1. Franklin, Ohio - materials recovery - in operation
2. St. Louis, Mo. - direct firing of solid waste in coal fired boiler - in operation
3. Baltimore, Md. - pyrolysis to produce gas - in operation (shakedown)
4. San Diego, Calif. - pyrolysis to produce fuel oil - in design state
5. Delaware - direct firing of solid waste in oil-fired boiler - in design stage

In addition to these Federally supported projects, private enterprise is also contributing to the advancement of new resource/energy recovery systems. Union Carbide has constructed a large pilot scale pyrolysis unit to complete the research and development of the process. NCRR, in cooperation with the City of New Orleans, is installing a separation plant to recover various materials from the city's solid waste stream. The State of Connecticut by using its broad regulatory and funding capability has created a State-wide resource recovery authority which during the next few years will establish regional disposal and resource recovery facilities for the entire State.

Interest by communities in resource recovery is increasing dramatically because of these various activities by industry, State and local government and EPA's OSWMP and ORD. Information in January 1974 showed 6 systems in operation, 7 under construction, 6 ready to start construction, and 13 communities were in various stages of funding, contracting, and design.

Hazardous waste management practices are also receiving closer attention by State and local government. Several states, including California have passed specific legislation directed at hazardous waste and are establishing rules and regulations to improve hazardous waste management. EPA's OSWMP has programs underway to provide technology options and guidelines for environmentally acceptable hazardous waste management and technical assistance efforts to assist Government and industry to adopt these options and guidelines.

The major problem(s) for the solid waste management field still involves the institutional constraints that prevent an acceleration of application of known and acceptable technical and management practices. These are the areas that require the greatest attention by citizens and governmental entities. Regulations need to be established and enforced. Funds for governmental services need to be reprioritized to provide greater funding flexibility for solid waste management. The taxing and rate inequities which impact economically on secondary materials need to be adjusted. Continuation of the practices which do not conserve energy and resources in consumer products need to be understood and corrected to advance waste reduction. Finally, government at every level needs more legislative and funding support and focus to assure that the goals that protect the environment, conserve energy and resources and recover material and energy from the solid waste stream are met. To achieve these goals will require far greater commitments by all sectors of American life. The Federal perspective sees this commitment as one of all the solid waste management community. We can and will provide the leadership, but the work must be done by all.

Since 1965 the Federal focus on the problems of solid waste management have been the responsibility of EPA's Office of Solid Waste Management Programs and its predecessor organizations in the Department of Health, Education and Welfare. Efforts begun in 1966 have been primarily focused on assisting States to develop strong, vigorous solid waste management agencies; developing and demonstrating new and improved solid waste management technology and management techniques; and assisting state and local government and industry in adopting improved practices.

When the Solid Waste Disposal Act of 1965 was amended in 1970 by the Resource Recovery Act, it dramatically altered the shape and direction of the solid waste management program efforts in EPA. The increased emphasis on resource recovery and hazardous wastes has resulted in a new program greatly different from the one which implemented the original 1965 Act.

Responsibility for meeting the authorities of the current amended Solid Waste Disposal Act are shared between the CSWMP, the Regional Offices, and ORD. Current program efforts both intramurally and extramurally are specifically aimed at the problems discussed above with emphasis on the problems and solutions needed for the achievement of acceptable and safe waste management, including the protection of the land from improper disposal practices; and the conservation of natural resources, including energy through resource recovery and waste reduction.

This report provides a listing and brief description of the major projects that OSWMP managed during FY 1975 (July 1, 1974 through June 30, 1975). It does not attempt to detail each and every activity of OSWMP nor explain why certain efforts are being conducted. Rather, the listing of projects in Section III and publications in Section IV is provided so that persons who are interested in what OSWMP is doing and what information is forthcoming or available can find a way to satisfy that interest.

The projects listed in Section III are designed to meet the goals established by the Agency's solid waste management strategy. As mentioned earlier, other portions of EPA, i.e., ORD, and the Regional Offices also share responsibilities in carrying out EPA's solid waste management strategy. No effort is made in this report to discuss their efforts. This report was specifically developed to describe the major results and efforts of OSWMP during FY 1975.

II. OSWMP FY 75 PROGRAM PERSPECTIVE

The Office of Solid Waste Management Programs is a small program in the Environmental Protection Agency. It consists of a staff of 125 and in Fiscal Year 1975 had a base budget of about \$12.3 million. Additional funding received subsequent to approval of the base budget raised the total amount of dollars managed by OSWMP in 1975 to approximately \$20 million. Other portions of the Agency, the Office of Research and Development and the 10 EPA Regional Offices also are involved in solid waste management.

The OSWMP is not a regulatory program. The existing Solid Waste Disposal Act, as amended, was extended in FY 75. Several hearings were held on substantive amendments to the present Act but new legislation did not pass either the House or the Senate.

A major accomplishment in Fiscal Year 1975 was the publication of an Agency solid waste management strategy in October 1974. This strategy statement gives the priorities for the Agency's solid waste management efforts, and details the programmatic thrusts of the program. The Agency goals as stated in the solid waste management strategy are to achieve acceptable and safe waste management, and to conserve natural resources.

To meet these goals the Office is attempting to develop a better understanding of the environmental problems caused by improper management of certain wastes that may be "potentially hazardous." Our Hazardous Waste Management Division (HWMD) focused on this effort. HWMD is establishing a data base to understand the sources of wastes (mostly industrial sources), the potential environmental damages that are or may be caused by improper management of those wastes, and the technology options that may be applied or be needed to reduce or eliminate potential damages. Major studies are underway in 13 industry groupings in the U.S. to define quantitatively and qualitatively their hazardous waste streams. A large study is underway to test the acceptability of various thermal reduction processes to destroy certain hazardous wastes and a major project to demonstrate the land disposal of chemical (hazardous) wastes was initiated in FY 75. This Division is also developing the necessary tools and capabilities necessary to enable hazardous wastes to be regulated to protect environmental quality and public health. Studies are underway to interpret and understand other environmental regulatory programs and to develop recommended procedures for hazardous waste management. This Division has been delegated the responsibility to issue disposal regulations for pesticides and pesticide wastes under the FIFRA, as amended. This Division also works with the States and others who are developing their own regulatory programs directed toward "potentially hazardous" wastes. Major program elements of HWMD are guidelines development, data base development, and program implementation. Major projects in the HWMD are described under these headings in Section III of this report.

A major focus of the Systems Management Division (SMD) is the development of a better understanding of land disposal practices for wastes. In the past, OSWMP focused primarily on land disposal for municipal solid wastes, but during FY 75 increased resources were devoted to understanding the effects and practices of disposal and/or utilization of municipal sewage sludge on the land. SMD is supporting the Water Supply Office of EPA by preparing a Report to Congress, as required by the Safe Drinking Water Act, on the impacts of all land disposal practices on groundwater. Our land disposal efforts are to characterize the nature of leachate generated and potential or actual groundwater contamination from a variety of land disposal practices, to understand the technology of leachate collection and treatment, and to work with communities to better implement sound waste disposal practices. SMD has initiated a project to demonstrate anaerobic treatment of leachate and has underway a project to determine the acceptability of utilizing municipal sewage sludge as a soil conditioner and supplement in growing turf. This Division also addresses conventional solid waste management; with significant efforts directed toward the promotion of collection efficiency and safety in solid waste management. Of particular interest is the technical assistance capability and supportive tools of SMD which when utilized by cities and industries can significantly reduce their collection costs. SMD is also developing guidelines for the collection of municipal, commercial and institutional solid wastes under Section 209 of the Solid Waste Disposal Act, as amended. Major program elements of SMD are technical assistance, land disposal and special wastes. Major projects in the SMD are described under these headings in Section III of this report.

A major focus of the Resource Recovery Division (RRD) is the implementation of systems to recover energy and materials from solid waste. RRD currently manages 5 large resource recovery demonstration projects, (two in materials recovery and 3 in energy recovery) and is attempting to stimulate the adoption of systems to separate wastes at their generation source for separate collection and recovery. RRD devotes considerable effort in studies and analyses to determine what actions are needed to stimulate increased demands for secondary materials and increase the practice of waste reduction. RRD also is responsible for the preparation of the annual Report to Congress on Resource Recovery and Waste Reduction as mandated by Section 205 of the Solid Waste Disposal Act, as amended. This Division is also responsible for developing 4 guidelines for resource recovery under Section 209 of the Solid Waste Disposal Act, as amended. These guidelines address the sale of returnable beverage containers at Federal facilities, source separation and separate collection of wastes for recycling; implementation of large scale resource recovery facilities to recover materials and energy; and Federal procurement of products containing material recovered from post consumer wastes. Major program elements of RRD are materials recovery, energy recovery, and waste reduction. Major projects in the RRD are described under these headings in Section III of this report.

During FY 75 \$3.0 million was allocated to the Agency's Regional Offices to fund planning, demonstration and training projects of State solid waste management programs. The Regional Administrators were allowed maximum flexibility in awarding grants to State programs in order to implement the State role as envisioned in the Agency's Solid Waste Management Strategy for FY 75.

Grant funds were utilized by the State solid waste management programs to increase efforts in the enforcement of State regulations for solid waste processing and disposal facilities, to initiate State-wide hazardous waste surveys, and to conduct the planning necessary to encourage material and energy recovery from solid waste.

III. LISTING OF PROJECTS MANAGED IN FY 1975

Section III is divided into three major subsections: Completed Projects; Projects in Process; and New Starts. Within each subsection the projects are listed according to the two goals of the Agency's solid waste management strategy: Safe and acceptable solid waste management; and conservation of natural resources. Within the subsection on safe and acceptable waste management the projects are divided into efforts related to municipal solid waste and sludges and efforts related to hazardous wastes. The projects within the conservation of natural resources subsection are divided into efforts directed at energy recovery, materials recovery, and waste reduction.

III A. COMPLETED PROJECTS

SAFE AND ACCEPTABLE WASTE MANAGEMENT

Municipal Solid Waste and Sludges

Title: SOLID WASTE DISPOSAL BY CONTAINERIZATION

Type: Demonstration Grant

Amount: \$593,645 (total) \$378,070 (OSWMP)

Grantee: Department of Public Works, Humboldt County, California

Date Completed: January 31, 1974 (final report received FY 75)

Project Officer: Donna Krabbe

Major Outputs: A report on use of large bulk containers for rural collection. Published through NTIS.

Title: SYSTEMS ANALYSIS STUDY OF THE CONTAINER TRAIN METHOD OF SOLID WASTE COLLECTION AND DISPOSAL

Type: Demonstration Grant

Amount: \$206,925 (total) \$155,194 (OSWMP)

Grantee: Public Works Department, City of Wichita Falls, Texas

Date Completed: August 31, 1974 - final report currently in review.

Project Officer: Donna Krabbe

Major Outputs:

1. Report on use of computer methods to plan collection systems and to route collection vehicles.
2. Appropriate computer programs. Not currently planned for popular distribution.

Title: MANAGEMENT OF COMMERCIAL REFUSE COLLECTION

Type: Demonstration Grant

Amount: \$73,733 (total) \$39,250 (OSWMP)

Grantee: Scottsdale, Arizona

Date Completed: June 30, 1975

Project Officer: R. Kent Anderson

Major Outputs: Final Report entitled: "A Handbook for Initiating or Improving Commercial Refuse Collection" and an Appendices entitled, "Appendices to a Handbook for Initiating or Improving Commercial Refuse Collection."

Title: IMPLEMENTATION OF AN IMPROVED SOLID WASTE MANAGEMENT
SYSTEM - VRCSD MODEL SANITARY LANDFILL

Type: Demonstration Grant
Amount: \$182,600 (total) \$136,949 (OSWMP)
Grantee: Ventura Regional County Sanitation District
Date Completed: March 1975
Project Officer: Truett DeGeare
Major Outputs: Report on county solid waste system.

Title: CHILTON COUNTY SOLID WASTE DISPOSAL DEMONSTRATION
PROJECT--CLEAN AND GREEN

Type: Demonstration Grant
Amount: \$463,537 (total) \$230,000 (OSWMP)
Grantee: Chilton County, Alabama
Date Completed: November 1974
Project Officer: R. Kent Anderson
Major Outputs: Report on rural collection and disposal
system.

Title: DEMONSTRATION OF IMPROVED LOCAL-REGIONAL SOLID WASTE
MANAGEMENT SYSTEMS

Type: Demonstration Grant
Amount: \$455,457 (total) \$250,000 (OSWMP)
Grantee: Warren County, Pennsylvania
Date Completed: December 1974
Project Officer: R. Kent Anderson
Major Outputs: None

Title: MERCED COUNTY ASSOCIATION OF GOVERNMENTS SOLID
WASTE MANAGEMENT SYSTEM

Type: Demonstration Grant
Amount: \$260,615 (total) \$150,000 (OSWMP)
Grantee: Merced County, California
Date Completed: June 1975
Project Officer: R. Kent Anderson
Major Outputs: Report on implementation of county
disposal system.

Title: TECHNIQUES FOR ASSESSING LAND DISPOSAL SITE
GAS HAZARDS AND INSITUTING CONTROL SYSTEMS

Type: Demonstration Grant
Amount: \$216,337 (total) \$138,078 (OSWMP)
Grantee: City of Winston-Salem, North Carolina
Date Completed: December 1974
Project Officer: Truett DeGeare
Major Outputs: Report on system design, construction,
 and evaluation.

Title: SONOMA COUNTY SOLID WASTE STABILIZATION STUDY

Type: Demonstration Grant
Amount: \$344,271 (total) \$185,659 (OSWMP)
Grantee: Sonoma County, California
Date Completed: October 1974
Project Officer: Truett DeGeare
Major Outputs: Report on leachate stabilization via
 recirculation.

Title: EFFECTIVE USE OF HIGH WATER TABLE AREAS FOR
SANITARY LANDFILL

Type: Demonstration Grant
Amount: \$1,129,189 (total) \$500,000 (OSWMP)
Grantee: Orange County, Florida
Date Completed: September 1974
Project Officer: Truett DeGeare
Major Outputs: Report on construction techniques and
 leachate movement.

Title: ATLANTA SHREDDING, BALING AND RAIL HAUL SOLID
WASTE DISPOSAL SYSTEM

Type: Demonstration Grant
Amount: \$2,534,099 (total) \$450,000 (OSWMP)
Grantee: City of Atlanta, Georgia
Date Completed: March 1975
Project Officer: R. Kent Anderson
Major Outputs: None

Title: IMPLEMENTATION OF ALLEGHENY COUNTY SOLID WASTE
MANAGEMENT PLAN

Type: Demonstration Grant
Amount: \$207,900 (total) \$147,000 (OSWMP)
Grantee: Allegheny County, Pennsylvania
Date Completed: December 1974
Project Officer: Bernard J. Stoll
Major Outputs: None

Title: REFUSE BALING AND BALE DISPOSAL

Type: Demonstration Grant
Amount: \$778,264 (total) \$487,979 (OSWMP)
Grantee: City of San Diego, California
Date Completed: June 1975
Project Officer: Steven J. Hitte
Major Outputs: Report describing and evaluating system
to shred, bale, and landfill solid wastes.

Title: IMPLEMENTATION OF THE CITY OF CLEVELAND'S NEW
SOLID WASTE COLLECTION AND DISPOSAL SYSTEM

Type: Demonstration Grant
Amount: \$987,964 (total) \$138,000 (OSWMP)
Grantee: City of Cleveland, Ohio
Date Completed: January 1975
Project Officer: Bernard J. Stoll
Major Outputs: Report on institutional and operational
problems encountered in revising collection
system.

Title: IMPLEMENTATION OF A MANAGEMENT INFORMATION SYSTEM
AND A SYSTEM FOR MEASUREMENT OF THE EFFECTIVENESS
OF SOLID WASTE OPERATIONS

Type: Demonstration Grant
Amount: \$250,000 (total) \$166,600 (OSWMP)
Grantee: Government of the District of Columbia
Date Completed: August 1974
Project Officer: Allen J. Geswein
Major Outputs: Report describing program implementation.

Title: APPLICATION OF HEURISTIC TECHNIQUES TO THE
OPTIMIZATION OF REFUSE COLLECTION ROUTING AND
INTEGRATION OF SEPARATED REFUSE COLLECTION
INTO THE SYSTEM

Type: Demonstration Grant
Amount: \$89,087 (total) \$63,474 (OSWMP)
Grantee: Township of Cherry Hill, New Jersey
Date Completed: May 1975
Project Officer: Allen J. Geswein
Major Outputs: Report describing project.

Title: REFUSE COLLECTION REROUTING STUDY

Type: Demonstration Grant
Amount: \$72,720 (total) \$54,540 (OSWMP)
Grantee: City of Toledo, Ohio
Date Completed: September 1974
Project Officer: Allen J. Geswein
Major Outputs: Report describing rerouting procedures.

Hazardous Wastes

Title: ASSESSMENT OF INDUSTRIAL HAZARDOUS WASTE
PRACTICES--INORGANIC CHEMICALS INDUSTRY

Type: Contractor Study
Amount: \$170,000
Contractor: Versar, Inc.
Date Completed: March 1975
Project Officer: Timothy Fields
Major Outputs: Final report which contains data describing
the industry and its wastes, current
hazardous waste management practices, and
estimated costs of hazardous waste treatment
disposal.

Title: ASSESSMENT OF INDUSTRIAL HAZARDOUS WASTE
PRACTICES--STORAGE AND PRIMARY BATTERY INDUSTRY

Type: Contractor Study
Amount: \$97,319
Contractor: Versar, Inc.
Date Completed: January 1975
Project Officer: Timothy Fields
Major Outputs: Final report which contains data describing
the industry and its wastes, current
hazardous waste management practices, and
estimated costs of hazardous waste treatment
and disposal.

Title: A STUDY OF PESTICIDE DISPOSAL IN
A SEWAGE SLUDGE INCINERATOR

Type: Contractor Study
Amount: \$95,163 (total) \$45,391 (OSWMP)
Contractor: Versar, Inc.
Date Completed: March 1975
Project Officer: Arch Scurlock; Fred Lindsey
Major Outputs: Report documenting demonstration test
destruction of DDT and 2,4,5-T pesticides
in an operating multiple hearth sewage
sludge incinerator.

Title: DESTRUCTING CHEMICAL WASTES IN COMMERCIAL
 SCALE INCINERATORS, PHASE I

Type: Contractor Study

Amount: \$183,651

Contractor: TRW, Inc. Systems Group

Date Completed: June 1975

Project Officer: Fred Lindsey

Major Outputs: Two volume report surveying full-scale
 incineration facilities for hazardous
 wastes, setting up an incineration
 prioritization formula for hazardous
 wastes, and formulating a detailed test
 burn demonstration program plan.

CONSERVATION OF NATURAL RESOURCES

Energy Recovery

Title: STUDY OF THE FEASIBILITY OF REQUIRING SECONDARY MATERIALS IN FEDERAL CONSTRUCTION

Type: Contractor Study

Amount: \$54,000

Contractor: Resource Planning Associates, Inc.

Date Completed: January 1975

Project Officer: David B. Sussman

Major Outputs: Published report describing Federal construction programs and their ability to absorb the recycled material recovered from the waste stream.

Title: SAN DIEGO DEMONSTRATES PYROLYSIS OF SOLID WASTE

Type: Report

Amount: N/A

Contractor: None

Date Completed: June 1975

Project Officer: Steven J. Levy

Major Outputs: Publication describing the EPA demonstration grant in San Diego, California.

Title: NATIONWIDE SURVEY OF RESOURCE RECOVERY ACTIVITIES

Type: Report

Amount: N/A

Contractor: None

Date Completed: March 1975

Project Officer: Richard Hopper

Major Outputs: A summary of communities and states pursuing resource recovery.

Title: BALTIMORE DEMONSTRATES GAS PYROLYSIS

Type: Report

Amount: N/A

Contractor: None

Date Completed: February 1975

Project Officer: David B. Sussman

Major Outputs: A brochure describing the EPA demonstration project in Baltimore.

Materials Recovery

Title: RECOVERING RESOURCES FROM SOLID WASTE
USING WET PROCESSING

Type: Report
Amount: N/A
Contractor: None
Date Completed: December 1974
Project Officer: Yvonne Garbe
Major Outputs: Summary report for wide distribution
discussing the EPA demonstration of wet
pulping for recovery in Franklin, Ohio.

Title: ANALYSIS OF THE RECYCLING TAX CREDITS

Type: Issue Paper
Amount: N/A
Contractor: None
Date Completed: April 1975
Project Officer: Steve Lingle
Major Outputs: An issue paper analyzing the provisions
of a recycling tax credit being proposed
by Congress. The paper was distributed
to Congressional staff and other Federal
agencies.

Title: EPA COMMENTS ON FTC'S PROPOSED LABELING
GUIDES FOR RECYCLED PRODUCTS

Type: Issue Paper
Amount: N/A
Contractor: None
Date Completed: May 1975
Project Officer: Robert Randol
Major Outputs: A written analysis and recommendation from
EPA to the FTC concerning their proposed
labeling guides for recycled materials.

Title: ANALYSIS OF LOAN GUARANTEES FOR RESOURCE RECOVERY PLANTS

Type: Issue Paper

Amount: N/A

Contractor: None

Date Completed: January 1975

Project Officer: Steve Lingle; Robert Randol

Major Outputs: An issue paper analyzing and stating EPA's position on a provision of a draft congressional bill calling for Federal guarantees of loans for resource recovery plants. Paper was sent to the appropriate congressional committee.

Title: PUBLICATIONS ON PAPER RECYCLING

- Separating Paper at the Source for Recycling (EPA Publication)
- Paper Recycling in 1973: A Dramatic Year in Perspective (Journal)
- Paper Recycling in the United States (Journal)

Type: Reports

Amount: N/A

Contractor: None

Date Completed: October 1974 - March 1975

Project Officer: Steve Lingle

Major Outputs: Publications on the recovery and marketing of paper from municipal solid waste for wide distribution to municipal officials.

Title: PUBLICATIONS ON SOLID WASTE GENERATION

- Comparative Estimates of Post-Consumer Solid Waste
- A Solid Waste Estimation Procedure: A Material Flows Approach

Type: Reports

Amount: N/A

Contractor: None

Date Completed: May 1975

Project Officer: Fred Smith; Frank Smith

Major Outputs: Publications presenting estimates of solid waste generation and comparing those estimates with other published estimates.

Title: ENVIRONMENTAL IMPACTS OF PRODUCTION OF VIRGIN
AND SECONDARY PAPER, GLASS, AND RUBBER PRODUCTS

Type: Contractor Study
Amount: \$60,000
Contractor: Gordian Associates
Date Completed: July 1975
Project Officer: Fred Smith
Major Outputs: A report describing the environmental impacts
of production of glass, paper, and rubber
from virgin and recycled raw materials. Report
is for use in-house.

Title: ENVIRONMENTAL IMPACTS OF VIRGIN AND
RECYCLED STEEL AND ALUMINUM

Type: Contractor Study
Amount: \$90,000
Contractor: Calspan
Date Completed: July 1974
Project Officer: Frank Smith
Major Outputs: A report describing the environmental
impacts of production of steel and
aluminum products from virgin and
recycled raw materials. Report data
is primarily for use in-house in
decision-making.

Title: A TECHNICAL, ENVIRONMENTAL, AND ECONOMIC EVALUATION
OF THE "WET PROCESSING SYSTEM FOR THE RECOVERY AND
DISPOSAL OF MUNICIPAL SOLID WASTE."

Type: Contractor Study
Amount: \$50,000
Contractor: Systems Technology Corporation
Date Completed: June 1975
Project Officer: Yvonne Garbe
Major Outputs: A report with detailed evaluation data
describing the operation and economics
of the Franklin, Ohio demonstration
project.

Title: DEMONSTRATION OF THE RECOVERY OF RESIDUES FROM
INCINERATOR RESIDUE IN LOWELL, MASSACHUSETTS

Type: Demonstration Grant
Amount: \$3.2 million (total) \$2.4 million (OSWMP)
Grantee: Lowell, Massachusetts
Date Completed: June 1975
Project Officer: Yvonne Garbe
Major Outputs: The grantee withdrew from the grant at
the end of the first phase (design) due
to problems with the city's incinerator.

Title: RECOMMENDATION TO THE IRS ON ALLOWING USE OF
POLLUTION CONTROL REVENUE BONDS TO FINANCE
RESOURCE RECOVERY PLANTS

Type: Report
Amount: N/A
Contractor: None
Date Completed: March--June 1975
Project Officer: Robert Randol
Major Outputs: A series of meetings and discussions
with IRS officials and interest groups
within the municipal sector to influence
the IRS ruling on the use of PCRB's for
recovery plant financing.

Title: ANALYSIS OF SOURCE SEPARATE COLLECTION OF
RECYCLABLE SOLID WASTE

Type: Contractor Study
Amount: \$70,000
Contractor: SCS Engineers
Date Completed: August 1974
Project Officer: Penny Hansen
Major Outputs: A summary report of the technical and
economic feasibility of source separation
and collection. A report of case studies.

Waste Reduction

Title: WASTE REDUCTION CONFERENCE

Type: Conference

Amount: \$50,000

Contractor: None

Date Completed: April 3, 1975

Project Officer: Eileen Claussen

Major Outputs: A conference was held to discuss the views of government, labor industry, and consumer groups concerning methods and policies to reduce solid waste generation at the source. Conference proceedings are being prepared and will be published in FY 76.

Title: A STUDY OF THE FEASIBILITY OF THE FEDERAL GOVERNMENT TO USE RETREADED TIRES

Type: Contractor Study

Amount: \$55,000

Contractor: Smithers Scientific Services, Inc.

Date Completed: April 1975

Project Officer: Chuck Peterson

Major Outputs: Final report that will be used in discussion with GSA and their use of retreaded passenger tires.

Title: BASELINE RESOURCE RECOVERY FORECASTS 1972 TO 1990

Type: Contractor Study

Amount: \$64,000

Contractor: Midwest Research Institute

Date Completed: March 1975

Project Officer: Michael Loube

Major Outputs: Report projecting levels of solid waste generation and resource recovery through 1990.

Title: RESOURCE AND ENVIRONMENTAL PROFILE ANALYSIS OF
NINE BEVERAGE CONTAINER ALTERNATIVES

Type: Contractor Study
Amount: \$50,000
Contractor: Midwest Research Institute
Date Completed: December 1974
Project Officer: Eileen Claussen
Major Outputs: Report summarizing the environmental and
resource consumption of impacts of nine
beverage container systems for soft drink
and malt beverages.

Title: TECHNICAL AND ECONOMIC STUDY OF WASTE OIL RECOVERY

Type: Contractor Study
Amount: \$75,000
Contractor: Teknekron, Inc.
Date Completed: September 1974
Project Officer: Larry McEwen
Major Outputs: Report on the re-refining industry including
an economic and marketing analysis of that
industry and barriers to its expansion.
Study also identifies Federal involvement in
waste oil recovery and the relationship between
the economics of virgin lub oil production
and waste oil re-refining.

Title: IMPLEMENTATION AND ENFORCEMENT OF FEDERAL
CONSUMER PRODUCT REGULATORY PROGRAMS

Type: Contractor Study
Amount: \$50,000
Contractor: Resource Planning Associates
Date Completed: March 1975
Project Officer: Michael Loube
Major Outputs: Report evaluating several Federal product
regulation programs. Report will be used
for analysis of suggested Federal programs
to regulate products in order to reduce
solid waste generation.

III B. PROJECTS IN PROCESS

SAFE AND ACCEPTABLE WASTE MANAGEMENT

Municipal Solid Waste and Sludges

Title: ASSISTANCE DELIVERY PROGRAM FOR CITIES

Type: Demonstration Grant

Amount: \$300,086 (total) \$284,851 (OSWMP)

Grantee: The National League of Cities and
United States Conference of Mayors

Anticipated
Completion: October 4, 1975

Project Officer: Nancy Dunne

Major Outputs: 8 Seminars
5 Conferences
4 Articles for Nations Cities
1 Project Report
4 Publications

Title: ASSISTANCE DELIVERY PROGRAM FOR COUNTIES

Type: Demonstration Grant

Amount: \$128,346 (total) \$114,846 (OSWMP)

Grantee: The National Association of Counties

Anticipated
Completion: December 12, 1975

Project Officer: Nancy Dunne

Major Outputs: 4 National Meetings
4 Workshops
5 Information packages and distribution
6 Case Studies
1 Project Report

Title: BREVARD COUNTY SOLID WASTE DISPOSAL SYSTEM

Type: Demonstration Grant

Amount: \$2,425,535 (total) \$110,200 (OSWMP)

Grantee: Utilities Division, Brevard County, Florida

Anticipated
Completion: June 30, 1976

Project Officer: Donna Krabbe

Major Outputs: 1. Report on the success of a landfill:

- (a) with liner and leachate collection system
- (b) with shredding
- (c) of shredded waste not covered.

2. A billing system for county collection services.

Title: EVALUATION OF AN INJURY REPORTING AND ANALYSIS
SYSTEM FOR THE SOLID WASTE MANAGEMENT INDUSTRY

Type: Contractor Study
Amount: \$105,250
Contractor: Safety Sciences, Division of WSA Inc.
Anticipated Completion: October 1975 but will be extended 10 months.
Project Officer: Sidney Wener
Major Outputs: A two volume final report which describes the development of the Injury Reporting and Analysis System (IRIS) for the solid waste management industry and reports the results of the field test of the system in 15 solid waste agencies, a User's Manual which describes the steps needed to implement IRIS, and two brochures which briefly describe IRIS.

Title: SOLID WASTE INFORMATION AND ASSISTANCE ANALYSIS
FOR LOCAL GOVERNMENT CHIEF ADMINISTRATIVE OFFICERS

Type: Demonstration Grant
Amount: \$210,225 (total) \$170,225 (OSWMP)
Grantee: The International City Management Association
Anticipated Completion: October 1975
Project Officer: Nancy Dunne
Major Outputs: 6 Issues of "Refuse Report"
2 Conferences
4 Seminars
12 Transfer team visits
12 Information packages
2 Sessions at ICMA Annual Conference

Title: OPERATION C.U.T.E.

Type: Demonstration Grant
Amount: \$198,154 (total) \$107,769 (OSWMP)
Grantee: Polk County, Texas
Anticipated Completion: October 1975
Project Officer: R. Kent Anderson
Major Outputs: Final Report.

Title: MODEL CITY-URBAN RENEWAL SOLID WASTE LAND
RECLAMATION, EDUCATION AND TRAINING DEMONSTRATION PROJECT

Type: Demonstration Grant
Amount: \$1,457,300 (total) \$971,534 (OSWMP)
Grantee: Mid-America Regional Council
Anticipated
Completion: June 1977
Project Officer: Truett DeGeare
Major Outputs: Report on design construction and operation
of model sanitary landfill.

Title: DEMONSTRATION OF EIDAL SW1150 SHREDDER

Type: Demonstration Grant
Amount: \$317,200 (total) \$161,466 (OSWMP)
Grantee: Onondaga County, New York
Anticipated
Completion: August 1975
Project Officer: Steven J. Hitte
Major Outputs: Evaluation report on economics and
performance characteristics of shredder.

Title: PERFORMANCE EVALUATION OF A FULL SCALE SOLID
WASTE BALER AND ASSOCIATED SANITARY LANDFILL

Type: Contractor Study
Amount: \$88,665
Contractor: Ralph Stone and Company
Anticipated
Completion: August 1975
Project Officer: Steven J. Hitte
Major Outputs: Report on performance of baler and
balefill.

Title: MADISON, WISCONSIN CONTINUED LYSIMETER MONITORING

Type: Contractor Study
Amount: \$71,680
Contractor: University of Wisconsin
Anticipated
Completion: June 1976
Project Officer: Truett DeGeare
Major Outputs: Report on Leachate Generation.

Title: DEMONSTRATION OF A SOLID WASTE RAIL HAUL
SYSTEM FOR THE CITY OF PHILADELPHIA

Type: Demonstration Grant
Amount: \$16,566,489 (total) \$593,744 (OSWMP)
Grantee: City of Philadelphia, Pennsylvania
Anticipated
Completion: August 1977
Project Officer: R. Kent Anderson
Major Outputs: Report on implementation and operation
of rail haul system.

Title: UPDATING AND EXPANSION OF MUNICIPAL-SCALE
INCINERATOR DESIGN AND OPERATION REPORT

Type: Contractor Study
Amount: \$58,487
Contractor: RECON Systems, Inc.
Anticipated
Completion: October 1975
Project Officer: Steven J. Hitte
Major Outputs: Revised Report

Title: CLARK COUNTY SOLID WASTE MANAGEMENT PROJECT

Type: Demonstration Grant
Amount: \$126,842 (total) \$93,434 (OSWMP)
Grantee: Clark County, Arkansas
Anticipated
Completion: July 1975
Project Officer: R. Kent Anderson
Major Outputs: Report on rural collection and
disposal system.

Title: FOREST COUNTY SOLID WASTE MANAGEMENT SYSTEM

Type: Demonstration Grant
Amount: \$188,910 (total) \$55,122 (OSWMP)
Grantee: Forest County, Pennsylvania
Anticipated
Completion: October 1975
Project Officer: R. Kent Anderson
Major Outputs: Report on rural collection system.

Title: CATTARAUGUS COUNTY REFUSE DISPOSAL SYSTEM

Type: Demonstration Grant

Amount: \$259,324 (total) \$194,493 (OSWMP)

Grantee: Cattaraugus County, New York

Anticipated

Completion: October 1975

Project Officer: R. Kent Anderson

Major Outputs: Report on county disposal system.

Title: NEWTON-WALTHAM SOLID WASTE DISPOSAL DISTRICT

Type: Demonstration Grant

Amount: \$150,000 (total) \$112,500 (OSWMP)

Grantee: City of Newton, Massachusetts

Anticipated

Completion: September 1975

Project Officer: Bernard J. Stoll

Major Outputs: Report on cooperative effort of two cities to provide transfer and disposal system.

Hazardous Wastes

Title: ASSESSMENT OF INDUSTRIAL HAZARDOUS WASTE PRACTICES
--ORGANIC CHEMICALS, PESTICIDES, AND EXPLOSIVES
INDUSTRIES

Type: Contractor Study
Amount: \$229,863
Contractor: TRW Systems Group, TRW, Inc.
Anticipated
Completion: September 1975
Project Officer: Timothy Fields
Major Outputs: Final report which contains data
describing the industry and its wastes,
current hazardous waste management
practices, and estimated costs of
hazardous waste treatment and disposal.

Title: ASSESSMENT OF INDUSTRIAL HAZARDOUS WASTE PRACTICES
--PETROLEUM REFINING INDUSTRY

Type: Contractor Study
Amount: \$192,019
Contractor: Jacobs Engineering Company
Anticipated
Completion: August 1975
Project Officer: Matthew Straus
Major Outputs: Final report which contains data
describing the industry and its wastes,
current hazardous waste management
practices, and estimated costs of
hazardous waste treatment and disposal.

Title: ASSESSMENT OF INDUSTRIAL HAZARDOUS WASTE PRACTICES
--PAINT AND ALLIED PRODUCTS INDUSTRY

Type: Contractor Study
Amount: \$124,810
Contractor: Wapora, Inc.
Anticipated
Completion: August 1975
Project Officer: Matthew Straus
Major Outputs: Final report which contains data
describing the industry and its wastes,
current hazardous waste management
practices, and estimated costs of hazardous
waste treatment and disposal.

Title: ASSESSMENT OF INDUSTRIAL HAZARDOUS WASTE PRACTICES
--ELECTROPLATING AND METAL FINISHING INDUSTRIES

Type: Contractor Study

Amount: \$203,474

Contractor: Battelle Columbus Laboratories

Anticipated Completion: September 1975

Project Officer: Matthew Straus

Major Outputs: Final report which contains data describing the industry and its wastes, current hazardous waste management practices, and estimated costs of hazardous waste treatment and disposal.

Title: ASSESSMENT OF INDUSTRIAL HAZARDOUS WASTE PRACTICES
--METALS MINING INDUSTRY

Type: Contractor Study

Amount: \$137,037

Contractor: Midwest Research Institute

Anticipated Completion: September 1975

Project Officer: Allen Pearce

Major Outputs: Final report which contains data describing the industry and its wastes, current hazardous waste management practices, and estimated costs of hazardous waste treatment and disposal.

Title: ASSESSMENT OF INDUSTRIAL HAZARDOUS WASTE PRACTICES
--PRIMARY METALS INDUSTRY

Type: Contractor Study

Amount: \$271,074

Contractor: Calspan Corporation

Anticipated Completion: October 1975

Project Officer: Allen Pearce

Major Outputs: Final report which contains data describing the industry and its wastes, current hazardous waste management practices, and estimated costs of hazardous waste treatment and disposal.

Title: ASSESSMENT OF INDUSTRIAL HAZARDOUS WASTE PRACTICES
--PHARMACEUTICALS INDUSTRY

Type: Contractor Study
Amount: \$158,000
Contractor: Arthur D. Little, Inc.
Anticipated Completion: July 1975
Project Officer: Allen Pearce
Major Outputs: Final report which contains data describing the industry and its wastes, current hazardous waste management practices, and estimated costs of hazardous waste treatment and disposal.

Title: DESTRUCTING CHEMICAL WASTES IN COMMERCIAL
SCALE INCINERATORS, PHASE II

Type: Contractor Study
Amount: \$1,472,105
Contractor: TRW, Inc., Systems Group
Anticipated Completion: January 1977
Project Officer: John Schaum
Major Outputs: Series of reports documenting demonstration test burns of high priority wastes in full-scale incinerators of different designs.

CONSERVATION OF NATURAL RESOURCES

Energy Recovery

Title: BALTIMORE, MARYLAND DEMONSTRATION PROJECT
"PYROLYSIS FOR STEAM GENERATION"

Type: Demonstration Grant
Amount: \$6,000,000
Grantee: City of Baltimore, Maryland
Anticipated Completion: 1977
Project Officer: David B. Sussman
Major Outputs: The demonstration of a new technology for energy recovery from and disposal of municipal solid waste.

Title: RESOURCE RECOVERY--REFUSE DERIVED FUEL

Type: Demonstration Grant
Amount: \$1,440,000
Grantee: District of Columbia
Anticipated Completion: July 1979
Project Officer: Robert Holloway
Major Outputs: Operation and evaluation of a 200 ton per day energy recovery system; publication of summary, interim progress and evaluation reports, and final report.

Title: USE OF REFUSE AS A SUPPLEMENTARY FUEL IN POWER PLANT BOILERS

Type: Demonstration Grant
Amount: \$3,600,000
Grantee: City of St. Louis, Missouri
Anticipated Completion: March 1976
Project Officer: Robert Holloway
Major Outputs: Operation and evaluation of a 300 ton per day energy recovery system; publication of summary, interim progress and evaluation reports, and a final report.

Title: SAN DIEGO COUNTY SOLID WASTE RESOURCE RECOVERY PROJECT

Type: Demonstration Grant

Amount: \$3,562,710

Grantee: San Diego County

Anticipated Completion: September 1977

Project Officer: Steven J. Levy

Major Outputs: Demonstration of prototype plant to convert solid waste to oil. Evaluation of technical, economic, and environmental performance.

Title: STUDY OF THE FEASIBILITY OF FEDERAL PROCUREMENT OF FUELS PRODUCED FROM SOLID WASTES

Type: Contractor Study

Amount: \$45,000

Contractor: Arthur D. Little, Inc.

Anticipated Completion: August 1975

Project Officer: David B. Sussman

Major Outputs: Published report listing an inventory of all federally owned boilers and the feasibility and cost of converting the suitable boilers to a solid waste derived fuel.

Title: DELAWARE RECLAMATION PROJECT

Type: Demonstration Grant

Amount: \$9,000,000

Grantee: State of Delaware

Anticipated Completion: July 1981

Project Officer: Robert Holloway

Major Outputs: Operation and evaluation of a 500 ton per day energy and materials recovery system, publication of summary, interim progress and evaluation reports, and a final report.

Materials Recovery

Title: ANALYSIS OF DEMAND AND SUPPLY FOR SECONDARY
FIBER IN THE UNITED STATES PAPER AND BOARD INDUSTRY

Type: Contractor Study

Amount: \$185,000

Contractor: A. D. Little

Anticipated
Completion: October 1975

Project Officer: Fred Smith

Major Outputs: A report describing the technology and
economics of secondary fiber use as well
as a characterization of the industry,
and predictions of availability of virgin
and secondary resources.

Waste Reduction

Title: THIRD ANNUAL REPORT TO CONGRESS ON RESOURCE
RECOVERY AND WASTE REDUCTION

Type: Report

Amount: N/A

Contractor: None

Anticipated

Completion: August 1975

Project Officer: J. Nicholas Humber

Major Outputs: A report to Congress discussing
nation-wide status of resource recovery
and waste reduction activities.

Title: ESTIMATION OF CONSUMER DEMAND ELASTICITIES

Type: Contractor Study

Amount: \$60,000

Contractor: Ernst & Ernst

Anticipated

Completion: October 1975

Project Officer: Michael Loube

Major Outputs: Report estimating the demand elasticity
to various consumer products that are
found in the municipal solid waste stream.
This report will be helpful in evaluation
of taxes and other fiscal incentives to
reduce waste generation.

Title: AN ANALYSIS OF THE MATERIALS AND NATURAL RESOURCE
REQUIREMENTS AND RESIDUAL GENERATION OF PERSONAL
CONSUMPTION EXPENDITURE ITEMS

Type: Contractor Study

Amount: \$125,000

Contractor: Research Triangle Institute

Anticipated

Completion: September 1975

Project Officer: Michael Loube

Major Outputs: Report summarizing the materials and resource
requirements and waste generation impacts of
a number of products found in municipal solid waste.

III C. NEW STARTS

SAFE AND ACCEPTABLE WASTE MANAGEMENT

Municipal Solid Waste and Sludges

Title: COLLECTION MANAGEMENT TECHNICAL ASSISTANCE
--EAST-WEST GATEWAY REGIONAL AREA

Type: Contractor Study
Amount: \$25,000
Contractor: Resource Planning Associates, Inc.
Anticipated
Completion: October 1975
Project Officer: Donna Krabbe
Major Outputs: 1. Collection assistance to local communities.
2. Report on this assistance and assessment of our collection management tools.

Title: COLLECTION MANAGEMENT TECHNICAL ASSISTANCE
--PIEDMONT TRIAD REGION, NORTH CAROLINA

Type: Contractor Study
Amount: \$30,000
Contractor: Resource Planning Associates, Inc.
Anticipated
Completion: October 1975
Project Officer: Donna Krabbe
Major Outputs: 1. Collection assistance to local communities.
2. Report on this assistance and assessment of our collection management tools.

Title: COST ESTIMATING HANDBOOK FOR SOLID
WASTE MANAGEMENT SYSTEMS

Type: Contractor Study
Amount: \$82,421
Contractor: Booz, Allen & Hamilton, Inc.
Anticipated
Completion: February 1976
Project Officer: Cynthia McLaren
Major Outputs: Draft report - compilation of existing EPA data on solid waste management costs.
Final report - Cost Estimating Handbook for Processing and Disposal Facilities.

Title: MONITORING AND ENFORCEMENT PROCEDURES FOR CONTROL
OF LAND DISPOSAL OF MUNICIPAL SOLID WASTE

Type: Contractor Study
Amount: \$115,000
Contractor: Wehran Engineering
Anticipated
Completion: March 1976
Project Officer: Burnell Vincent
Major Outputs: Manual on Leachate Section.

Title: RESOURCE ALLOCATION MODEL USER'S MANUAL

Type: Contractor Study
Amount: \$80,000
Contractor: Mitre Corporation
Anticipated
Completion: October 1975
Project Officer: Donna Krabbe
Major Outputs: 1. A planning model for processing
and disposal networks.
2. Documentation of the planning model.

Title: EVALUATION OF LIQUID SLUDGE UTILIZATION ON SOD
 Type: Demonstration Grant
 Amount: \$44,417 (total) \$20,000 (OSWMP)
 Grantee: Washington Suburban Sanitary Commission
 Anticipated Completion: June 1976
 Project Officer: Chris W. Rhyne
 Major Outputs: A report identifying the problems of using liquid sludge in seedling establishment of turfgrass and the feasibility of replacing commercial fertilizer with liquid sludge in the production of sod.

Title: THE DENTON LANDTILL PROJECT
 Type: Demonstration Grant
 Amount: \$163,670 (total) \$150,000 (OSWMP)
 Grantee: Institute for Storm Water Research
 Anticipated Completion: June 1978
 Project Officer: R. Kent Anderson
 Major Outputs: A report describing the technical feasibility of incorporating shredded solid waste and digested sewage sludge into the soil for the purpose of utilizing the nutrient and organic content of the wastes being disposed.

Title: FEASIBILITY OF COMPOSTING RAW SEWAGE SLUDGE BY HIGH RATE SUCTION AERATION
 Type: Demonstration Grant
 Amount: \$35,268 (total) \$20,000 (OSWMP)
 Grantee: City of Bangor, Maine
 Anticipated Completion: June 1976
 Project Officer: Larry A. Prior
 Major Outputs: A report identifying the various institutional and operation problems encountered in composting raw sewage sludge under the harsh climatic conditions typically experienced by northern communities similar to Bangor, Maine. In addition, a detailed evaluation of costs and potential uses of the composted sludge will be incorporated.

Title: AN ENVIRONMENTAL ASSESSMENT OF MUNICIPAL WASTEWATER
TREATMENT SLUDGE UTILIZATION PRACTICES

Type: Contractor Study
Amount: \$197,167
Contractor: SCS Engineers, Inc.
Anticipated
Completion: December 1976
Project Officer: Larry A. Prior
Major Outputs: A report quantifying the degree of
environmental damage that has resulted
from the application of various types
of sewage sludges to land. Included
in the report will be an assessment of
ground and surface water contamination,
soils accumulation and plant uptake of
heavy metals, public attitude, operations
and control technology, and the relative
costs of landspreading sewage sludge on a
comparative basis. This document will
serve as background information in the
development of sludge utilization and
disposal guidelines.

Title: SEWAGE TREATMENT SOLIDS DISPOSAL BY SUBSURFACE
LAND APPLICATION

Type: Contractor Study
Amount: \$99,645
Contractor: SCS Engineers, Inc.
Anticipated
Completion: November 1975
Project Officer: Dale C. Mosher
Major Outputs: A report identifying the environmental
impact of current and past practices of
subsurface land disposal. Included in
the report will be a detailed assessment
of current pollution control technology
and their associated cost. This document
will serve as a background information in
the development of sludge utilization and
disposal guidelines.

Title: LEACHATE TREATMENT BY ANAEROBIC FILTER

Type: Demonstration Grant

Amount: \$250,000 (total) \$200,000 (OSWMP)

Grantee: Town of Enfield, Connecticut

Anticipated Completion: April 1978

Project Officer: Alessi D. Otte

Major Outputs: Report on technical and economic feasibility of system. Will include system design, construction and evaluation.

Title: SOLID WASTE DISPOSAL AND RESOURCE RECOVERY FACILITY WITH LEACHATE COLLECTION/TREATMENT SYSTEM

Type: Demonstration Grant

Amount: \$2,429,001 (total) \$1,018,504 (OSWMP)

Grantee: Lycoming County, Pennsylvania

Anticipated Completion: May 1977

Project Officer: Alessi D. Otte

Major Outputs: Report on site evaluation, design, construction procedures, and costs for liner and collection system.

Title: THE EFFECTS OF LEACHATE ON THE SURFACE AND GROUND WATER QUALITY AT THE ORANGE COUNTY, FLORIDA LANDFILL

Type: Contractor Study

Amount: \$68,633

Contractor: Orange County Pollution Control Department

Anticipated Completion: November 1977

Project Officer: Stephen C. James

Major Outputs: Report on leachate movement.

Title: THE SELECTION AND MONITORING OF LAND DISPOSAL CASE STUDY SITES

Type: Contractor Study

Amount: \$101,712

Contractor: SCS Engineers, Inc.

Anticipated Completion: February 1976

Project Officer: Stephen C. James

Major Outputs: Report assessing leachate generation and movement at selected disposal sites.

Title: REPORT TO CONGRESS ON WASTE DISPOSAL
 Type: Contractor Study
 Amount: \$300,000 (Water Supply Division funds)
 Contractor: Geraghty and Miller, Inc.
 Anticipated
 Completion: October 1975
 Project Officer: Stephen C. James
 Major Outputs: Report on impact of waste disposal
 on water quality.

Title: SHORELINE PARK GAS RECOVERY PROGRAM
 Type: Demonstration Grant
 Amount: \$597,000 (total) \$260,000 (OSWMP)
 Grantee: City of Mountain View, California
 Anticipated
 Completion: May 1977
 Project Officer: Chris W. Rhyne
 Major Outputs: Report on technical and economic feasibility
 of recovering and marketing gas from land
 disposal site.

Title: SONOMA COUNTY SOLID WASTE STABILIZATION STUDY
 Type: Contractor Study
 Amount: \$25,000
 Contractor: EMCON, Associates
 Anticipated
 Completion: February 1976
 Project Officer: Chris W. Rhyne
 Major Outputs: Report on leachate stabilization via
 recirculation.

Title: DEMONSTRATION OF A LEACHATE TREATMENT PLANT
 Type: Demonstration Grant
 Amount: \$230,097 (total) \$215,097 (OSWMP)
 Grantee: Applied Technology Associates
 Anticipated
 Completion: June 1977
 Project Officer: Bernard J. Stoll
 Major Outputs: Report on design, economics and operation
 of treatment plant.

Title: SMALL INCINERATOR EVALUATION

Type: Contractor Study

Amount: \$39,384

Contractor: Ross Hoffman Associates

Anticipated Completion: December 1975

Project Officer: Steven J. Hitte

Major Outputs: Report on performance of small incinerators.

Title: INVESTIGATION AND EVALUATION OF EFFECTS OF SOLID WASTE DISPOSAL ON GROUND AND SURFACE WATER RESOURCES

Type: Contractor Study

Amount: \$185,644

Contractor: A. W. Martin Associates, Inc.

Anticipated Completion: November 1975

Project Officer: Dale C. Mosher

Major Outputs: Report on effects of leachate on water quality.

Hazardous Wastes

Title: ASSESSMENT OF INDUSTRIAL HAZARDOUS WASTE PRACTICES
--TEXTILES INDUSTRY

Type: Contractor Study
Amount: \$154,241
Contractor: Versar, Inc.
Anticipated
Completion: March 1976
Project Officer: Matthew Straus
Major Outputs: Final report which contains data
describing the industry and its wastes,
current hazardous waste management
practices, and estimated costs of
hazardous waste treatment and disposal.

Title: ASSESSMENT OF INDUSTRIAL HAZARDOUS WASTE PRACTICES
--RUBBER AND PLASTICS INDUSTRY

Type: Contractor Study
Amount: \$155,801
Contractor: Foster D. Snell, Inc.
Anticipated
Completion: April 1976
Project Officer: Matthew Straus
Major Outputs: Final report which contains data
describing the industry and its wastes,
current hazardous waste management
practices, and estimated costs of
hazardous waste treatment and disposal.

Title: ASSESSMENT OF INDUSTRIAL HAZARDOUS WASTE PRACTICES
--SPECIAL MACHINERY INDUSTRY

Type: Contractor Study
Amount: \$208,912
Contractor: Wapora, Inc.
Anticipated
Completion: April 1976
Project Officer: Allen Pearce
Major Outputs: Final report which contains data
describing the industry and its wastes,
current hazardous waste management
practices, and estimated costs of
hazardous waste treatment and disposal.

Title: ASSESSMENT OF INDUSTRIAL HAZARDOUS WASTE PRACTICES
--LEATHER TANNING AND FINISHING INDUSTRY

Type: Contractor Study
Amount: \$118,679
Contractor: SCS Engineers, Inc.
Anticipated Completion: May 1976
Project Officer: Allen Pearce
Major Outputs: Final report which contains data describing the industry and its wastes, current hazardous waste management practices, and estimated costs of hazardous waste treatment and disposal.

Title: CHEMICAL WASTE LAND DISPOSAL FACILITY

Type: Demonstration Grant
Amount: \$5,410,065 (total) \$3,720,050 (OSWMP)
Grantee: Minnesota Pollution Control Agency
Anticipated Completion: June 1980
Project Officer: Don Farb
Major Outputs: Operating full-scale land disposal and treatment facility for chemical wastes. A series of reports will document and evaluate the project.

Title: ENERGY CONVERSION POTENTIAL OF INDUSTRIAL WASTE STREAMS

Type: Contractor Study
Amount: \$200,000
Contractor: To be determined
Anticipated Completion: September 1976
Project Officer: Alan S. Corson
Major Outputs: This study will provide an estimate of the energy recovery of industrial wastes, the technical potential for waste utilization as an energy source, alternate strategies for implementation of industrial waste-energy, and the necessary economic tradeoffs.

Title: PESTICIDE DISPOSAL HANDBOOK

Type: Contractor Study

Amount: \$34,676

Contractor: TRW, Inc., Systems Group

Anticipated Completion: January 4, 1976

Project Officer: Harry W. Trask

Major Outputs: The handbook will provide pesticide applicators with information on the use of common chemicals in the detoxification/chemical degradation of 20 widely used pesticides. An important aspect will be the "DO NOT" section, where users will be clearly warned of the potential dangers involved in certain pesticide treatment situations. Highly technical language will be avoided in favor of common terms used by pesticide applicators.

Title: STUDY OF SELECTED LANDFILLS DESIGNED AS "PESTICIDE DISPOSAL SITES"

Type: Contractor Study

Amount: \$23,947

Contractor: TRW, Inc., Systems Group

Anticipated Completion: December 21, 1975

Project Officer: Harold R. Day

Major Outputs: This study of the economic and institutional aspects of establishing and operating landfills primarily for pesticide/container disposal will provide the basis for a report for distribution to Regions, States, and the public. The information will provide guidance and direction for the establishment of similar sites in those areas where pesticide disposal regulations compel the use of improved sites and facilities.

Title: SURVEY OF METHODS USED TO CONTROL WASTES
CONTAINING HEXACHLOROBENZENE

Type: Contractor Study (BOA Task Order)
Amount: \$24,304
Contractor: TRW, Inc., Systems Group
Anticipated
Completion: September 15, 1975
Project Officer: Thomas V. Leshendok
Major Outputs: Final Report

Title: DEVELOPMENT OF A SYSTEM FOR THE EXCHANGE AND
RECYCLING OF HAZARDOUS WASTES

Type: Contractor Study
Amount: \$94,130
Contractor: Arthur D. Little, Inc.
Anticipated
Completion: July 1, 1976
Project Officer: Christopher H. Porter
Major Outputs:

1. A systematic, readily usable data base and model structure to assess potential uses of industrial wastes.
2. Analyze and draw inferences as to the preferred institutional arrangements through which an industrial waste utilization clearinghouse can be implemented in the United States.

Title: THE POTENTIAL FOR CAPACITY CREATION BY THE
HAZARDOUS WASTE TREATMENT AND DISPOSAL INDUSTRY

Type: Contractor Study
Amount: \$46,587
Contractor: Foster D. Snell, Inc.
Anticipated
Completion: March 1, 1976
Project Officer: Allen Kohan
Major Outputs: Economic and financial profile of the hazardous waste service industry. Plus, estimate of the potential for creating new capacity to meet requirements projected as a result of regulations.

Title: ECONOMIC ANALYSIS OF POTENTIAL HAZARDOUS WASTE
MANAGEMENT REGULATION ON THE INDUSTRIAL INORGANIC
CHEMICALS INDUSTRY (SIC 281) AND THE PETROLEUM
REFINING INDUSTRY (SIC 291)

Type: Contractor Study

Amount: \$128,281

Contractor: Arthur D. Little, Inc.

Anticipated

Completion: May 1, 1976

Project Officer: Michael Shannon

Major Outputs: Information concerning the economic
burden of potential regulations on
prices, production, industry growth,
investment and employment levels,
small business, etc.

CONSERVATION OF NATURAL RESOURCES

Energy Recovery

Title: ENERGY RECOVERY IMPLEMENTATION GRANT - DENVER

Type: Demonstration Grant

Amount: \$70,000

Grantee: Denver Regional Council of Governments

Anticipated Completion: June 1977

Project Officer: Richard Hopper

Major Outputs: To support efforts such as the preparation of a request for proposals, the negotiation of a contract, and the issuing of bonds necessary for the implementation of an energy recovery system.

Title: ENERGY RECOVERY IMPLEMENTATION GRANT - RICHMOND, VIRGINIA

Type: Demonstration Grant

Amount: \$50,000

Grantee: City of Richmond

Anticipated Completion: June 1977

Project Officer: Richard Hopper

Major Outputs: To support efforts such as the preparation of a request for proposals, the negotiation of a contract, and the issuing of bonds necessary for the implementation of an energy recovery system.

Title: ENERGY RECOVERY IMPLEMENTATION GRANT - LANE COUNTY, OREGON

Type: Demonstration Grant

Amount: \$50,000

Grantee: Lane County, Oregon

Anticipated Completion: June 1977

Project Officer: Richard Hopper

Major Outputs: To support efforts such as the preparation of a request for proposals, the negotiation of a contract, and the issuing of bonds necessary for the implementation of an energy recovery system.

Title: ENERGY RECOVERY IMPLEMENTATION GRANT
- MONTGOMERY COUNTY, OHIO

Type: Demonstration Grant
Amount: \$70,000
Grantee: Montgomery County, Ohio
Anticipated
Completion: June 1977
Project Officer: Richard Hopper
Major Outputs: To support efforts such as the preparation of a request for proposals, the negotiation of a contract, and the issuing of bonds necessary for the implementation of an energy recovery system.

Title: ENERGY RECOVERY IMPLEMENTATION GRANT
- STATE OF RHODE ISLAND

Type: Demonstration Grant
Amount: \$50,000
Grantee: Rhode Island Solid Waste Management Corp.
Anticipated
Completion: January 1977
Project Officer: Denise F. Hawkins
Major Outputs: To support efforts such as a feasibility study, site selection, system design and development, and issuance of an RFP for construction, which are necessary for the implementation of an energy recovery facility.

Title: ENERGY RECOVERY IMPLEMENTATION GRANT
- SHILLINGTON, PENNSYLVANIA

Type: Demonstration Grant
Amount: \$50,000
Grantee: Western Berks Refuse Authority
Anticipated
Completion: July 1976
Project Officer: Denise F. Hawkins
Major Outputs: To support efforts such as a preliminary design, interlocal waste supply agreements, market letters of intent, and specific financing plans, which are necessary for the implementation of an energy recovery facility.

Title: ENERGY RECOVERY IMPLEMENTATION GRANT
- LEXINGTON, KENTUCKY

Type: Demonstration Grant
Amount: \$50,000
Grantee: Lexington-Fayette Urban County, Kentucky
Anticipated Completion: July 1976
Project Officer: Denise F. Hawkins
Major Outputs: To support efforts such as the issuance of an RFP and bonds for construction, negotiation of market contracts, preparation of an environmental impact statement, and completion of designs, which are necessary for the implementation of an energy recovery facility.

Title: ENERGY RECOVERY IMPLEMENTATION GRANT
- MIDDLESEX COUNTY, NEW JERSEY

Type: Demonstration Grant
Amount: \$50,000
Grantee: Middlesex County, New Jersey
Anticipated Completion: January 1977
Project Officer: Denise F. Hawkins
Major Outputs: To support efforts such as site acquisition, negotiation of market contracts, development of an implementation plan and the issuance of an RFP, which are necessary for the implementation of an energy recovery facility.

Title: TENNESSEE VALLEY AUTHORITY REGIONAL RESOURCE RECOVERY SYSTEM STUDY

Type: Study
Amount: \$100,000
Contractor: Tennessee Valley Authority
Anticipated Completion: February 1976
Project Officer: Harry Butler
Major Outputs: Detailed feasibility study culminating in decision on whether to implement 8000 tons per day regional resource recovery system in TVA service area.

Title: CEMENT KILN FUEL DEMONSTRATION

Type: Demonstration Grant

Amount: \$350,000

Grantee: Palmer Township, Pennsylvania

Anticipated Completion: July 1977

Project Officer: Steven J. Levy

Major Outputs: Demonstration of prototype plant to produce pelletized fuel from solid waste and evaluation of the use of the fuel in a cement kiln.

Title: RESOURCE RECOVERY INDUSTRY CAPACITY STUDY

Type: Contractor Study

Amount: \$27,000

Contractor: Mitre Corporation

Anticipated Completion: August 1975

Project Officer: Richard Hopper

Major Outputs: A report evaluating industry's capacity to respond to an increased demand for the construction of resource recovery facilities and a profile of the industry.

Title: THE TECHNICAL AND ECONOMIC EVALUATION OF THE EPA DEMONSTRATION PROJECT IN BALTIMORE

Type: Contractor Study

Amount: \$200,000

Contractor: To be determined

Anticipated Completion: Winter 1975

Project Officer: David B. Sussman

Major Outputs: A published report describing in detail the technical points and the economic viability of the project in Baltimore.

Title: ENERGY RECOVERY IMPLEMENTATION GRANT - NEW YORK, NEW YORK

Type: Demonstration Grant

Amount: \$50,000

Grantee: New York, New York

Anticipated Completion: July 1976

Project Officer: Denise F. Hawkins

Major Outputs: To support the preliminary design of a 1000 ton per day energy recovery facility.

Materials Recovery

Title: AN ANALYSIS OF THE EFFECTIVENESS OF PRODUCT CHARGES AND SUBSIDIES IN STIMULATING WASTE REDUCTION AND INCREASING RESOURCE RECOVERY

Type: Contractor Study

Amount: \$50,000

Contractor: Research Triangle Institute

Anticipated Completion: January 1976

Project Officer: Fred Smith

Major Outputs: A report containing methodologies and predictions for analysis and decision-making concerning product charges and subsidies.

Title: DEMONSTRATION OF MULTI-MATERIAL SOURCE SEPARATION IN AN URBAN AREA

Type: Demonstration Grant

Amount: \$345,500 (total) \$121,700 (OSWMP)

Grantee: Somerville, Massachusetts

Anticipated Completion: January 1978

Project Officer: Penny Hansen

Major Outputs: Demonstration of home separation and separate collection techniques for cans, glass, and paper in a high density urban area. Report describing results.

Title: DEMONSTRATION OF MULTI-MATERIAL SOURCE SEPARATION

Type: Demonstration Grant

Amount: \$248,404 (total) \$94,736 (OSWMP)

Grantee: Marblehead, Massachusetts

Anticipated Completion: January 1978

Project Officer: Penny Hansen

Major Outputs: Demonstration of home separation and separate collection techniques for cans, glass, and paper in a suburban community.

Title: ANALYSIS OF HIGH-GRADE OFFICE SEPARATION

Type: Contractor Study

Amount: \$33,000

Contractor: SCS Engineers, Inc.

Anticipated Completion: December 1975

Project Officer: Penny Hansen

Major Outputs: A report recommending the type of office paper separation technique which appears to be optimum based on case studies.

Title: HOME PAPER RECOVERY: A MUNICIPAL IMPLEMENTATION GUIDE

Type: Report

Amount: N/A

Contractor: None

Anticipated

Completion: October 1975

Project Officer: Penny Hansen

Major Outputs: A publication for wide National distribution describing the techniques and costs of separating newspaper at the home and separately collecting it for recycling.

Title: RESOURCE RECOVERY PLANT IMPLEMENTATION GUIDE:
A HANDBOOK FOR MUNICIPAL OFFICIALS

Type: In-house

Amount: N/A

Contractor: None

Anticipated

Completion: November 1975

Project Officer: Alan Shilepsky; Robert Randol

Major Outputs: A series of eight individual reports published for wide national distribution which together comprise a comprehensive guide to municipal officials in recovery plant implementation. The seven sections are: Planning and Overview; Technology; Markets; Procurement; Contracts; Financing; Accounting Framework; further Assistance.

Title: GUIDELINES FOR SOURCE SEPARATION OF MATERIALS
FOR RECYCLING

Type: Guideline

Amount: N/A

Contractor: None

Anticipated

Completion: January 1976

Project Officer: Penny Hansen

Major Outputs: A mandatory requirement for Federal Agencies to separate wastepaper for recycling.

Title: CLOSED CYCLE WASTE OIL RE-REFINING DEMONSTRATION

Type: Demonstration Project

Amount: \$150,000

Contractor: Not yet awarded

Anticipated Completion: Fourth Quarter FY 77

Project Officer: Larry McEwen

Major Outputs: Revision of minimum procurement specifications for lube oil to include re-refined lube oil quality at a Federal facility. This demonstration will submit a re-refined lube oil to test for military specification quality and then examine the performance of this lube oil under field test conditions. Planning for project started in FY 75, funding will be initiated in FY 76.

Title: PROCUREMENT OF PRODUCTS THAT CONTAIN RECYCLED MATERIALS GUIDELINES

Type: Guideline

Amount: N/A

Contractor: None

Anticipated Completion: September 1975

Project Officer: David B. Sussman

Major Outputs: Recommend procedures for specification drafters and procurement officials to follow to stimulate the marketability of recycled materials by creating a demand.

Title: RESOURCE RECOVERY FACILITIES GUIDELINES

Type: Guideline

Amount: N/A

Contractor: None

Anticipated Completion: February 1976

Project Officer: Harry P. Butler

Major Outputs: Mandatory requirement for all Federal agencies that generate more than 100 tons of solid waste per day to establish a resource recovery facility.

Waste Reduction

Title: SOLID WASTE MANAGEMENT GUIDELINES FOR
BEVERAGE CONTAINERS

Type: Guideline
Amount: N/A
Contractor: None
Anticipated
Completion: 1. Proposed Guidelines in
Federal Register - September 1975.
2. Completed Guidelines - Spring 1976

Project Officer: Harold Samtur
Major Outputs: Mandatory guidelines for Federal Agencies
published in Federal Register. These
guidelines are also recommended for State
and local jurisdiction.

Title: ENVIRONMENTAL IMPACT OF DISPOSABLES
VERSUS REUSABLES

Type: Contractor Study
Amount: \$100,000
Contractor: Midwest Research Institute Subcontract
with Franklin Associates pending
Anticipated
Completion: February 1976
Project Officer: Harold Samtur
Major Outputs: Report on study detailing the seven
categories of Environmental Impact and
Energy Consumption and Comparable,
Disposable, and Reusable Products.

Title: RESOURCE AND ENVIRONMENTAL ANALYSIS OF
ALTERNATIVE MILK CONTAINER SYSTEMS

Type: Contractor Study
Amount: \$40,000
Contractor: Midwest Research Institute/Franklin Associates
Anticipated
Completion: December 1975
Project Officer: Michael Loube
Major Outputs: Report documenting the comparative
environmental and resource consumption
impacts of nine milk containers.

Title: RETURNABLE BEVERAGE CONTAINER LEGISLATION: THE
VERMONT EXPERIENCE

Type: Report
Amount: N/A
Contractor: None
Anticipated
Completion: September 1975
Project Officer: Michael Loube
Major Outputs: Publication summarizing the first year's
experience with returnable beverage
container legislation in the State of
Vermont.

Title: WASTE REDUCTION FACT SHEETS

Type: Fact Sheet
Amount: N/A
Contractor: None
Anticipated
Completion: (1) December 1974
(2) May 1975
Project Officer: Michael Loube
Major Outputs: (1) Red Owl Food Stores Program Fact Sheet.
(2) Program on International Paper Company
and Wells Dairy Fact Sheet.

Title: ANALYSIS OF RETURNABLE BEVERAGE CONTAINER LEGISLATION

Type: Report
Amount: N/A
Contractor: None
Anticipated
Completion: September 1975
Project Officer: Michael Loube; John Skinner
Major Outputs: Report summarizing the costs and benefits
of national legislation to establish a
returnable system for beverage container
for soft drinks and malt beverages.

IV. PUBLISHED REPORTS

OFFICE OF SOLID WASTE MANAGEMENT PROGRAMS PUBLICATIONS

July 1, 1974--June 30, 1975

Safe and Acceptable Waste Management

- ACT Systems, Inc. Residential collection systems. v.1. Report summary. Environmental Protection Publication SW-97c.1. [Washington], U.S. Environmental Protection Agency, 1974. 106 p.
- ACT Systems, Inc. Residential collection systems. v.2. Detailed study and analysis. Environmental Protection Publication SW-97c.2. U.S. Environmental Protection Agency, 1974. 254 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-239 917.)
- Allison, G., S. Mooser, and P. Taylor. Má allá de la lata de basura. Spanish version of "Beyond the trashcan." Environmental Protection Publication SW-7tg. [Washington], U.S. Environmental Protection Agency, 1974. 23 p.
- Applied Management Sciences, Inc. Baltimore's municipal solid waste management system; a case study. Environmental Protection Publication SW-49c. U.S. Environmental Protection Agency, 1973. 110 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-228 161.) [Released in 1974.]
- Applied Management Sciences, Inc. Columbus' municipal solid waste management system; a case study. Environmental Protection Publication SW-82c. U.S. Environmental Protection Agency, 1974. 156 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-236 659.)
- Applied Management Sciences, Inc. Detroit's municipal solid waste management system; a case study. Environmental Protection Publication SW-81c. U.S. Environmental Protection Agency, 1973. 94 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-236 662.) [Released in 1974.]
- Applied Management Sciences, Inc. San Jose's municipal solid waste system: a case study. Environmental Protection Publication SW-78c. U.S. Environmental Protection Agency, 1973. 144 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-240 395.) [Released in 1974.]
- Arthur D. Little, Inc. Alternatives to the management of hazardous wastes at national disposal sites. v.2. Appendices. Environmental Protection Publication SW-46c.1. U.S. Environmental Protection Agency, 1973. 235 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-237 264.) [Released in 1974.]

- Bartle Wells Associates and Garretson, Elmendorf, Zinov, and Reibin [Humboldt County, California]. Rural storage and collection container systems. Environmental Protection Publication SW-81d. U.S. Environmental Protection Agency, 1975. [123 p.] (Distributed by National Technical Information Service, Springfield, Va., as PB-240 365.)
- Cimino, J. A. Health and safety in the solid waste industry. American Journal of Public Health, 65(1):38-46, Jan. 1975.
- City of Winston-Salem, North Carolina, and Enviro Engineers, Inc. An evaluation of landfill gas migration and a prototype gas migration barrier. Environmental Protection Publication SW-79d. U.S. Environmental Protection Agency, 1975. 154 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-239 357.)
- Colonna, R. A. EPA publishes decision-makers guide for sanitation officials. Solid Wastes Management, 17(7):30,34,37, July 1974.
- Colonna, R. A., and C. McLaren, comps. Decision-makers guide in solid waste management. Environmental Protection Publication SW-127. Washington, U.S. Government Printing Office, 1974. 157 p.
- Connolly, J. A., V. P. Fuschini, and S. S. Radinsky, comps. Users' guide to the solid waste information retrieval system thesaurus. Environmental Protection Publication SW-104.01. Washington, U.S. Government Printing Office, 1974. 56 p.
- Darnay, A. Environmental protection, residuals management, and resources--the future is now. Presented at Annual Meeting of National Packaging Association, Boca Raton, Fla., Mar. 12-16, 1974. [Washington], U.S. Environmental Protection Agency, 1974. 23 p.
- Darnay, A. Resource recovery and land protection; an environmental imperative. Presented at Spring Meeting, Paperboard Group, American Paper Institute, Greenbrier, W.Va., May 21, 1974. New York, American Paper Institute. 7 p.
- Darnay, A. Solid Waste management and national priorities. Presented at 3d National Congress on Waste Management Technology and Resource Recovery, San Francisco, Nov. 14, 1974. [Washington, U.S. Environmental Protection Agency, 1974.] 9 p.
- Darnay, A. Statement of Arsen J. Darnay, Jr., Acting Deputy Assistant Administrator for Solid Waste Management Programs, Environmental Protection Agency, before the Subcommittee on Minerals, Materials and Fuels, Committee on Interior and Insular Affairs, United States Senate, Washington, D.C., October 30, 1973. [Washington, U.S. Environmental Protection Agency, 1974.] 10 p.

- Darnay, A. Waste management--private and public perspectives. Presented at National Solid Waste Management Association's International Waste Equipment and Technology Exposition, Houston, June 25, 1974. [Washington], U.S. Environmental Protection Agency, 1974. 15 p.
- Da Vee, W., and M. G. Stragier [City of Tolleson, Arizona]. Mechanized, non-stop residential solid waste collection. Environmental Protection Publication SW-76d. U.S. Environmental Protection Agency, 1974. 48 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-239 196.)
- EMCON Associates. Sonoma County solid waste stabilization study, Environmental Protection Publication SW-65d.1. U.S. Environmental Protection Agency, 1975. 283 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-239 778.)
- Environmental Action Foundation. Portrait of the san-man. Environmental Protection Publication SW-6tg.1. Washington, U.S. Environmental Protection Agency, 1974. [16-min 16-mm motion picture, sound.]
- EPA press briefing on solid waste management and energy, February 8, 1974. [Washington, U.S. Environmental Protection Agency, 1974.] 6 p., attachments, app.
- Finan, M. Habia una vez un dragon malvado. Spanish version of "Once there lived a wicked dragon." Environmental Protection Publication SW-105s. [Washington], U.S. Environmental Protection Agency, 1975. 31 p.
- Garland, G. A., and D. C. Mosher. Leachate effects of improper land disposal. Waste Age, 6 (3):42,44-48, Mar. 1975.
- Geswein, A. J. Liners for land disposal sites; an assessment. Environmental Protection Publication SW-137. [Washington], U.S. Environmental Protection Agency, 1975. 66 p.
- Gunnerson, C. G. Debris accumulation in ancient and modern cities. Journal of the Environmental Engineering Division, Proceedings of the American Society of Civil Engineers, 99(EE3):229-243, June 1973.
- Hayes, A. J. Hazardous waste management facilities in the United States. Environmental Protection Publication SW-146. [Washington], U.S. Environmental Protection Agency, Dec. 1974. 39 p.
- Hickman, H. L., Jr. The Federal solid waste management programme; a review and prognosis. Presented at 76th Annual Conference of Institute of Solid Wastes Management, Scarborough, England, June 18-21, 1974. London, Institute of Solid Wastes Management, 1974. 14 p.

Hinesly, T. D. Agricultural benefits and environmental changes resulting from the use of digested sludge on field crops. Environmental Protection Publication SW-30d.1. U.S. Environmental Protection Agency, 1974. 375 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-236 402.)

Illinois report probes citizens' attitudes on refuse problems. Solid Wastes Management, 17(2):19,51-53,66,70,72, Feb. 1974; 17(3):26,74, 84-85, Mar. 1974. Reprinted, [Washington], U.S. Environmental Protection Agency, 1974. 6 p.

Improving productivity in solid waste collection; a brief for elected officials. Washington, National Commission on Productivity, 1974. 10 p.

Kiefer, I. Hospital wastes. Environmental Protection Publication SW-129. Washington, U.S. Government Printing Office, 1974. 36 p.

Lehman, J. P. Federal program for hazardous waste management. Waste Age, 5(6):6-7,66-68, Sept. 1974.

Levy, S. J. Pyrolysis of municipal solid waste. Waste Age, 5(7):17-20, Oct. 1974.

Midwest Research Institute. Size-reduction equipment for municipal solid waste. v.1. Procedures for evaluating and comparing equipment. v.2. Inventory of equipment. Environmental Protection Publication SW-53c. U.S. Environmental Protection Agency, 1973. 126 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-226 551.) [Released in 1974.]

National Association of Counties. Basic issues on solid waste management affecting county government. [Washington], U.S. Environmental Protection Agency, May 1973. 40 p.

National Association of Counties Research Foundation. Suggested solid waste management ordinance for local government. Environmental Protection Publication SW-73d. [Washington], U.S. Environmental Protection Agency, 1974. 23 p.

Office of Solid Waste Management Programs. Available information materials; solid waste management. Environmental Protection Publication SW-58.22. [Washington], U.S. Environmental Protection Agency, Dec. 1974. 30 p.

Office of Solid Waste Management Programs. Available information materials; solid waste management. Environmental Protection Publication SW-58.23. [Washington], U.S. Environmental Protection Agency, Mar. 1975. 45 p.

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.

Office of Solid Waste Management Programs. Mechanics of style; a guide for Solid Waste Management authors, secretaries, grantees, and contractors. Environmental Protection Publication SW-7.2. Washington, U.S. Environmental Protection Agency, 1974. 20 p.

Our effluent society; the States and solid waste management. Lexington, Ky., The Council of State Governments, 1974. Reprinted, [Washington], U.S. Environmental Protection Agency, 1974. 41 p.

Pesticides; EPA proposal on disposal and storage. Federal Register, 39(200):36847-36950, Oct. 15, 1974.

Porter, R. C., and Henningson, Durham and Richardson. The Des Moines story; a report on the implementation of the solid waste management plan for the Des Moines Metropolitan Area Solid Waste Agency. Environmental Protection Publication SW-70d. U.S. Environmental Protection Agency, 1974. 272 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-233 873.)

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Rogers, H. W., and S. J. Hitte. Solid waste shredding and shredder selection. Environmental Protection Publication SW-140. [Washington], U.S. Environmental Protection Agency, Nov. 1974. 87 p.

Ross Hofmann, Associates. A study of pneumatic solid waste collection systems as employed in hospitals. Environmental Protection Publication SW-75c. U.S. Environmental Protection Agency, 1974. 260 p., app. (Distributed by National Technical Information Service, Springfield, Va., as PB-236 543.)

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Steiner, R. L., and R. Kantz. Sanitary landfill; a bibliography. Environmental Protection Publication SW-4rg.1. [Washington], U.S. Environmental Protection Agency, 1974. 34 p.

Stone, R., comp. Disposal of sewage sludge into a sanitary landfill. Environmental Protection Publication SW-7ld. [Washington], U.S. Environmental Protection Agency, 1974. 418 p.

Stragier, M. G. Mechanized residential solid waste collection. Environmental Protection Publication SW-74d. U.S. Environmental Protection Agency, 1974. 176 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-239 195.)

Stuart Finley, Inc. The big pickup. Environmental Protection Publication SW-100c. Washington, U.S. Environmental Protection Agency, 1974. [28-min 16-mm motion picture, sound, color.]

U.S. Congress, Senate, Committee on Public Works. A legislative history of the Solid Waste Disposal Act, as amended, together with a section-by-section index. Washington, U.S. Government Printing Office, 1974. 503 p.

U.S. Environmental Protection Agency. Thermal processing and land disposal of solid waste; guidelines. Federal Register, 39(158): 29327-29338, Aug. 14, 1974.

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VTN, Inc. Effective use of high water table areas for sanitary landfill; final report. v.2. Environmental Protection Publication SW-57d.1. U.S. Environmental Protection Agency, 1973. 128 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-236 463.) [Released in 1974.]

Walker, W. H. Where have all the toxic chemicals gone? Ground Water, 11(2):11-20, Mar.-Apr. 1973. Reprinted, [Washington], U.S. Environmental Protection Agency, 1974. 10 p.

Weddle, B. R., and G. A. Garland. Dumps; a potential threat to our groundwater supplies. Nation's Cities, 12(10):21-22, 24-25, 42, Oct. 1974.

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Wolcott, R. M., and B. W. Vincent. The relationship of solid waste storage practices in the inner city to the incidence of rat infestation and fires. Environmental Protection Publication SW-150. [Washington], U.S. Environmental Protection Agency, May 1975. 14 p.

Conservation of Natural Resources

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- Bingham, T. H., et al. [Research Triangle Institute]. An evaluation of the effectiveness and costs of regulatory and fiscal policy instruments on product packaging. Environmental Protection Publication SW-74c. Washington, U.S. Environmental Protection Agency, 1974. 301 p.
- Claussen, E. L. Packaging source reduction; can industry and government cooperate? Environmental Protection Publication SW-136. [Washington], U.S. Environmental Protection Agency, 1974. 17 p.
- Colonna, R. A. EPA publishes decision-makers guide for sanitation officials. Solid Wastes Management, 17(7):30,34,37, July 1974.
- Colonna, R. A., and C. McLaren, comps. Decision-makers guide in solid waste management. Environmental Protection Publication SW-127. Washington, U.S. Government Printing Office, 1974. 157 p.
- 1975 Conference on Waste Reduction; presented by the U.S. Environmental Protection Agency. Washington, U.S. Environmental Protection Agency, 1975. 4 p. [Flyer.]
- 1975 Conference on Waste Reduction; program. Washington, U.S. Environmental Protection Agency, 1975. 4 p.
- Connolly, J. A., V. P. Fuschini, and S. S. Radinsky, comps. Users' guide to the solid waste information retrieval system thesaurus. Environmental Protection Publication SW-104.01. Washington, U.S. Government Printing Office, 1974. 56 p.
- Cukor, P., M. J. Keaton, and G. Wilcox [Teknekron, Inc., and the Institute of Public Administration]. A technical and economic study of waste oil recovery. pt.1. Federal research on waste oil from automobiles. Environmental Protection Publication SW-90c.1. U.S. Environmental Protection Agency, 1974. 107 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-237 618.)
- Cukor, P., M. J. Keaton, and G. Wilcox [Teknekron, Inc., and the Institute of Public Administration]. A technical and economic study of waste oil recovery. pt.2. An investigation of dispersed sources of used crankcase oils. Environmental Protection Publication SW-90c.2. U.S. Environmental Protection Agency, 1974. 63 p. (Distributed by National Technical Information Service, Springfield Va., as PB-237 619.)

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