
Solid Waste



EPA Activities

Under the Resource Conservation and Recovery Act Fiscal Year 1978

EPA ACTIVITIES UNDER THE RESOURCE CONSERVATION
AND RECOVERY ACT OF 1976

Annual Report to the President and the Congress
Fiscal Year 1978

This report (SW-755) was compiled by the Office of Solid Waste as required by Section 2005 of the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (Public Law 94-580) and was delivered March 21, 1979, to the President and the Congress

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U.S. ENVIRONMENTAL PROTECTION AGENCY 1979



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

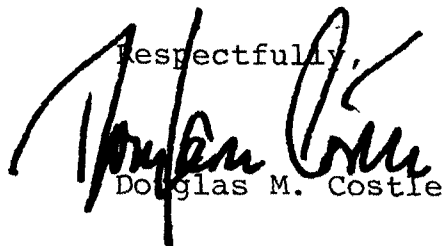
MAR 21 1979

THE ADMINISTRATOR

To the President and to the Congress of the United States:

I am submitting herewith the Environmental Protection Agency's second annual report on its activities under the Resource Conservation and Recovery Act of 1976 (RCRA), Public Law 94-580. As required in Section 2005, this report summarizes in detail the programs for Fiscal Year 1978 and outlines solid waste problems, program objectives, legislative considerations, and plans for Fiscal Year 1979.

Respectfully,


Douglas M. Costle

Enclosure

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I. OVERVIEW

The basic goals of the Resource Conservation and Recovery Act of 1976 are to (1) improve solid waste management in order to protect public health and the environment and (2) conserve valuable material and energy resources. More specifically, the chief objectives are:

- Regulation of the management of hazardous wastes from point of generation through disposal, by EPA or by State programs authorized by EPA.
- Regulation of the disposal on land of all other solid wastes* by the States in accordance with minimum Federal criteria.
- Establishment of resource recovery and conservation as the preferred solid waste management approach.

The Act requires or authorizes a number of activities directed toward achieving these objectives: Federal regulations and guidelines; financial and technical assistance to State and local governments; research, demonstrations, and studies; and public participation and education.

This second annual report is prepared as required by Section

*The Act defines "solid waste" as follows: "Any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Federal Water Pollution Control Act, as amended (86 Stat. 880), or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923)."

2005 of the Act. Following an overview of current solid waste problems and the EPA program, Chapters 2-6 give a more detailed account of the year's activities and plans for 1979 in the areas of hazardous waste management, State and local program development, land disposal provisions, resource recovery and conservation, and public participation and education. Brief summaries from the EPA Regional Offices are compiled in Chapter 7 to indicate the activities in the different parts of the country. Reports and publications issued during the year are listed in the Appendix.

SOLID WASTE PROBLEMS

Annually the United States generates about 344 million metric tons of industrial wastes (including 30 to 40 million tons of hazardous wastes), 130 million metric tons of municipal refuse, 5 million metric tons (dry weight) of sewage sludge, 430 million metric tons (dry weight) of agricultural wastes, and over 3 billion tons of mining waste. The amounts tend to grow with increasing population, consumption, and production, and the greater amounts of pollutants being held back from discharge into rivers, lakes, oceans, and the air. Serious environmental, public health, economic, and administrative problems and issues are associated with the management of these wastes.

Effects of Improper Disposal

General. Most solid wastes are disposed of on the land, a practice that is as yet largely unregulated. It is

roughly estimated that there are 100,000 industrial impoundments (pits, ponds, and lagoons), 20,000 municipal refuse landfills, and 23,000 municipal sludge disposal sites in the nation. Improper disposal practices have led to direct exposure of humans to toxic wastes, contamination of ground waters and surface waters, air pollution, damage to wetlands and other environmentally sensitive areas, explosions of landfill gas, contamination of croplands with heavy metals, and other effects. Potentially the most widely significant effect is contamination of ground water. Probably well over half of all disposal facilities leak contaminants into ground water. Yet ground water is the water supply for half the U.S. population, and its use is growing rapidly. Once seriously contaminated, an aquifer is no longer usable as a drinking water source.

Hazardous Waste Incidents. Numerous severe cases of damage from inadequate management of hazardous wastes came to national attention in fiscal year 1978. Perhaps the most serious of these was at Love Canal in Niagara Falls, New York. The area was declared eligible for Federal disaster relief in August 1978 because of the danger from toxic chemicals seeping into basements and backyards. The former canal site had long been used for burial of industrial chemical wastes prior to 1953. The State identified 82 chemical compounds at the site, including 1 known carcinogen (benzene) and 11 suspected carcinogens. The incidence rates for miscarriages and birth defects are elevated among families

living adjacent to the canal. The costs of relocating over 200 families, purchasing property, remedial construction, and additional testing and monitoring may exceed \$20 million. Federal assistance allocated thus far totals \$6 million: disaster relief amounting to \$2 million, and a \$4 million grant as part of the RCRA appropriation for fiscal year 1979.

Other hazardous waste incidents during the year included:

- An explosion that killed 6 workers and injured 12 at a hazardous waste treatment and disposal facility in New Jersey.
- Numerous cases of illegal dumping of hazardous wastes in marshes, streets, vacant lots, and sewers in New Jersey, Rhode Island, and Connecticut.
- Dumping of PCB wastes along 200 miles of North Carolina's roads.
- Severe contamination of wells near a chemical waste disposal site in Tennessee.
- Asphyxiation of a worker in Louisiana by hydrogen sulfide produced when incompatible chemical wastes were mixed.
- An explosion of hazardous wastes at an Army base in California, killing one worker and severely burning another.

Such events underscored the need for the hazardous waste regulatory controls required by RCRA and added greatly

to the sense of urgency in developing the Federal regulations. The Love Canal incident brought out more clearly than ever before the potential seriousness of effects from hazardous wastes, even those buried long ago, and led the Office of Management and Budget to establish a task force consisting of EPA, the Federal Disaster Assistance Administration, and the Council on Environmental Quality to assess the potential magnitude of Love-Canal-type incidents and to develop and assess various options for Federal policy with respect to such incidents. To assist the task force, information on hazardous waste disposal sites was requested from the EPA Regional Offices in October 1978. The Regional Offices roughly estimated that there were about 32,000 landfill, storage, and other sites containing hazardous waste which may cause adverse impacts on public health or the environment, and that over 800 of them may contain "significant" quantities of hazardous wastes which could cause "significant" imminent hazard to public health.

While the forthcoming RCRA regulations will apply to hazardous waste management facilities in operation, Federal authority to clean up those sites which are inactive or abandoned is quite limited. EPA can take enforcement action against the owner to require cleanup if the site causes imminent and substantial danger to human health or the environment. Owners often do not possess adequate assets to pay for the cleanup, however, and they may not be responsible

for the disposal operation. Many States have more authority than the Federal government to deal with these problems. The work of the OMB task force will help to indicate what the Federal role should be and what legislative measures should be proposed.

Siting of Waste Management Facilities

Partly as a result of poor past practices in waste management, proposed sites for waste processing or disposal facilities are commonly rejected following storms of local protest. From the national perspective, this appears to be the major problem confronting efforts to improve solid waste management. Such opposition is likely to develop against any proposed waste management facility but has been especially vehement against hazardous waste facilities. For example, strong public protests resulted in the termination in the past year of a project to establish a chemical waste landfill in Minnesota. This was to be a demonstration project of the Minnesota Pollution Control Agency aided by an EPA grant.

Costs of Solid Waste Management

Cost is obviously a major factor to contend with in improving solid waste management. Available cost estimates are rough but indicative of the magnitudes involved. Estimated costs of municipal solid waste management, including collection, transfer stations, incineration, and landfilling but excluding resource recovery, average \$43 a ton and total more than \$5.5 billion a year nationally, according to 1978 EPA estimates.

Municipal sludge management costs about \$635 million a year (1977). The manufacturing industries spent approximately \$962 million in 1976 for solid waste management, according to Bureau of the Census data. These costs are climbing with increased waste generation, inflation, and shortage of disposal space in many areas.

The environmental requirements under RCRA will add to waste management costs. Compliance with State programs based on RCRA land disposal provisions under Subtitle D may require expenditures by industries and governments of over \$1.6 billion a year, according to preliminary estimates. The economic impact of the hazardous waste regulations (Subtitle C) on 17 industries that are expected to be most affected was studied; the cost of compliance by these industries was estimated to total \$750 million, or 0.3 percent of gross sales. The cost of inaction or ineffectual action, in terms of health effects, ruining of ground water supplies, and other serious human, environmental, and economic damage is undoubtedly greater. The economic impacts are being closely considered in the weighing of RCRA regulatory alternatives.

Levels of Resource Recovery and Conservation

The levels of recycling and other forms of waste utilization have been low in this country compared with potential recovery and levels achieved by some other industrialized nations. EPA estimates that about 8 percent of the municipal solid waste stream was being recovered in 1977--about 7 percent

through source separation, that is, the setting aside of recyclable materials (mostly paper) at the point of generation, and 1 percent through mixed waste processing, which is generally based on energy recovery. Several West European countries (Germany, Sweden, Netherlands, Switzerland, and Denmark) process 20 to 60 percent of their municipal solid waste for energy recovery. A number of interrelated factors have held back more rapid expansion of resource recovery: The traditional forms of waste disposal, dumping or landfilling, have generally been cheap in this country, at least in terms of direct costs--environmental damage has been ignored and, compared with many European countries, land has been plentiful. Most communities lack the experience, expertise, and organization required to plan effectively for resource recovery. There are technological uncertainties. Markets for recovered materials have been limited and highly unstable. National policies have encouraged use of virgin resources. Until recently, fossil fuels have been plentiful and cheap, dampening interest in wastes as fuels.

As land disposal becomes more difficult and resources more costly, however, many U.S. communities are now turning to resource recovery systems, which can greatly reduce the amount of wastes requiring land disposal while contributing to resource supplies. EPA projects that by 1985, 10 to 15 percent of municipal solid waste may be processed for energy

recovery. Wastepaper collection and other recycling programs are also on the increase at present, particularly in the northeast and California.

To help cities overcome the problem of inadequate planning and consultation, a new grant program in EPA resulting from the President's Urban Policy Message of March 1978 will begin making funds available in fiscal year 1979 for feasibility studies and other critical preparatory steps in resource recovery.

Industries are increasingly interested in finding uses for waste materials. Twenty or more "waste exchanges" have been set up around the country to make known the availability and promote the use of industrial wastes. EPA provides technical assistance in establishing such systems.

Federal programs and policy changes that might result in stronger economic incentives for resource recovery and conservation are being examined by the interagency Resource Conservation Committee.

Other Problems Affecting Implementation of RCRA

Other problems more strictly related to the implementation of RCRA provisions are noted in the following chapters in relation to the activities affected. Such problems include the need for capacity expansion in the hazardous waste management industry and difficulties in complying with the requirement for procurement of recycled products.

SUMMARY OF ACTIVITIES

Hazardous Waste Management

Of highest priority among EPA activities under RCRA was development of the regulations on hazardous waste management required under Subtitle C. Several of the regulations reached the stage of formal proposal during the fiscal year: the standards for transporters (Section 3003), the regulations governing notification of hazardous waste management activities to EPA or authorized States (Section 3010), and the guidelines for authorized State programs (Section 3006). The State guidelines will be repropose, however, because they are being integrated with similar requirements under the Clean Water Act and the Safe Drinking Water Act. By the end of calendar year 1978 most of the regulations had been proposed (see table).

The requirement that the regulations be promulgated within 18 months of enactment of the law (that is, by April 1978) unfortunately could not be met due to the complexity of the task, which has involved numerous administrative, technical, and legal decisions, data development, extensive public participation, and integration with other environmental programs. Beginning September 7, 1978, environmental organizations and the State of Illinois brought suit against EPA for failure to promulgate hazardous waste and other regulations by the dates required in RCRA. In response EPA issued a

RCRA REGULATIONS AND GUIDELINES ISSUED OR IN PREPARATION
AS OF JANUARY 31, 1979

Section of the Act	Description	Statutory Deadline	Status*
1008	Solid waste management guidelines	October 1977 and time to time thereafter	Guidelines on landfill disposal are scheduled for proposal in March 1979, with final issuance in Jan. 1980.
3001	Identification and listing of hazardous waste	April 1978	Proposed Dec. 18, 1978. Final scheduled for Dec. 1979.
3002	Standards for generators of hazardous waste	April 1978	Proposed Dec. 18, 1978. Final scheduled for Dec. 1979.
3003	Standards for transporters of hazardous waste	April 1978	Proposed April 28, 1978. Final scheduled for Dec. 1979.
3004	Standards for hazardous waste treatment, storage, and disposal facilities	April 1978	Proposed Dec. 18, 1978. Final scheduled for Dec. 1979.
3005	Permits for treatment, storage, or disposal of hazardous waste	April 1978	Proposal scheduled for Mar. 1979. Final scheduled for Dec. 1979.
3006	Guidelines for development of State hazardous waste programs	April 1978	Proposed Feb. 1, 1978. Reproposal scheduled for Mar. 1979. Final scheduled for Oct. 1979.
3010	Notification system regulations	-	Proposed July 11, 1978. Final scheduled for Aug. 1979.
4002(a)	Guidelines for identification of regions and agencies for solid waste management	April 1978	Interim guidelines published May 16, 1977.
4002(b)	Guidelines for State plans	April 1978	Proposed Aug. 28, 1978. Final scheduled for June 1979.
4004	Criteria for classification of disposal facilities	October 1977	Proposed Feb. 6, 1978. Final scheduled for July 1979.
6002	Guidelines for procurement practices	-	Proposal of the first guidelines, on cement and concrete, scheduled for April 1979.
7002	Prior notice of citizen suits	-	Final regulations published October 21, 1977.
7004	Public participation guidelines	-	Interim guidelines published Jan. 12, 1978.
	Public participation guidelines for programs under RCRA, Clean Water Act, and Safe Drinking Water Act (will supersede previous guidelines)	-	Proposed August 7, 1978. Final scheduled for Feb. 1979.
+	Regulations to implement the Resource Conservation and Recovery Act of 1976; Grants and other financial assistance	-	Interim regulations published October 20, 1977. Amendments published Sept. 25, 1978.

*Schedules for issuance of guidelines and regulations in preparation are subject to change.
+Financial assistance provisions.

proposed schedule for development of the regulations and held a public meeting on September 15 to inform the public of the schedule and receive comments on it. On January 3, 1979, the U.S. District Court of the District of Columbia found that expediting the present schedule did not appear to be in the public interest but ordered the Agency to keep the Court informed regarding any departures from the schedule filed with the Court.

The number of States likely to apply for and receive at least interim authorization to conduct hazardous waste regulatory programs was estimated to be about 40 at the end of fiscal year. Federal funds (\$3.4 million in fiscal 1978) and EPA technical assistance were provided to States in support of hazardous waste program development.

EPA's Office of Enforcement is developing alternatives for enforcement policy and management in concert with the development of the regulations. The Office of Enforcement prepared and distributed guidance for the Regional Offices in dealing with Section 7003 "Imminent Hazard" action which can be initiated when an imminent and substantial endangerment to health or the environment exists.

Studies, research projects, and demonstrations of the Office of Research and Development and the Office of Solid Waste concentrated on mechanisms of damage caused by hazardous wastes, technology for control, and economic analyses.

In fiscal year 1979, development of the regulations will continue to be the main focus of efforts; promulgation of all seven regulations is scheduled to be completed by December 1979. Various preparations for implementation of the regulatory program will continue, including planning of the management system, writing of manuals, and presentation of seminars on requirements of the program. Grants to States for hazardous waste regulatory development will total \$15 million. A demonstration of remedial construction will begin at Love Canal.

Two main problem areas are foreseen in implementing the regulatory program. The first is citizen opposition to the siting of new hazardous waste management facilities, as discussed above under "Solid Waste Problems." Studies and a public education program are being planned in response to this problem. A second problem may develop from the magnitude of the task of administering the regulatory program--some 380,000 waste generators, transporters, disposers, etc., will be brought into the system, and staffing and funding may not be adequate to implement the program within the expected 2-year period.

Planning and Development of State and Local Programs

Subtitle D of RCRA includes provisions for promoting the development of State and local solid waste programs that will achieve environmentally sound disposal practices and expand resource recovery and conservation.

In 1978 an important task was the implementation of guidelines issued in 1977 on identification of regions and agencies for solid waste management. Such identifications were made in every State, although some were on an interim basis pending further development of the State plans.

Guidelines for State plans were proposed in August 1978. They establish the requirements for State plans and recommend methods for meeting those requirements. The following major areas are covered: the identification of State, local, and regional responsibilities and the distribution of Federal funds; the development of the State disposal program; the development of the State resource conservation and recovery program; facility planning and development; coordination with other environmental programs; and public participation in the development and implementation of State and substate plans.

The new program of Technical Assistance Panels required under Section 2003 began operating out of the Regional Offices in January 1978. The panels are made up of Federal, State, and local government employees and consultants. By the end of July, 186 requests for assistance from State and local governments had been filled. A unique part of the panels program is "peer matching," whereby a State or local official faced with a particular waste management problem can receive first-hand advice from one or more other officials who have been successful in dealing with that problem.

Apart from the panels program, thousands of routine requests for information and advice were handled by the Office of Solid Waste and the Regional Offices. Planning systems, manuals, technical reports, slide presentations, and seminars were made available.

Federal financial assistance to the States for programs under RCRA totaled \$14.2 million in 1978 (including the \$3.4 million used for hazardous waste regulatory activities), compared with \$3 million in 1977. Regulations governing grants under RCRA were published in October 1977 and amended in September 1978.

A study of manpower and training needs in State and local solid waste programs is required under Section 7007; a contract for such a study was let in 1978. Preparation of an orientation course on the RCRA programs for Federal, State, and local employees was begun.

Plans for 1979 include promulgation of the State plan guidelines, development of an annual report on State solid waste programs, expanded activity in the Technical Assistance Panels program, and completion of the manpower and training study. Federal financial assistance will include \$15.2 million in State grants for planning under Subtitle D. A major question for the years ahead is the adequacy of resources for State and local program development, particularly implementation of the land disposal provisions.

Land Disposal

Development of the criteria for acceptable land disposal of solid wastes, as required in Section 4004, was of highest priority among EPA activities in implementing the land disposal provisions under Subtitle D. Proposed criteria were published in February 1978 and covered a wide range of potential effects of land disposal on public health and the environment. Sixteen hearings and meetings were held to receive comments. Final promulgation is scheduled for July 1979.

The criteria will be the minimum standards against which States will evaluate disposal facilities. Those that do not meet the criteria will appear on an inventory of "open dumps" to be published by EPA. Open dumps are to be either closed or upgraded under State-established compliance schedules that do not exceed 5 years beyond the publication date of the inventory. Because of the large number of facilities that will have to be evaluated, the evaluations will be conducted over several years and the inventory will be published in annual installments. Each State's phasing of the process will be an important part of its solid waste management plan.

Guidelines for landfill disposal were drafted under authority of Section 1008 and distributed for public comment in August 1978. Formal proposal is scheduled for March 1979.

Work was begun on an overall regulation covering management of municipal wastewater treatment sludge under authority of Section 405 of the Clean Water Act. It will incorporate relevant regulations and criteria issued under RCRA and the Clean Air Act, as well as the Clean Water Act. A manual on the planning, design, and operation of municipal sludge landfills was completed.

A project on landfill siting is being conducted by the National Association of Regional Councils with EPA grant support. The project will locate six successful regional landfill sites, document how they were established, and hold seminars for other regional planners.

A wide range of projects were carried on to develop knowledge and technology related to land disposal. A data base on industrial disposal facilities and waste management practices is being developed. Intensive studies are being made of coal-fired utilities, iron and steel, inorganic chemicals, and nonferrous metals.

Studies required by RCRA on solid waste on Federal lands in Alaska, on mining wastes, and on sludges were nearing completion at the end of the fiscal year.

Research continued in the areas of: waste characterization and decomposition; pollutant transport mechanisms, pollutant control and treatment, codisposal of various hazardous wastes and/or municipal sludge with municipal refuse, remedial action at inoperative disposal sites, and landspreading and

other alternatives to landfilling. The recovery and use of methane from a landfill is being demonstrated.

In 1979 the land disposal criteria will be promulgated, and the inventory process will begin. Guidelines for landfill disposal will be proposed. Data development on industrial waste management will continue as a major effort. The studies on Alaska, sludge, and mining wastes will be completed, and the projects to develop the technology for land disposal will continue.

Resource Recovery and Conservation

A financial assistance program for resource recovery projects in urban areas was organized following the President's request to Congress for funding of such a program in his Urban Policy Message of March 1978. Aid totaling \$15 million will be awarded in fiscal year 1979. The money is to be used for planning, feasibility studies, technology assessments, preparation of requests for proposals, and other "front-end" steps for resource recovery projects.

Technical assistance for resource recovery and conservation took several forms: the Technical Assistance Panels, guidance for State program development, seminars around the country on resource recovery implementation, and assistance in setting up waste exchanges.

The implementation of three guidelines that include mandatory provisions for Federal agencies were monitored: The Guidelines for Source Separation have led to the participation

of 175,000 Federal employees in paper recycling programs. Under the Guidelines for Beverage Containers 14 of 52 reporting agencies are requiring, on an agencywide basis, the placing of refundable 5-cent deposits on all beer and soft drink containers sold in their facilities. Under the Resource Recovery Facilities Guidelines, Defense Department installations in nine metropolitan areas are planning to operate or utilize resource recovery plants.

Section 6002 of RCRA requires that procurement with Federal funds be of items composed of the highest percentage of recovered materials practicable. EPA is developing guidelines for recommended procurement practices. The first guidelines will be on use of fly ash and blast furnace slag in making cement and concrete.

The interagency Resource Conservation Committee issued a report in January 1978 on beverage container deposits and a status report in July 1978 on analyses of solid waste disposal charges.

Several types of activity were carried on to develop information and technology regarding resource recovery: technical, economic, and environmental assessments of commercial-scale resource recovery facilities; demonstrations of resource recovery systems; research projects in the "wastes-as-fuels" program; studies of resource recovery required under Section 8002; case studies of three municipally

sponsored source separation programs; and a national survey of programs for separate collection of wastepaper and other recyclables.

EPA signed an interagency agreement with the Department of Commerce to ensure coordination of activities under RCRA. Subtitle E assigns certain duties to the Department, mainly in developing specifications for recovered materials and encouraging commercialization of new uses for recovered materials. For coordination with the Department of Energy in the area of energy recovery, EPA and DOE have set up working groups for transfer of information, joint planning, and review of proposals.

Current problems in implementing the RCRA provisions related to resource recovery and conservation include the following:

- The deadline of October 1978 by which agencies are to comply with the provisions for procuring recycled products could not be met due to lack of detailed information on technical performance and economic feasibility and also lack of supplies of recycled products.

- The Federal office paper recycling program is having difficulties resulting from unsteady markets and purchase of poorer quality paper by the government. The fact that all revenues go to the Treasury rather

than building management may be affecting incentives for the program.

Plans for 1979 are mainly concerned with further development or follow through of the previous year's activities. Financial assistance will be provided to urban resource recovery projects, and these will be monitored and guided. Procurement guidelines for cement and concrete will be proposed. The Resource Conservation Committee will issue its final report. The resource recovery seminars will continue to be presented around the country. The efforts to develop, evaluate, and report on resource recovery technologies and methods will continue.

Public Participation and Education

As required by Section 7004, EPA and the States provided many opportunities for public participation in implementing the Act. Forty-one public meetings and hearings were held by EPA during the year on proposed regulations and other issues related to RCRA. Even before the stage of formal proposal, drafts of regulations were distributed for early review by interested persons. Almost all States held widely publicized public meetings on the identification of regions and agencies for solid waste management, and some States held meetings to receive public comment on their draft 1979 work programs.

Interim Guidelines for Public Participation in Solid Waste Management were issued in January 1978. These will be superseded in 1979 by overall regulations for public participation in programs under RCRA, the Clean Water Act, and the Safe Drinking Water Act.

The citizen education grant program supported numerous conferences and workshops on solid waste management issues, with emphasis on hazardous waste management. Seven grants totaling \$218,000 were awarded.

Numerous reports and other publications were produced and distributed (see Appendix). Slide presentations, exhibits, and news releases were also produced.

The Solid Waste Information Retrieval System (SWIRS) conducted over 1,100 literature searches. Approximately 6,000 new abstracts were added to the system. The SWIRS library contains all abstracted documents plus 6,000 books and other materials.

In 1979, approximately 26 public meetings and hearings are scheduled on proposed regulations and guidelines. The new guidelines covering public participation in programs under RCRA and the water laws will be promulgated. A 4-year public education program with the main focus on hazardous waste management issues will be started; conferences in four EPA Regions are scheduled for the first year. Due to lack of funds the literature search component of SWIRS will be

terminated, at least under EPA auspices, but the library will be maintained.

BUDGET

In EPA the Office of Solid Waste (OSW) has lead responsibility for the development under RCRA of all regulations and guidelines and establishment of basic policies for technical and financial assistance, public participation, and a number of other programs. The Office of Research and Development (ORD) is responsible for research and development projects, including the studies required under Subtitle H. The Office of Enforcement is responsible for the enforcement aspects of the hazardous waste regulatory program. The EPA Regional Offices have main responsibility for working with the States on RCRA implementation and providing technical assistance. Many other parts of EPA have supportive and cooperative roles in RCRA implementation.

Significant increases in budget and staffing to carry out the new mandates under RCRA did not begin until fiscal year 1978. The 1978 budget for EPA's solid waste activities was \$35.7 million, or twice the 1977 figure (see table). In 1979, the budget will double again. Most of the increase for both years is in the form of increased aid to State and local governments.

LEGISLATION

A number of minor amendments to the Solid Waste Disposal Act as amended by RCRA were enacted on November 8, 1978, as

EPA SOLID WASTE BUDGET ESTIMATES FOR FISCAL YEARS 1977-79

	1977		1978		1979	
	\$ (millions)	Positions	\$ (millions)	Positions	\$ (millions)	Positions
Office of Solid Waste	\$ 8.2	107	\$11.6	137	\$16.6*	139
Office of R&D	4.2	23	7.4	21	8.1	20
Office of Enforcement	0.1	2	0.6	5	0.8	26
Office of Federal Activities	0	0	0	0	0.1**	0
Regional Offices	1.8	60	1.9	66	3.0	109
State/local grants:						
State plans	2.9	--	14.2 ⁺	--	15.2	--
Haz. waste control	--	--	--	--	15.0	--
Urban resource recovery	--	--	--	--	15.0	--
Total	\$17.3	192	\$35.7	229	\$73.8	294

* Includes \$4 million for demonstration of remedial measures at Love Canal disposal site.

**For academic training grants.

+ Includes \$3.4 million used for State hazardous waste regulatory development.

part of Public Law 95-609, the Quiet Communities Act of 1978. (Copies of the law as amended are available from the Office of Solid Waste.) Proposals for substantive amendments are being discussed in the Agency for possible submission to Congress in the Spring of 1979. Some areas under consideration are:

- Creation of a national fund to cover certain types of liabilities and other costs incurred by hazardous waste management facilities beyond the coverage afforded by the financial responsibility provisions of regulations under Section 3004.
- Funding and other mechanisms to deal with the problem of inactive or abandoned hazardous waste management sites that pose a threat to health or the environment.
- Extension of the period for the open dump inventory beyond the 1 year allowed, and provision for authority to inspect disposal sites.
- Strengthened Federal authority for enforcing compliance with the hazardous waste management regulations.
- Gearing the Federal procurement requirement ("items must be composed of the highest percentage of recovered materials practicable") to the issuance of guidelines specifying what the requirement means in terms of particular products.
- Extension of funding authorizations beyond 1979.

CONCLUSIONS

Substantial progress has been made in developing the regulations, assisting State and local governments, incorporating public participation, and other areas of RCRA implementation. Over the next year, basic regulatory development will be largely completed, and the main focus will shift to putting rules and plans into effect. It has become very clear from what we have learned about the necessary scope and complexity of the programs, the siting problem, program costs, and other factors that these undertakings will not be simple or short-termed. Continuing efforts and cooperation by governments, industry, and the public will be required over many years to bring hazardous waste management and land disposal under adequate control and to establish resource recovery and conservation as preferred approaches to waste management.

II. HAZARDOUS WASTE MANAGEMENT

Subtitle C of the Act requires creation of a management control system for hazardous wastes to prevent serious risk of injury to health or the environment from the mismanagement of such wastes. The key provisions are directed to identification of hazardous wastes, institution of a manifest system to track wastes through their life cycle (i.e., point of generation to point of final disposal), and establishment of a permit system, based on standards, for hazardous waste treatment, storage, and disposal facilities. Under this program, the generator will be responsible for determining whether a waste is hazardous according to the identification criteria. If it is, the generator must either obtain a permit to manage the waste onsite or transport the waste to a permitted treatment, storage, or disposal facility. In the latter case, a manifest containing basic information about the waste must accompany each shipment to the point of final disposal. In either case all treatment, storage, and disposal operations must meet the minimum standards developed.

The standards and regulations that are currently being developed by EPA will form the basis of a Federal system of hazardous waste regulation. It is clearly the intent of Congress, however, that the States be given every opportunity to implement their own hazardous waste programs that are equivalent to and consistent with the Federal program.

Section 3006 of the Act directs EPA to develop guidelines for State hazardous waste programs and procedures by which States may seek authorization to conduct their programs in lieu of an EPA-administered program. EPA must grant authorization to all States that apply unless EPA finds that the proposed State program is not equivalent to or consistent with the Federal program. If a State chooses not to assume the hazardous waste program, EPA is required to conduct the program in that State. To aid the States in establishing a hazardous waste program, Federal grants are authorized for fiscal years 1978 and 1979.

The Act requires that the criteria, standards, and guidelines for the hazardous waste program be promulgated within 18 months of enactment, that is, by April 1978. Promulgation has been delayed, however, until December 1979 due to lack of data in several areas, an extensive public participation program, the complex nature of most of the regulations, and the need to integrate the program with programs under other environmental legislation.

An extensive data base which can be used to analyze the regulatory alternatives and to support the chosen approach is being developed under authority of Subtitle H of RCRA by the Office of Research and Development and the Office of Solid Waste.

For the hazardous waste management control system to be fully implemented, sufficient permitted treatment, storage,

and disposal facilities must be available to the regulated community. It is estimated that the current total capacity is far short of projected needs. The need to facilitate capacity creation is being considered in developing standards and is the focus of other activities.

Reducing the generation of hazardous wastes, and finding economic uses for such wastes that are generated, are clearly options to be selected wherever feasible. The system of regulatory control now in preparation should serve to encourage conservation practices. Waste management costs will generally rise as safer methods are required, and this should be an incentive to reduce waste generation. Similarly, higher disposal costs should make resource recovery processes comparatively more economical, although regulations will apply to resource recovery processes as well as other "treatment" of hazardous wastes. Many of the research, development, and demonstration projects and studies being carried out by EPA relate directly to the evaluation of hazardous waste resource recovery processes and opportunities.

OBJECTIVES

During fiscal year 1978, the EPA objectives with regard to hazardous waste management were unchanged from the previous year and were as follows:

- * Developing the required standards, regulations, and systems for the regulatory control program.

- * Encouraging State implementation of the program and developing guidelines for State hazardous waste programs.
- * Providing technical assistance to States, local governments, industries, and others involved in hazardous waste management.
- * Developing the technical and economic data base for the regulatory program and for technical assistance.
- * Facilitating expansion of the service industry for hazardous waste treatment, storage, and disposal.
- * Promoting resource conservation and recovery.

PROGRAMS

Hazardous Waste Management Regulations

Six sets of regulations are being developed to establish criteria and standards for hazardous waste management:

Criteria, identification methods, and listing of hazardous waste (Section 3001)

Standards for generators of hazardous waste (Section 3002)

Standards for transporters of hazardous waste (Section 3003)

Standards for owners and operators of hazardous waste treatment, storage, and disposal facilities (Section 3004)

Permits for treatment, storage, or disposal of
hazardous waste (Section 3005)

Preliminary notification of hazardous waste
activities (Section 3010)

The regulations are the basis for the Federal regulatory program and also represent minimum requirements for authorized State programs.

In the first quarter of fiscal year 1978, draft versions were circulated to interested persons. Three 2-day public meetings were held in October to discuss the proposed content and expected impact of the regulations and to solicit further input.

The EPA working groups (which include State representatives) evaluated all comments, and subsequent drafts were developed in late 1977 and again in 1978. By mid-1978, over 800 people were on mailing lists to receive such drafts.

Two of the regulations, on standards applicable to transporters and on notification of hazardous waste activities, progressed to the stage of formal proposal in the Federal Register during the fiscal year. Initial public hearings were held. Additional hearings on the transporter standards will be held in conjunction with those on standards for generators due to the close tie between the two sets of standards.

Formal proposal of all the regulations is scheduled to be completed by March 1979. Comments at public hearings or

in writing will be taken for 90 days following the proposal date. Promulgation of the final rules is due to be completed by December 1979. (See schedule on page 1-11.)

Identifying and Listing Hazardous Wastes. According to Section 3001, development of the criteria for identifying the characteristics of hazardous wastes must consider such factors as "...toxicity, persistence, and degradability in nature, potential for accumulation in tissue, and other related factors such as flammability, corrosiveness, and other hazardous characteristics." As the term is defined for use in the Act, hazardous waste is a subset of solid waste "which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause or significantly contribute to an increase in mortality or an increase in seriously irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly... managed."

Hazardous waste characteristics fall into two general classes: those whose effects are acute, that is, may cause near-term danger, and those whose effects are chronic, or likely to occur over a rather long period.

In the draft regulations* under Section 3001, three characteristics are cited as producing acute effects:

* These regulations were proposed December 18, 1978.

ignitability, corrosiveness, and reactivity. Standard test methods will be proposed for determining these characteristics.

Chronic toxic effects have been found to occur chiefly as a result of leaching of hazardous waste constituents to ground and surface waters. A test has been developed to determine the extractability of pollutants from wastes. The draft regulations propose that the extracts be compared with the EPA limits for contaminants in drinking water, with allowance for dilution.

We are also considering, for later proposal, a radioactivity standard and evaluation of the extract specifically for mutagenic activity, tendency for bioaccumulation, and mammalian, aquatic, and plant toxicity. Evaluation of the extract through bioassay is under development. There are potential problems in the bioassay approach since little, if any, toxicity work has been performed on wastes (very little has been done on mixtures of any kind); however, the bioassay allows a more direct evaluation of the waste than analytical procedures.

The proposed regulations will include lists of hazardous wastes and of processes that generate hazardous wastes. Beside each item the hazardous characteristic (toxic, ignitable, etc.) or an indication of the EPA Administrator's finding that the waste is hazardous will be noted, and the waste will be considered hazardous unless the generator can demonstrate otherwise.

The status of key projects that were initiated through grants and contracts to provide background data and test procedures suitable for Section 3001 regulations was as follows at the end of the fiscal year:

Extraction procedure development--a procedure was developed to measure the tendency of hazardous constituents of waste to migrate when the waste is exposed to leaching action in a landfill or open dump.

Candidate extraction procedures--evaluation and selection of representative techniques from existing procedures were completed.

Extraction procedure evaluation--still in progress was the comparative evaluation of the candidate procedures, the newly developed technique, and actual landfill leachate, which will lead to the selection of a standard procedure.

Toxicity--compilation of background data was being completed, and the suitability of empirical tests on substances produced by procedures described above was being evaluated.

Standard procedure validation--still to be done were determination of the performance of the selected procedure by commercial facilities and optimization of the reproducibility of test results.

Sampling and analysis techniques--development and compilation of standards or protocols for taking

a "standard" sample of a waste and analyzing it were completed.

Standards for Generators of Hazardous Wastes. According to Section 3002, standards applicable to generators of hazardous waste shall establish requirements for: (1) instituting a manifest system to assure that all transported hazardous waste is designated to go to a permitted facility; (2) furnishing information on general chemical composition; (3) recordkeeping; (4) submitting reports to the Administrator on the quantities of hazardous waste generated during a particular time period and its disposition; (5) using appropriate containers; and (6) labeling of containers used for storage, transport, or disposal of hazardous waste.

The manifest system is designed to track hazardous wastes from the point of generation to the point of ultimate disposal. According to the draft regulations,* the manifest or delivery document will have a standard format which can be incorporated into existing documents required by the Interstate Commerce Commission (bill of lading) and the Department of Transportation (shipping paper). Information on the manifest will include the following: name, address, and identification code of the generator, transporter, and designated treatment, storage, and disposal facility (TSDF); proper shipping name of the waste; the hazard class associated with the waste (toxic, reactive, etc.); and emergency response

*These regulations were proposed December 18, 1978.

information. The manifest must accompany the waste during transport and will be signed in turn by the generator, the transporter, and the TSDF representative to acknowledge acceptance of the waste.

Information on the general chemical composition of the waste will be transmitted to the TSDF by the "shipping description" on the manifest report. A copy of the signed manifest will be returned to the generator by the TSDF. Recordkeeping regulations will require the generator to retain a copy of the manifest for 3 years.

Instances of failure to receive a properly signed manifest will be reported quarterly by generators to the EPA Administrator. Otherwise, all generators must report on an annual basis. The reports will be derived from the information on the manifests and will include the following: name, address, and identification code of the generator; proper shipping name of the waste; the hazard class; quantity of waste shipped; and identification codes of the TSDFs used for disposal. The reporting form will be a standard document that will be used nationally by EPA.

Containers of hazardous waste must conform to DOT regulations on containers under 49 CFR (Code of Federal Regulations) 173, 178, and 179. Containers must also be labeled and marked in accordance with DOT regulations in 49 CFR 172. In addition, an EPA marking must also appear, indicating the generator's identification code and the

manifest document number.

The Agency proposes to define a hazardous waste generator as one who generates and disposes of more than 100 kilograms of hazardous waste per month. This decision is based upon a number of factors. Agency studies indicate that environmental quality would not be compromised by excluding small quantities of hazardous waste from Subtitle C regulations, since disposal of such wastes are required to be in accordance with regulations to be established under Subtitle D, Section 4004; also transportation would have to meet DOT requirements. Analyses have shown that hazardous wastes in limited quantities can be safely disposed of in facilities that are environmentally acceptable for disposal of municipal waste or industrial waste in general. Only 0.1 to 0.5 percent of hazardous waste produced by manufacturers (SIC 20-39) would escape Subtitle C regulation, but approximately 50 percent of the manufacturers would be given relief.

A secondary advantage would be that the regulatory agencies would be relieved of a large administrative burden associated with notification, reporting, enforcement, etc. The exclusion would furthermore alleviate the burden (congestion, etc.) on the limited number of hazardous waste management facilities.

In addition, these regulations will not apply to farmers and commercial/retail establishments provided certain waste management procedures are used.

Standards for Transporters of Hazardous Wastes.

Through coordination and cooperation between EPA and the Department of Transportation, EPA regulations for transporters of hazardous wastes were developed and proposed on April 28, 1978, (Federal Register, 43:18506). The proposal addresses the following standards: an identification code which each transporter must obtain from EPA or an authorized State and which is to appear on manifests and other documents; record-keeping; acceptance and transport of hazardous waste; compliance with the manifest system; delivery of the hazardous wastes to a designated permitted facility; actions in the event of spills; and placarding/markings of vehicles. The proposal also would extend current DOT regulations to intrastate as well as interstate shipments of hazardous wastes.

DOT, after review of the proposed 3003 standards and drafts of other Subtitle C standards, published on May 25, 1978 (Federal Register, 43:22626), proposed amendments to their regulations for the Transportation of Hazardous Waste Materials. DOT's proposal either incorporates or references most of the standards proposed under Section 3003. A joint EPA/DOT public hearing on both proposed regulations was held on June 20, 1978.

EPA intends to promulgate the transportation regulations by referencing the DOT regulations for hazardous waste materials and adding any others which DOT cannot incorporate.

Regulations for Treatment, Storage, and Disposal.

Section 3004 mandates the development of performance standards for owners and operators of hazardous waste treatment, storage, and disposal facilities for the purpose of protecting human health and the environment. Such standards are to include requirements for: (1) recordkeeping, (2) reporting, (3) monitoring, (4) design, (5) construction, (6) training and (7) ownership.

During fiscal year 1978, three drafts of the regulations were issued outside the Agency for review. Approximately 100 comments were received and considered in the development of the standards. Development of the background documents to support these regulations also continued; 22 such documents have now been drafted.

The draft regulations* prescribe three types of standards: human health and environmental standards for protection of the major environmental media, more specific requirements for all facilities, and detailed operating and design procedures for particular types of facilities. The draft regulations include the following standards:

- All facilities are to be located, designed, constructed, and operated in such a manner as to prevent endangerment of an Underground Drinking Water Source or a sole or principal source aquifer; prevent discharge into surface waters in violation of Sections 303 or 311 of the Clean Water Act; and prevent air emissions from causing a violation under the Clean Air Act.
- Ground water monitoring is required at most sites.

*These regulations were proposed December 18, 1978.

- Storage must be managed to result in no discharge of contaminants to ground water, surface water, or air.
- Other general standards relate to site location, training, recordkeeping, reporting, contingency plans, monitoring, and closure and post-closure requirements.
- Standards are included for design, construction, and operation of specific treatment, storage, and disposal techniques--landfills, incinerators, landfarms, surface impoundments, chemical/physical/biological treatment facilities, and storage facilities.

Limited nontechnical standards will be proposed for facilities managing certain large-volume wastes with what appear to be relatively low hazard levels: cement kiln dust, utility wastes, mining wastes, phosphate processing wastes, gas and oil drilling muds, and oil production brines. These wastes are generally not amenable to the control methods upon which the draft standards as a whole are based. EPA plans to obtain more information on these wastes to determine what specific control technology standards would be appropriate.

Standards drafted under Section 3004 dealing with financial requirements for hazardous waste management facilities include standards for continuity of operation and financial responsibility.

The continuity-of-operation standards require that each owner or operator of a treatment, storage, or disposal facility establish two separate trust funds that will assure EPA that closure and post-closure requirements will be met. The closure fund is to be established before the site is

approved, while the post-closure fund can be established during the operation of the facility. All facilities must comply with the continuity-of-operation requirement for closure, but only disposal facilities must establish the post-closure monitoring and maintenance fund, which must cover a period of 20 years after closure.

Financial responsibility standards, as now proposed, require a \$5 million minimum level of responsibility for claims arising out of injury to persons or property resulting from the release of hazardous wastes to the environment. An owner or operator may establish financial responsibility in the minimum amount by obtaining liability insurance, self-insuring, or demonstrating his ability to meet the level of responsibility by some other mechanism to the satisfaction of the Regional Administrator. The regulation requires that financial responsibility be maintained for a period of 20 years after closure.

One of the contract projects that will be initiated to support the hazardous waste regulations will produce operating and design manuals for various treatment, storage, and disposal techniques. Other manuals are being prepared on air and ground water monitoring and training procedures.

Permit System Development. As mandated by Section 3005, regulations are being developed requiring persons owning or operating facilities which treat, store, or dispose of hazardous waste to obtain permits. The rules will define

the administrative and procedural requirements for a permit system that is based on the standards being developed under Section 3004. The permit system will provide the mechanism needed to ensure uniform control by EPA over hazardous waste management facilities, including maintenance of data for compliance monitoring and enforcement.

In November 1977, copies of a draft of the Section 3005 regulations were distributed to an "outside review" community of about 40 organizations representing industry, State and local government, and public interest and environmental groups, and to over 400 parties who had requested copies. Approximately 35 parties submitted written comments. Major issues included extent of coverage of the regulations, public participation during the decision-making process, and streamlining of permit granting procedures. These are being addressed in a later draft which will integrate the permit requirements with requirements under the Clean Water Act and the Safe drinking Water Act.

Notification. Section 3010 requires that all persons generating or transporting hazardous waste or operating facilities for the treatment, storage, or disposal of hazardous waste notify the EPA Administrator (or State authorities in States having authorized hazardous waste management programs under Section 3006) within 90 days of promulgation of the regulations for identification of hazardous waste. Proposed regulations governing notification were

published July 11, 1978 (Federal Register, 43:29908); final rules are expected by August 1979.

The notification report must include the name and location of the person conducting hazardous waste activities, the type(s) of activities, and a description of the waste handled. Questions have arisen concerning which of the required items should be eligible for a claim of confidentiality and whether justification for claiming confidentiality should be provided with the initial notification response or at a later date when, and if, a request is made for that information. Options were presented for public comment in the preamble to the proposed regulation.

Provision is made for persons to declare their waste "undetermined" for the toxic category only. For notification purposes, this response places the waste in the hazardous waste system until an accurate determination of toxicity can be made. A list of testing laboratories has been completed for distribution to the EPA Regional Offices.

Three public hearings on the proposed regulation were held in August 1978. Additional comments and suggestions were received from both the private sector and government agencies.

The following is being done to prepare for the notification process: A list of potentially affected persons was completed in early fall, 1978; it includes lists provided by organizations and associations from various industrial sectors. A data

management system for handling notification responses is still under development. An optional notification form is being designed so that, if used, it will simplify data entry. A plan for notification by Federal facilities has been coordinated through the Office of Federal Activities in EPA.

Environmental and Economic Impact Assessments. Economic analyses of the proposed regulations are being conducted as required by Presidential Executive Orders. Recently completed and current contract studies include: (1) 21 industry-specific economic impact analyses of Subtitle C regulations, (2) economic impact analysis of Section 3003 on transporters, (3) economic impact analysis of Section 3004 on hazardous waste management facilities, (4) technical and administrative costs of compliance, and a (5) comprehensive Economic Impact Analysis.

Preliminary estimates indicate substantial compliance costs. Technical, administrative, transportation, and financial responsibility costs have been estimated at \$750 million for 17 manufacturing industries that are expected to be most affected. Industry segments for which compliance costs are likely to be significant include petroleum re-refining, inorganic chemicals, organic chemicals, leather tanning and finishing, textiles, and electroplating.

The EPA is developing a voluntary Environmental Impact Statement on the implementation of Subtitle C. It will

provide the necessary data and information for comparing and evaluating the beneficial and adverse impacts from alternative regulatory strategies.

State Hazardous Waste Programs

Section 3006 of the Act calls for the promulgation of guidelines for State hazardous waste management programs, including the substantive and procedural requirements for EPA authorization of such programs. These guidelines were proposed on February 1, 1978 (Federal Register 43:4366), and were the product of extensive public participation by State agency officials and others. The proposed guidelines elicited 91 written comments and numerous verbal comments at three public hearings and informal discussions held at different locations across the country in March 1978. Among the commenters were 28 States, seven substate entities, and the National Governors Association. Subsequently, however, it was decided that requirements in the guidelines should be integrated with similar requirements under the Clean Water Act and the Safe Drinking Water Act. Because major revisions will be necessary, the guidelines will be repropose; the scheduled date for reproposal is March 1979.

Areas of concern that have been identified and discussed during development of the guidelines include:

- o Under Section 3009 of the Act, States may not impose any requirements less stringent than those promulgated by EPA under Sections 3001 through 3005 of the Act. It has

been pointed out that a few States may have differing definitions of what is a hazardous waste and thus control different universes of hazardous wastes. This situation has the potential for disruption of interstate shipment of such wastes to environmentally adequate management facilities. It may be necessary for States to adopt the Federal definition promulgated under Section 3001 of the Act.

o Under the proposed guidelines, States must allow free movement of hazardous wastes across State boundaries in order to qualify for full authorization. This requirement may be suspended by the Regional Administrator until July 1984 if a State is working toward compliance. Since publication of the proposed guidelines, statutory importation bans on the interstate shipment of wastes was the subject of a United States Supreme Court decision (City of Philadelphia et al. v. New Jersey et al., June 23, 1978) which held that a State cannot bar outsiders from disposing of their wastes within its borders, since this is viewed as unconstitutionally interfering with the free flow of interstate commerce. The Court held that a State may not discriminate against waste coming from outside the State unless there is some reason apart from its origin to treat it differently. In view of this finding, the provision for temporary suspension of the requirement for free movement of hazardous wastes will be omitted in the final guidelines.

Congress clearly intends that participation by the States in the hazardous waste regulatory program should be maximized. There are a number of reasons supporting a strong State role: (1) the State is more familiar with its people, problems, and solutions; (2) the State will be better able to tailor the program to suit the needs of its citizens; (3) since some States have existing hazardous waste programs, it makes more sense to build on them rather than for EPA to preempt or needlessly duplicate them; (4) there will be more intensive public participation and citizen education and acceptance when there is State involvement; (5) without

strong State involvement, siting of hazardous waste management facilities is likely to be more difficult; (6) traditionally the States have been responsible for the handling of solid waste under their police power for public health and sanitation.

Federal financial assistance amounting to \$3.4 million was provided to the States in 1978 for hazardous waste regulatory planning as part of grants under Subtitle D for overall solid waste management planning. Also, grant support was given to forums on hazardous waste management for State environmental decisionmakers in Pennsylvania, Ohio, and Colorado. Forums are also being planned for other States.

In fiscal year 1979 financial assistance to the States totaling \$15 million will be provided under Section 3011. Regulations providing an allotment mechanism for these funds were promulgated as interim rules on September 25, 1978 (Federal Register 43:43424). Because programs are resource-intensive at the outset, the grant regulations provide for Federal payments of up to 100 percent of the costs of developing a fully authorized hazardous waste program. Operation of established programs, however, will be funded up to the 75 percent level. Ultimately (1981) this may cost \$20 to \$25 million annually if two-thirds of the States are granted authorization as expected.

A number of States have recently enacted hazardous waste management legislation in anticipation of establishment

of a national program. These include: Alabama, the District of Columbia, Kentucky, New York, North Carolina, Rhode Island, and Wisconsin. Several other States have revised, promulgated, or will soon promulgate regulations to implement the hazardous waste program, including: Kansas, Maryland, Minnesota, Missouri, New Mexico, Puerto Rico, South Carolina, Tennessee, and Texas. The number of States likely to apply for and receive authorization has now grown to about 40; only one State has given notice of rejecting the program, and the status of the remainder is uncertain. A more definitive evaluation of State acceptance of the program can be made when all the Subtitle C regulations have been promulgated.

Enforcement Activities

Section 3008 authorizes the Administrator to initiate appropriate enforcement action against any violator of any requirement of Subtitle C. This is the first time Federal enforcement authority has been granted for the management of hazardous waste. EPA's Office of Enforcement (OE) is engaged in activities to (1) assure that the standards, guidelines, and regulations promulgated under RCRA are consistent with the Agency's overall enforcement strategy and (2) develop a strategy and a policy for implementation of the Federal hazardous waste regulatory program.

In fiscal year 1978, the Office of Enforcement prepared and distributed guidance for the EPA Regional Offices in dealing with Section 7003 "Imminent Hazard" action. Federal

enforcement actions can be initiated under this provision when an imminent and substantial endangerment to health or the environment exists. Several States have taken action in such cases under applicable State laws in lieu of Federal actions.

The Office of Enforcement is developing alternatives for an enforcement management system and for enforcement policy. These alternatives will be developed in concert with the development of Subtitle C regulations. OE co-authored a Subtitle C Regional Implementation Plan with the Office of Solid Waste which sets forth current policy regarding State program development, notification, manifest tracking, facility permitting, surveillance, and enforcement. A series of workshops were held with regional personnel in enforcement, solid waste, and surveillance and analysis concerning regulation development, enforcement strategy, and enforcement activities prior to promulgation of the regulations. The development of a manual covering most aspects of the enforcement program has begun and is expected to be completed by mid-1979. The Office of Enforcement drafted consolidated EPA rules of practice for civil penalty hearings and the revocation or suspension of permits. Supplemental rules pertaining specifically to RCRA are included as an appendix to these rules.

The Office of Enforcement made substantial efforts to enhance its effectiveness through cooperation with State

enforcement agencies and other Federal enforcement agencies. States were encouraged to handle all imminent hazard enforcement actions. Regional guidance was prepared on Adequacy of Enforcement criteria for evaluating State hazardous waste programs pursuant to Section 3006. Meetings were initiated with the Department of Transportation concerning the coordination of efforts in enforcement and compliance monitoring of hazardous waste transporters. DOT and EPA are negotiating a memorandum of understanding to delineate each agency's responsibilities in enforcing the hazardous waste transportation regulations. The Office of Enforcement also assisted the Interagency Regulatory Liaison Group in compiling inspection criteria for four Federal agencies: Food and Drug Administration, Consumer Product Safety Commission, Occupational Safety and Health Administration, and EPA. A training program will be developed so that inspectors from any of the participating agencies will be sufficiently familiar with the regulations of all four to detect gross violations and refer them to the appropriate agency.

The Office of Enforcement prepared an interim inspection manual for disposal and storage facilities handling polychlorinated biphenyl (PCB) wastes, based on PCB Disposal and Marking Regulations issued under the Toxic Substances Control Act. The PCB regulations closely parallel the requirements in draft regulations under Section 3004 of RCRA. The experience of preparing the manual relating to PCB's is helping to determine the requirements for the RCRA

inspection manual. The National Enforcement Investigation Center will work closely with the Office of Enforcement in developing the manuals. Existing State and Federal inspection programs have been analyzed in developing policy for adequate surveillance of facilities under Subtitle C. OE has looked closely into the ramifications of the May 23, 1978, U.S. Supreme Court decision, Marshall v. Barlow's Inc., which ruled that OSHA inspectors must obtain either the owner's consent or a search warrant in order to carry out inspections. It is likely that this decision will also apply to EPA personnel conducting RCRA inspections. It is current OE policy to request owner/operator permission prior to the day of inspection. Search warrants would be necessary only for cases where entry had been denied on previous inspections, or when an element of surprise is necessary to document violations. Because of the nature of RCRA inspections, it is believed that the impact of the Court decision will be minimal.

Data Base Development

Data base development for the hazardous waste program continues through studies, research projects, and full-scale technological and economic evaluations and demonstrations.* The activities focus on the mechanisms of damage caused by hazardous wastes, technology for their control, and economic analyses.

*Reports resulting from these activities are listed in the Appendix.

The Office of Research and Development is continuing to implement and expand a program of research into technologies for the safe treatment, processing, and disposal of hazardous wastes. Representative activities in 1978 included:

- Projects were initiated to evaluate and develop technologies for preprocessing and treating inorganic chemical wastes and for concentrating liquid hazardous wastes received for treatment and disposal.
- A cost-benefit analysis was begun for treatment/disposal alternatives. The project will provide a cost-effectiveness ranking for application to decision-making.
- A contract was negotiated to test a field-scale hazardous waste incinerator. Pilot-scale evaluation of critical control parameters such as feed rate, combustion temperature, excess air requirements, and materials handling criteria will be optimized for nine organic hazardous wastes and verified at full-scale.
- An investigation is continuing into the development of a microwave plasma detoxification process for organic hazardous wastes. A 10-30 lb/hr demonstration-scale unit is currently being tested for destruction of pesticide and herbicide wastes and related organic compounds in gaseous, liquid, and solid forms. Plans include possible future conversion of this unit to a truck-mounted portable facility for field evaluation of the detoxification of other wastes.
- Research is being conducted to develop techniques for the bulk encapsulation of containers of pesticides and waste organic compounds of lower toxicity. This technology is being studied to supply data on material and equipment specifications, necessary precautions to prevent leaching, and assessment of the corrosive and degrading effects of hazardous wastes on containers.
- The overall efficiency of an evaporative pit disposal method for waste pesticides and pesticide rinse waters was determined. Efforts are now underway to develop four geographically and climatologically different field sites to verify data on environmental impact, design specifications, and rate of pesticide destruction. This work will be co-funded by the Soil Conservation Service.

- A research study was initiated to sample and measure air pollutants which may potentially be emitted from hazardous waste management facilities. The current phase will concentrate on facilities selection, methods for evaluating emissions, and development of detailed plans for facility tests. Field sampling will follow and a final report will summarize results and data analysis for use in regulatory action.

The Office of Solid Waste projects completed or in progress in fiscal year 1978 included the following:

- A grant project to demonstrate an environmentally acceptable chemical waste landfill in Minnesota was terminated by the grantee, the Minnesota Pollution Control Agency. Public opposition to siting of the landfill caused continuing delays in the project schedule. The Minnesota State Legislature, reacting to public pressure, passed legislation in March 1978 delaying any siting effort until a statewide hazardous waste plan could be prepared and approved. A final report received in August 1978 documented the siting process and problems experienced by the grantee.
- The quality of ground water and surface water around industrial waste disposal sites is being assessed to determine the effectiveness of land disposal design technology.
- Available technology and procedures for the treatment, storage, and disposal of ignitable, volatile, and reactive wastes are being evaluated.
- Engineering, economic, and environmental factors in heat recovery from hazardous waste incinerators are being evaluated. Potential as well as existing heat recovery methods are being covered.
- Alternatives to incineration and land disposal (i.e., methods for recovering, recycling, detoxifying, or volume reduction) for hazardous wastes generated by nine major industry groups are being studied. This project is a continuation of a previous study, completed in 1977, which covered wastes from four major industry groups. That study indicated there was potential for recovering valuable resources from a number of hazardous wastes by means of chemical, physical, and biological processes.
- The environmental adequacy of methods for land disposal of sludges from metal-finishing wastewater treatment is

being assessed. The methods involve lining disposal "cells" with chemical liners such as limestone, fly ash, and ferrous oxide so that heavy metal sludges can be deposited with a minimum potential for leaching into the environment.

- The destruction of halogenated hydrocarbon waste streams in commercial incinerators such as the rotary kiln type is being demonstrated. This project is a continuation of a previous test program, completed in 1977, which matched 7 commercial incinerator types with 13 industrial wastes and which demonstrated that incineration is a viable alternative for the management of organic industrial wastes.
- A study is underway to evaluate existing treatment, storage, and disposal methods for infectious wastes to identify the more cost-effective and environmentally sound technologies.
- A study was done of degradation/detoxification procedures for selected pesticides using common chemicals. The study concluded that only 18 of the 60 most commonly used pesticides can be safely treated in this manner.
- An assessment of procedures for the safe disposal of dilute pesticide solutions is underway.
- Responding to a congressional inquiry, OSW is working with other EPA offices, industry, and State environmental pollution agencies to determine and quantify the presence of dioxins in selected industrial sludges. An exploratory study has been completed and two reports have been issued. A more thorough investigation will utilize improved analytical techniques to quantify dioxins in industrial sludges at the part-per-trillion level. This will permit more meaningful interpretation of the hazard presented to human health and the environment.

Technical Assistance

In fiscal year 1978, the Hazardous Waste Management Division (HWMD) of the Office of Solid Waste responded with information and consultation to nearly 600 requests for technical assistance from governments, industry, and individuals. Examples of HWMD technical assistance during this period include:

- Continued cooperation with other EPA programs and the States of Virginia and Maryland in the work of the Kepone Task Force. This focused on investigating and recommending methods for treatment, storage, and disposal of Kepone and Kepone-contaminated wastes resulting from the Hopewell, Virginia, incident.
- Cooperation with EPA Municipal Environmental Research Laboratory in the development of a pesticide disposal research symposium held at Reston, Virginia, in September 1978.
- Review of a U.S. Army program which will utilize "air curtain" open-pit burning to dispose of certain hazardous wastes.
- Meeting with personnel of the Panama Canal Company regarding landfill disposal of hazardous waste, and with Navy personnel regarding disposal of organo-tin base wastes.
- Response to requests for information on the safe disposal of materials such as metal-cyanide-arsenic compounds, dioctylphthalate, acrylonitrile, nitrocellulose, polychlorinated biphenyls, etc.

PROBLEMS

The public meetings, comments, and discussions carried out in fiscal year 1978 identified a large number of issues and problems, many of which were resolved during the year. The main issues related to the content of the regulations have been noted above. There are, in addition, two areas that are expected to affect implementation of the regulations; these were discussed also in the 1977 annual report.

Resources for Implementation

Because of the extensive nature of the regulatory program, there are potential problems in availability of funds and staffing. It is estimated that approximately 30,000 permits will be issued to hazardous waste treatment,

storage, and disposal facilities. Altogether some 380,000 generators, transporters, treaters, storers, and disposers will be brought into the system through the notification process, the manifest program, through inspections, sampling, and analysis, and through enforcement actions. The data management and administrative machinery is now being developed to handle this. The cost to implement the total program is now estimated to be between \$20 million and \$35 million per year.

Several hundred people may be needed in the EPA Regional Offices to implement the regulations in those States without authorized programs. The total number needed will depend partially on regulatory decisions yet to be made and on which States are authorized. It appears, however, that sufficient manpower will not be available for prompt implementation in all States without authorized programs. Implementation in those States may therefore be stretched over 5 or 6 years or longer, rather than the 2 years deemed to be reasonable. This may present some major problems in coordinating and expediting development and operation of a national program for controlling the management of hazardous wastes.

Insufficient Waste Management Capacity and Public Opposition

Currently, only about 10 percent of hazardous waste is adequately managed. As the regulatory program eliminates dangerous waste management facilities, a shortage of available

capacity will result, since it will not be possible to sufficiently upgrade some facilities to meet the standards. The extent of this shortfall cannot be predicted at this point.

A study is being planned that will determine the extent and adequacy of current treatment, storage, and disposal capacity that exists at generator-owned hazardous waste management facilities and the potential for capacity expansion. It is estimated that 80 percent of all hazardous wastes generated is managed at generator-owned sites and that much of that amount is managed in an environmentally unacceptable manner. This study along with an earlier study of off-site hazardous waste management capacity will assist in the overall analysis of capacity.

The primary impediment to expansion of adequate waste management capacity is citizen opposition to the siting of new facilities. EPA is planning a two-phase study of the siting of hazardous waste management facilities and public opposition. Phase I involves the identification of 30 sites suitable for case study, 24 of which encountered public opposition and six of which did not. The 30 are divided among six different scenarios. The purpose of Phase I is to identify circumstances under which attempts to construct or expand a hazardous waste management facility were made, to determine which ones met with opposition, and to identify what methods (such as incentives, public awareness programs,

etc.) were used to minimize or lessen opposition. This effort will point out the conditions under which a siting or expansion program was or was not successful.

Phase II will assess past government involvement in siting hazardous waste facilities as well as other controversial facilities, and will analyze the need and potential for the government to become involved in siting. Phase II will also suggest alternatives that may be taken by the government to lessen or minimize public opposition.

PLANS FOR FISCAL YEAR 1979

Development of the regulations and guidelines will again be given primary attention in fiscal year 1979. The notification regulations (Section 3010) are scheduled for final promulgation.

Drafts of the Environmental Impact Statement and the Economic Impact Analysis will be distributed for public comment within 30 days of publication of proposed regulations under Sections 3001, 3002, and 3004; final versions will be ready at the time the regulations are promulgated.

In addition to the studies and other projects being conducted, as described above, in support of the development of regulations and technical assistance, projects will be undertaken to support the regulatory program. Current plans for such projects include but are not limited to the development of a test methods manual; manuals for hazardous waste transporters (spill emergency response) and for facility operators,

permit review manuals, and an ADP operating manual; a series of legislative seminars to assist State solid waste management programs in raising the level of awareness of State legislators about hazardous waste management problems; a series of seminars on the Section 3004 standards and on the permitting process; a series of guidance documents dealing with financial requirements, public participation, notification, and adequacy of resources for operating a State hazardous waste program; development of a mechanism to measure the effectiveness of EPA and the States in implementing Subtitle C; information packages for the public on hazardous waste management laws and regulations; market surveys for waste exchange systems; an outreach program to urge voluntary compliance with the RCRA regulations by industry and the public; and a series of guidance materials for Regional enforcement personnel on enforcing the Subtitle C regulations.

A demonstration of remedial construction will begin at the Love Canal landfill site (Niagara Falls, New York) with the support of a \$4 million grant to the State of New York.

III. PLANNING AND DEVELOPMENT OF STATE AND LOCAL PROGRAMS

Subtitle D of RCRA includes provisions for the development and implementation of State solid waste management plans (apart from regulation of hazardous waste management, which is covered by Subtitle C). States are eligible to receive financial assistance under Subtitle D if the State plan has been approved by EPA. The State plan must provide for identification of State, local, and regional responsibilities for solid waste management, the application and enforcement of environmentally sound disposal practices, and the encouragement of resource recovery and conservation.

In 1977, EPA issued guidelines for the identification of regions and agencies for solid waste management as required by Section 4002(a). The basic procedural requirements for making the identifications are set forth in Section 4006.

Under Section 4002(b), EPA guidelines for the development and implementation of State solid waste management plans are required. Federal financial assistance to State and local governments for such development and implementation is authorized for fiscal year 1978 and 1979 under Section 4008 of the Act.

Authorities in the Act for technical assistance to State and local governments include Section 2003, which requires EPA to provide assistance through "Resource Conservation and Recovery Panels" consisting of Federal, State,

and local government employees or contractors.

A complete study of the manpower and training needs of State and local solid waste programs is required under Section 7007, and grants for training projects are authorized.

OBJECTIVES

During fiscal year 1978, EPA objectives with regard to these mandates were as follows:

- * Assist and monitor implementation of the guidelines for identification of regions and agencies for solid waste management.
- * Prepare guidelines for development and implementation of State solid waste management plans.
- * Establish the Technical Assistance Panels Program.
- * Provide financial support to State, regional, and local governments.

PROGRAMS

Identification of Regions and Agencies

The guidelines for identification of regions and agencies for solid waste management required by Section 4002 were published in interim form on May 16, 1977 (40 CFR 255). These guidelines suggest criteria and procedures for the formal identification of regional boundaries by Governors and the joint identification by State and local officials of the agencies that will develop and implement the State solid waste management plan.

Regional Boundaries. The guidelines recommended that criteria for the designation of regions include: past experience, resource recovery options, waste volumes and types, environmental factors, and possible coordination with other programs.

Section 4006 of the Act requires the Governor of each State to consult with local elected officials before identifying regions. Such consultation was interpreted in the guidelines to include the following steps by the Governor or the lead State Agency: (1) preliminary identification of regions, (2) official notification of all local elected officials of this proposal, and (3) solicitation of local comments on the proposed scheme.

By November 1, 1978, all but two States had carried out these steps and made their identification of regions. The Governors did not create new boundaries but rather used the boundaries of previously established regional and local governments. The identifications can be divided into six categories:

1. The State was identified as the sole region by 14 Governors. This was an interim measure in Illinois, Pennsylvania, Tennessee, Texas, and Wyoming. In Delaware and West Virginia it supported previously established statewide solid waste authorities. Rhode Island, the District of Columbia, Puerto Rico, Virgin Islands, American Samoa, Guam, and the Northern Mariana Islands were also identified as regions.
2. The State and local governments were identified as regions, indicating strong home-rule traditions, in two States: Massachusetts and Vermont.

3. The State and multi-county boundaries were identified, indicating overlap in the planning jurisdictions of State and regional agencies (councils of governments and other regional planning organizations), in four States: Connecticut, Maine, Minnesota, and New Hampshire.
4. Multi-county boundaries were identified in 16 States: Alabama, Arizona, Colorado, Florida, Georgia, Idaho, Kentucky, Mississippi, Missouri, Montana, New Mexico, North Carolina, North Dakota, South Dakota, Utah, and Virginia.
5. The counties were the identified regions in eight States: Hawaii, Kansas, Maryland, Nevada, New Jersey, Oklahoma, South Carolina, and Washington.
6. A mix of county and multi-county regions were identified in 10 States: Arkansas, California, Indiana, Iowa, Michigan, Nebraska, New York, Ohio, Oregon, and Wisconsin.

Agencies Responsible for Planning and Implementation.

Section 4006 of the Act requires each State, together with local elected officials, to jointly identify (1) an agency to develop the State plan, (2) one or more agencies to implement the plan, and (3) the solid waste management functions that will be planned for and carried out by State, regional, and local governments.

The identification guidelines recommended that the criteria for selection of agencies include experience and expertise, representativeness, authority under State law, designations under Section 208 (areawide water quality management planning) of the Clean Water Act, planning objectives, and control of waste supplies.

In accordance with the identification guidelines, the States took the following steps:

1. All local governments and other interested groups were informed of the identification procedures being used in the States. At the same time, preliminary recommendations for agency identifications which had been developed at State-level meetings were presented to local governments.

2. The States solicited nominations for planning and implementation agencies from local officials. Five States mailed questionnaires to gather opinions of local officials.

3. Public meetings and hearings were held to develop State and local agreement on identification of agencies and responsibilities.

In all States a lead agency was selected to develop the statewide plan. A lead agency for hazardous waste management was identified in 43 States. Responsibilities for substate planning were shared by two or more levels of government in 14 States; assigned to the State government in 14 States; assigned to multi-county governments in 15 States; assigned to county governments in 6 States; and assigned to the Bureau of Indian Affairs, county, and regional governments in 1 State. In six States assignment of substate planning responsibilities was pending at the end of the fiscal year.

Counties, cities, and towns were identified in most States as responsible for implementing the solid waste management plan. A few States (including U.S. Territories) identified a State agency as responsible for implementation.

These identifications are subject to change as State planning progresses and needs become apparent for additional or different designations of responsibilities.

Guidelines for State Plans

The guidelines for development and implementation of State solid waste plans required in Section 4002(b) were proposed on August 28, 1978 (Federal Register, 43:38534). Copies were sent to over 600 State, regional, and local agencies as well as other Federal agencies, environmental groups, and representatives of industry. A public meeting was held in each of the 10 EPA Regions during September and October, and a hearing was held October 26, 1978, in Washington, D.C.

These guidelines propose that the State plan address management of all solid wastes in the State that pose potential adverse effects on health or the environment or provide opportunity for resource conservation or recovery. It should explore the nature and severity of these categories of solid wastes and establish priorities for their management.

Sections 4003 and 4005 of the Act set forth the minimum requirements that State plans must meet in order to be approved for Federal funding. In addition to identification of State, local, and regional responsibilities, these include: the prohibition of new open dumps; the requirement that all solid waste be utilized for resource recovery or

disposed of in an environmentally sound manner; the closing or upgrading of existing open dumps; the establishment of State regulatory powers necessary to implement the State plan; the elimination of State or local prohibitions of long-term contracts for the supply of solid waste to resource recovery facilities; and the provision of resource conservation, resource recovery, and disposal programs necessary for environmentally sound management.

In developing the plan the proposed guidelines require coordination with other programs such as water quality management planning and the National Pollutant Discharge Elimination System under the Clean Water Act, the surface impoundment studies under the Safe Drinking Water Act, and the mining waste regulatory program under the Surface Mining Control and Reclamation Act of 1977. The guidelines also require public participation in developing and implementing the plans, in developing the State's regulatory powers, and in awarding permits for resource recovery or disposal facilities.

Given the broad scope of the State plan and the necessary involvement of a number of agencies and parties, it is expected that planning and implementation will be time-phased over a number of years.

The proposed guidelines require that the State plan be developed within 18 months and that it cover a minimum time

period of 5 years. The State is to review the plan and, where necessary, revise and readopt it at least every 3 years.

Technical Assistance

The new program of Technical Assistance Panels required under Section 2003 began operating in January 1978. The panels are made up of experts on specific aspects of solid waste management who are selected from the staff of EPA and other Federal agencies, State and local governments, and the consulting community. The 10 Regional Offices manage the program, and headquarters staff mainly provides oversight and administrative support. Panels assistance is available to State and local governments and Federal agencies; other organizations and individuals may also submit requests through their State and local government.

By the end of fiscal 1978, 10 contracts had been negotiated to provide each EPA Region with consultant services as part of the panels program. Each Region was allocated a percentage of the \$1 million available for these contracts in fiscal year 1978 based on the population and the number of States in each Region.

A review of the panels program as of July 31, 1978, found that 186 requests for assistance had been filled out of 195 received. Nearly half had to do with resource recovery, with the rest nearly equally divided among the following categories: land disposal, collection, planning, and hazardous waste management. The predominance of resource

recovery was probably due to the availability of contracted consultation for this area only. In fiscal year 1979, such service will be available for all areas of solid waste management. It is expected that the activity of the program will increase and will correspond more closely to the emphases of RCRA as a whole.

A part of the panels program called "peer matching" provides travel funds to allow State and local officials who have experience with specific waste management problems to advise other officials faced with similar problems and situations. Six public interest groups have been awarded grant funds to assist in carrying out peer-matching activities: the National League of Cities, National Governors Association, National Association of Counties, American Public Works Association, International City Management Association, and the Governmental Refuse Collection and Disposal Association. These groups act as coordinators in bringing officials together for mutual assistance. In fiscal 1978 about 70 peer matches were carried out.

Apart from the panels program, thousands of routine requests for information and advice regarding solid waste problems are handled every year by the Office of Solid Waste and the Regional Offices. Special projects are carried out to provide aids such as manuals, technical reports, suggested guidelines, slide presentations, and seminars.

A number of these are noted in Chapters 2, 4, and 5 on hazardous waste management, land disposal, and resource recovery. In addition the following activities were conducted in 1978:

Implementation of WRAP (Waste Resources Allocation Program), a modeling tool for regional solid waste management planning, was continued. The model generates a comprehensive plan covering selection of sites and processes (including resource recovery) and determining links and flows among sources of waste generation, processing, and disposal sites. The plan represents a minimum-cost approach to handling all of the region's wastes while meeting environmental, tonnage, and traffic constraints. Thus far, 10 regional and local governments are using the system, and several universities are using it for teaching and consulting.

A very successful tool for local governments in improving their residential solid waste collection practices is the Collection Management Information System, or COLMIS. This is a computerized program whereby local communities can analyze their collection practices as to costs and productivity and then make improvements. Requests for this type of assistance have been very numerous, and a revised program, COLMIS II, is being written to accommodate the need for more management data by local solid waste managers.

Data on injuries to workers in collection and disposal of solid waste were compiled through the Injury Reporting

and Information System (IRIS). In-depth reports were prepared on the following topics:

- The use of personal protective equipment and its effect on accident reduction
- The occurrence of backstrain in relation to the age and experience of the employee
- How three variations in the collection system (type of crew size, work shift, and point of collection) affect injury rates
- How differences in worker compensation policies and wage continuation benefits affect the incidence of injuries
- The relationship of injury rates to type of equipment used (rear-end loader, side loader, etc.)

These reports are being prepared for publication. The data may be used for analyses of other safety topics in the future.

Financial Assistance

Federal financial assistance to the States for programs under RCRA totaled \$14.2 million in fiscal year 1978 (including \$3.4 million used for hazardous waste regulatory planning), compared with \$3 million in 1977. Regulations setting forth EPA policy for awarding grants under RCRA were published in October 1977 (40 CFR 35) and amended September 25, 1978 (Federal Register 43:43424).

Training

Under Section 7007, a study of manpower and training needs in State and local solid waste management programs is

required. A contract to do such a study was awarded in 1978. The study will include an assessment of manpower needs, training capabilities, and obstacles to employment and advancement. A report of the study will be completed in fiscal year 1979.

Development of a 5-day basic orientation course on the RCRA program for Federal, State, and local employees was begun. Training materials are being prepared and will be made available to the Regional Offices and States.

PROBLEMS

Looking ahead, the major question is the level of resources that can be devoted to development of State and local programs, particularly during the crucial period in which States are to evaluate all land disposal facilities and oversee the upgrading or closure of open dumps. Extending RCRA funding authorizations under Subtitle D from 1979 to at least 1984 will indicate to the States that continuing Federal financial and technical assistance is intended for the time of major activities.

PLANS FOR FISCAL YEAR 1979

- The guidelines for development of State plans are scheduled for promulgation in June 1979. Teams will visit States to discuss implementation of the guidelines.
- An annual report on State solid waste programs will be developed. Key items will be the status of legis-

lation and regulatory programs, including permitting, monitoring, and inspection activities in relation to land disposal.

- Technical assistance to State and local governments will increase as guidelines and regulations become final and ready for implementation. Primary emphasis will be directed toward the use of peer matches and contractor consultants to provide the assistance.
- Appropriations for 1979 include \$15.2 million for grants to States for development and implementation of their plans under Subtitle D; \$15 million for grants to urban areas for resource recovery projects, also under Subtitle D (described in Chapter 5); and \$15 million for grants to States for hazardous waste regulatory development under Subtitle C.
- The manpower and training study will be completed, and the basic orientation course and training materials will be made available through the Regional Offices. Academic training, mainly in hazardous waste management, will be supported by grants totaling \$100,000--the solid waste share of \$1.5 million that EPA will award for academic training in 1979.

IV. LAND DISPOSAL

RCRA prescribes key steps toward elimination of environmentally unacceptable disposal of solid wastes on land. EPA is directed to issue criteria for the classification of all land disposal facilities as either environmentally acceptable or unacceptable (Section 4004). Within 1 year after promulgation of the criteria EPA is to publish an inventory of all unacceptable sites ("open dumps") identified according to the criteria (Section 4005). Open dumping is prohibited except as covered by an acceptable schedule for compliance under the State plan (Section 4005). Such a schedule must include an enforceable sequence of actions leading to full compliance within a reasonable time (not to exceed 5 years from date of publication of the inventory). EPA guidelines for solid waste management which provide for the protection of public health and the environment are required under Section 1008.

In other words, the criteria define acceptable land disposal, the inventory is a national listing of sites which do not meet the criteria and therefore should be upgraded or closed, and the suggested guidelines describe acceptable operating practices--means of achieving the performance goals of the criteria. The State plans provide the framework for the regulatory elements to become functional.

OBJECTIVES

During fiscal year 1978, EPA objectives with regard to the land disposal provisions of RCRA were as follows:

- * Propose criteria for the classification of land disposal sites.
- * Begin development of guidelines for the landfill disposal of solid waste.
- * Continue planning for the inventory of open dumps, including integration with surface impoundment assessments under the Safe Drinking Water Act.
- * Continue development of EPA policy with regard to municipal sludge and industrial waste sludge management.
- * Integrate the municipal sludge management responsibilities under RCRA with those under the Clean Water Act.
- * Continue development of the data base for economical and environmentally safe processing and disposal of solid waste, with emphasis on support of the regulatory aspects of land protection.
- * Conduct required studies: solid waste cleanup in Alaska (Section 3), mining wastes (Section 8002(f)), and sludge management (Section 8002(g)).

PROGRAMS

Criteria for the Classification of Solid Waste Disposal Facilities

The Criteria for Classification of Solid Waste Disposal Facilities were proposed on February 6, 1978, (Federal Register 43:4902). These regulations were supposed to be issued within 1 year of enactment of RCRA, that is, by October 1977. This deadline could not be met, however; the current expected date of promulgation is July 1979. The task of developing standards covering the range of potential effects has been complex, involving extensive consultation, data development and evaluation, coordination with State programs and other Federal programs, and public participation.

In brief, the proposed criteria specify conditions that must be met regarding:

Ground water quality--The quality of ground water currently used for drinking or designated by the State for such use in the future must not be endangered beyond the boundary of the disposal facility.

Surface water quality--Surface water quality must not be adversely affected through point or nonpoint source discharges from the facility.

Environmentally sensitive areas--Except under specified conditions, facilities are not to be located in wetlands, floodplains, permafrost areas, critical habitats of endangered species, or in recharge zones of aquifers that are the sole or principal sources of drinking water for an area.

Air quality--All Federal, State, and local air pollution control regulations must be met; open burning of residential, commercial, institutional, and industrial solid waste is prohibited, and open burning of other solid waste is prohibited unless State and local regulations are complied with.

Application to land used to produce food-chain crops-- Such application must meet requirements related to cadmium levels, pathogens, pesticides, persistent organics, and the danger of direct ingestion of freshly applied waste by humans or by animals raised for milk.

Disease vectors--Rats, flies, etc., must be controlled through periodic application of cover material or other techniques where appropriate.

Safety--Hazards that must be avoided are explosive gases, toxic or asphyxiating gases, fires, bird hazards to aircraft, and dangerous public access to heavy equipment operation and exposed waste.

The criteria were proposed under authority of both RCRA and the Clean Water Act because of the similar objectives of the two laws for proper management of municipal wastewater treatment sludge. (Also, pursuant to Section 405 of the Clean Water Act, regulations for the giveaway or sale of municipal sludge are being developed which will provide an additional land disposal control complementary to the criteria.)

During the public comment period, which extended until June 12, 11 public meetings and 5 formal public hearings were held in different parts of the country by EPA headquarters to solicit comments. Public meetings were also conducted by the EPA Regional Offices. A wide variety of comments were received from Federal, State, and local agencies, environmental groups, industry, and private citizens.

All comments received are being considered in revising the criteria prior to final promulgation. All major substantive comments will be addressed in the final issuance.

An Environmental Impact Statement (EIS), including economic impact analysis, was prepared on the expected effects of the Criteria and issued in April 1978. Comments have been received on the EIS and changes are being made. The final EIS is scheduled to be issued in August 1979.

Development of Section 1008 Guidelines

Under the authority of Section 1008, suggested guidelines will be issued for landfill disposal of solid waste, for landspreading of solid waste, and for surface impoundments. Draft guidelines for landfill disposal were distributed for public comment in August 1978; formal proposal is scheduled for March 1979, and final issuance for January 1980. These guidelines will discuss design and operation of a landfill and will recommend practices for leachate control, gas migration control, and ground water monitoring. The guidelines for landspreading may also reach the proposal stage in 1979. Development of the surface impoundment guidelines is planned for fiscal year 1980.

Technical reports describing the current state of the art of landfill disposal of municipal refuse and sludge are being prepared as background information and further guidance for landfill operators. These reports will be published in 1979 and will provide technical details necessary to properly design, construct, and operate landfills.

The Inventory of Open Dumps

It is now estimated that over 140,000 land disposal facilities will have to be evaluated against the criteria in order to compile a complete inventory of open dumps. The 1-year period allowed in the law for this undertaking is generally recognized to be insufficient because of the number of facilities and the need to make definitive technical determinations regarding each of them.

With EPA financial and technical assistance, the States will evaluate the individual disposal sites; RCRA provides no authority for EPA to conduct the evaluations. The present plan is to have each State phase its evaluations according to priorities based on the potential impacts of facilities on health and the environment, the availability of State regulatory powers, and availability of Federal and State resources. Each State's phasing of the inventory process will be an important part of its solid waste management plan. The States are examining their regulatory authority for evaluating all land disposal facilities and for followup actions based on the results of evaluations. Some already have detailed information on municipal disposal sites as a result of existing permit systems. Evaluation of surface impoundments such as pits, ponds, and lagoons will be coordinated with assessments being conducted by EPA's Office of Drinking Water under the Safe Drinking Water Act.

A manual for use in making the evaluations for the inventory is being prepared for release concurrent with final promulgation of the disposal criteria.

The inventory will be published in annual installments. An arrangement has been made with the Bureau of the Census to handle the data processing.

Municipal Sludge Management

EPA intends to utilize the authority of Section 405 of the Clean Water Act for the development of an overall regulation on the management of municipal sludge. It will incorporate relevant regulations and criteria issued under RCRA and the Clean Air Act. Requirements for landfilling, landspreading, surface impoundments, land reclamation, quality of sludge incinerator emissions, and giveaway or sale are so far planned for inclusion in this regulation. The current target date for final promulgation is August 1980 following proposal in the latter half of 1979.

A manual providing engineers, local government officials, and sanitary landfill operators with information on the planning, design, and operation of municipal sludge landfills was completed. Process Design Manual: Municipal Sludge Landfills was distributed as one of the "Technology Transfer" series issued by EPA's Environmental Research and Information Center in Cincinnati.

Because of the staff resources needed to fulfill the regulatory mandates of RCRA and the Clean Water Act, EPA has had to delay completion of the municipal sludge strategy paper and decision guide described in last year's annual report.

Siting Problem

A major problem in land disposal is finding suitable sites that are acceptable to local residents. The Office of Solid Waste is examining possible Federal roles in reducing this problem. Information and suggestions are being solicited from States and communities. A project on landfill siting is being conducted by the National Association of Regional Councils with EPA grant support. The purpose of the project is to locate six successful regional landfill sites, document how they were established, and hold training sessions for other regional planners. Efforts to analyze the problem of opposition to hazardous waste disposal sites and promote public education regarding such siting are described in Chapters 2 and 6.

Research, Studies, Demonstrations*

The Office of Research and Development and the Office of Solid Waste are conducting a variety of projects to develop knowledge and technology related to land disposal.

Industrial Waste Disposal Data. The Office of Solid Waste has begun to establish a data base on industrial

*Reports resulting from these activities are listed in the Appendix.

disposal facilities and waste management practices. An effort is also being made to determine industry needs in complying with the land disposal criteria. Intensive studies are being made of four industries: coal-fired utilities, iron and steel, inorganic chemicals, and nonferrous metals. These industries respectively account for 63, 60, 40, and 8 million tons of waste per year.

Special Studies. The study of solid waste on Federal lands in Alaska (required under Section 3) was essentially complete by the end of the fiscal year. (The final report was sent to Congress on October 6, 1978.) The study identified 180 sites of abandoned solid waste. Of these, 16 were examined in depth to determine methods and costs of cleanup. The final report discusses environmental and economic considerations for cleanup in each of six geographic areas of Alaska. It is recommended that a joint committee, representing each Federal agency administering Alaskan land or otherwise responsible for debris on Federal lands in Alaska, be formed to develop a cleanup program. A ranking system for assigning priority among solid waste sites is proposed.

The studies of mining wastes (Section 8002(f)) and sludges (Section 8002(g)) are expected to be completed during the first half of fiscal year 1979.

Residual Characterization and Decomposition Studies. Data are being collected on composition of municipal and

hazardous wastes, and sampling and analytical methods are being developed. Information about waste compatibility, decomposition, and potential leaching is being generated. Representative ongoing studies of the Office of Research and Development include:

- o Development of standardized methods for sampling and analysis
- o Compilation and evaluation of analytical techniques for contaminant analysis and current leaching test methods
- o Research to develop short-term leaching and soil interaction tests.

Pollutant Transport Studies. Pollutant transport research involves the study of release of pollutants in liquid and gaseous forms from various municipal and hazardous wastes and the subsequent movement and fate of these pollutants in soils adjacent to disposal sites. Both laboratory and field verification studies at selected sites are being performed to assess the potential for ground water contamination. Examples of efforts underway include:

- o An examination of factors which control attenuation of organic contaminants (particularly PCB's) by soils.
- o Field verification studies at three municipal landfill sites where monitoring wells and coring soil samples are being used to identify

contaminants and determine their distribution in soil and ground water beneath the landfill sites.

- o Eight municipal sludge disposal sites were studied to determine how far contamination has moved from these sites and whether this contamination represents a significant threat to local ground water supplies. A final report is in preparation.

Pollutant Control and Treatment Studies. The objective of these research activities is to lessen the impact of pollution from waste disposal sites by developing technology that minimizes, contains, or eliminates pollutant release and leaching from wastes disposed of on land. Included in this research area are:

- o The evaluation of liner materials (natural soils, synthetic membranes, and admixtures) used to prevent contaminants from reaching ground water. Testing involves study, in the landfill environment, of the chemical resistance and durability of the liner materials over 12-and 36-month exposure periods to leachate from industrial wastes, SO_x wastes, and municipal solid wastes.
- o A test and evaluation program for chemical fixation of 10 industrial waste streams to transform them into low-soluble materials to minimize pollutant release and rate of leaching. The

waste streams are being treated with at least one of seven separate fixation processes and subjected to leaching and physical testing.

- o Four field verification studies to verify the success with which pollutants have been immobilized in stabilized industrial wastes.
- o Evaluation studies of physical, biological, and chemical methods for treatment of leachate, including precipitation, carbon adsorption, and ion exchange.

Codisposal Studies. Waste decomposition, compatibility, and pollutant generation associated with admixing or codisposing of various hazardous wastes and/or municipal sludge with municipal refuse are being investigated. Representative ongoing studies include:

- o Study of combinations of municipal solid waste and various solid and semisolid industrial wastes added to simulated landfill lysimeters.
- o Evaluations of chemically treated and untreated industrial wastes disposed of in a simulated municipal refuse landfill environment.

Remedial Action. The objectives of the remedial action studies in progress are the identification and evaluation of the best practical technology for minimizing contamination of ground water and dangerous gas migration from inoperative

waste disposal sites which are determined to be unsound.

Research underway or planned includes:

- o An engineering feasibility study to determine on a site-specific basis the best practicable technology to be applied from existing neutralization or confinement techniques.
- o Field verification of the effectiveness of the best practicable remedial technology.
- o Preparation of a remedial action manual to guide local municipalities.

Landspreading and Other Landfill Alternatives. The objective of this research is to evaluate the feasibility and beneficial aspects of alternatives to common landfill burial techniques. The economics and environmental impact of disposal of industrial and municipal wastes by deep-well injection and placement in underground mines have been determined. Current research centers around:

- o The study of land cultivation techniques for waste residues, including municipal and hazardous industrial sludges and other waste, with emphasis upon operational requirements, fate and mobility of wastes in soils, economics, and field verifications. Studies were completed of municipal sludge land-spreading at nine sites in seven States; reports are in preparation.

- o Evaluation of the status of disposal of wastes in saline environments.
- o In a demonstration project in Bangor, Maine, municipal sludge is being mixed with wood chips and subjected to forced aeration. the resulting mulch is used in landscaping. An interim report, Composting Sewage Sludge by High-Rate Suction Techniques, is available from the Office of Solid Waste, and a final report is in preparation.

Methane Recovery Demonstration. A project to demonstrate the recovery and use of methane from a landfill is being conducted in Mountain View, California, by the city and the Pacific Gas and Electric Company with EPA assistance. Eighteen wells have been drilled on a 20-acre portion of the landfill. Methane from the wells will be piped into processing equipment to remove impurities and then mixed with natural gas for use in existing pipelines serving homes. About 600,000 cubic feet of gas having approximately two-thirds the heating value of natural gas is expected to be produced daily, enough to meet the needs of about 1,000 typical homes in the area.

PLANS FOR FISCAL YEAR 1979

- o The criteria for classifying land disposal sites are scheduled for promulgation in July 1979.
- o The inventory process will be started when the criteria are promulgated. The States will make evaluations of the disposal sites with EPA assistance. The available data will be published 1 year after the criteria are promulgated.
- o Guidelines for landfill disposal will be proposed.
- o Integration of the provisions of RCRA and the Clean Water Act for management of municipal sludge will be fully pursued.
- o Development of the data base on industrial disposal facilities and waste management practices will continue as a major effort.
- o The research and demonstration activities will continue to be directed toward providing the necessary data base for standards, guidelines, and technical assistance. The studies on sludge and on mining wastes required in Section 8002 will be published.

V. RESOURCE RECOVERY AND CONSERVATION

A basic goal of the Resource Conservation and Recovery Act is "to conserve valuable material and energy resources" (Section 1003). The Act requires or authorizes a number of EPA activities related to resource recovery and conservation, including technical assistance, financial assistance for State and local planning and implementation, guidelines, and research, development, and demonstrations. The Act also establishes the interagency, Cabinet-level Resource Conservation Committee to study and make recommendations regarding Federal resource conservation policies.

Resource recovery was given additional impetus by the President when, in his Urban Policy Message of March 27, 1978, he included a request for a \$15 million grant program to support planning, feasibility studies, and all other "front-end" steps leading to resource recovery projects in urban areas. Legislative authority for this program is Section 4008(a)(2)(A) of the Act.

OBJECTIVES

EPA pursued the following objectives in resource recovery and conservation during fiscal year 1978:

- * Prepare the program for financial assistance to urban areas for development of resource recovery projects.
- * Continue technical assistance in resource recovery through the Technical Assistance Panels (described in Chapter 3), regional seminars, and other means.
- * Implement, at Federal facilities, the EPA guidelines for source separation, for beverage container deposits, and for resource recovery facilities.
- * Prepare guidelines for Federal procurement of products containing several specific waste materials.
- * Provide economic analysis and staff support to the interagency Resource Conservation Committee.

- * Develop information and technology related to collection, storage, processing, and marketing of source-separated materials; technical approaches to resource recovery; and waste reduction.

PROGRAMS

Urban Policy Resource Recovery Program

The new financial assistance program resulting from the President's Urban Policy Message will help communities to adequately assess the feasibility of resource recovery projects and obtain sufficient consultation and staff for the preparatory steps in implementation. This program is to begin in fiscal year 1979; \$15 million was appropriated for the first year, and the President has indicated that he will consider requesting funding for each of the following 2 years.

In fiscal year 1978, EPA developed the program structure and published a proposed solicitation announcement on July 31, 1978. A public meeting was held on August 18, 1978, to obtain public comment on the proposed announcement. The final announcement and request for proposals was published in October 1978. We expect to begin making awards by March or April 1979.

Eligible activities will include:

Planning and feasibility studies

Technology assessments

Investigating of markets for recovered materials

Investigating and evaluating financing alternatives

Preparing requests for proposals (RFP's) for
design and construction of facilities

Evaluating responses to RFP's

Analyzing legal issues

Negotiating contracts

EPA will provide no funding under this program for:

Engineering design of facilities

Construction of facilities

Land acquisition

Equipment purchase

Operating expenses

Selection criteria developed for the program focus on the potential for successful implementation and the extent of urban economic distress. Major elements involved in judging potential success include:

- o Potential of resource recovery to alleviate land disposal problems in that area.
- o Prior progress toward implementation.

o Project success factors, including:

Availability of financing

Support of high-level local officials

Sufficient quantities of wastes

Control of wastes

Local and regional cooperation

State, local, and public support

Availability of markets for recovered materials

Eligibility for funding is not limited to large cities, but under the selection criteria the major portion of the funds will probably go to jurisdictions of at least 50,000 population. The aid will go primarily to agencies with clear responsibility for implementation as designated in the State planning process under Subtitle D.

Financial assistance under this program will be accompanied by close guidance and monitoring of the projects to maximize chances for success; the awards will therefore be called "cooperative agreements" rather than "grants."

Technical Assistance

EPA technical assistance in resource recovery takes several forms: the Technical Assistance Panels described in Chapter 2, continuing guidance for State program development, regional seminars, and information materials development and distribution.

State Program Development. Within the past several years a number of States have independently enacted comprehensive statewide programs designed to promote and develop resource recovery and conservation activities. As noted in Chapter 3, RCRA requires that all States begin assessing long-range solutions to waste management problems, with resource recovery and conservation alternatives comprising important parts of those solutions. EPA offers the States guidance on the most effective approach to take in developing its resource recovery program. Differing conditions require that programs be tailored to each State. The Agency has responded to many requests from State governments for technical assistance and advice in these areas.

We are monitoring the progress and activity in all of the States that are developing a resource recovery program. In effect, the Agency is serving as an information clearing-house for all State resource recovery activities. In addition, we evaluate various State program elements (e.g., financial assistance mechanisms) periodically.

Seminars. The Office of Solid Waste developed a 2-day seminar ("Resource Recovery Technology: An Implementation Seminar") in 1977. Directed mainly at municipal officials, the seminar presents alternatives and major issues in the implementation of resource recovery

systems. In fiscal year 1978 the seminar was conducted in six cities; approximately 1,000 people attended. The seminar program will continue into 1979 and will be regularly updated to reflect the changing state of the art in resource recovery technology.

A 1-day workshop ("Municipal Newspaper Recovery Workshop") was developed and presented in two southeastern cities. A significant market expansion for old newspapers in the southeast has led to increased demand for information on the operation of municipally sponsored newspaper recovery programs. This workshop includes presentations on marketing, collection, implementation, and public education considerations.

Assistance for Waste Exchanges. In the past, EPA resource recovery and conservation activities were directed almost solely at municipal solid wastes, but under the wider scope of RCRA, increasing attention is being given to industrial and other wastes. Industry is increasingly cognizant of the benefits of conservation and recycling in view of rising costs of materials, energy, and waste management. An important new mechanism to promote the recovery of industrial wastes is the waste exchange or clearinghouse. In the past two years, at least 20 such exchanges have been started.

Two basic types of exchanges have developed: the materials exchange, which accepts the waste, analyzes it, treats it, and aggressively seeks out markets to sell it at a profit; and the information exchange, which transfers only data about the waste. Also referred to as information clearinghouses, the latter exchanges have had the greatest success. The majority of information exchanges have been successfully operated by chambers of commerce or trade associations; the few operated by private individuals on a profit basis or by State governments have been less successful.

Increased awareness of the exchanges and the basic concept was a major objective during the year; efforts included presentations at the seminars on resource recovery, personal and telephone contacts, obtaining press coverage, and preparation and wide distribution of a publication, Industrial Waste Exchanges: Fact Sheet.

A contract project is being planned to collect information on exchanges and then prepare a workbook and graphics which will explain the concept, history, success, etc., of the present network of exchanges. These will be used at seminars to be given for industry and State and local officials at several locations where it is determined that the need and potential for exchanges are the greatest.

Guidelines

Guidelines for Source Separation for Materials Recovery, promulgated on April 23, 1976, require the recovery of high-grade paper, newsprint, and corrugated boxes from designated Federal facilities. The high-grade office paper comes from office buildings; the newsprint and corrugated come primarily from military bases.

Office paper recycling programs have been started in Federal buildings in 9 of the 10 EPA Regions. Currently, 175,000 Federal employees in 135 Federal facilities are participating in paper recycling programs. It is expected that another 100,000 employees will be in the program by October 1979. EPA has worked with GSA in establishing contract procedures for the sale of the paper and in developing an educational program for training Federal employees in procedures for recycling office paper. To date, over 2,000 tons of paper have been recycled under the guidelines with a return to the Federal Treasury of over \$125,000. In addition, at least 15 States and hundreds of local governments have adopted the guidelines.

Guidelines for Beverage Containers, issued

September 21, 1976, require that a refundable 5-cent deposit be placed on all containers for beer and soft drinks sold at Federal facilities. The deposit is intended to encourage the return of containers for either refilling or recycling.

The Guidelines required Federal agencies to report their compliance decisions to EPA by December 1977. Of the 52 agencies that have reported, 14 are implementing the guidelines agencywide, 4 are implementing only partially, 2 are not implementing the guidelines at all, 3 filed interim reports pending results of guideline test programs, 1 filed an incomplete report, and 28 reported that another agency, usually GSA, controlled their facilities and the landlord agency was responsible for implementing the guidelines.

EPA is monitoring compliance with the guidelines. As part of the task, EPA is analyzing the implementation reports and will either concur or not concur with the decisions of each agency. We will also track implementation progress.

The monitoring element also includes evaluation of prototype test programs. The Department of Defense concluded its guidelines test at 10 military bases in June. DOD will submit its decision based on this test in February 1979. The General Services Administration also conducted a test of the guidelines in 8 of its 10 regions.

Early in the fiscal year, the U.S. Brewers Association et al sued EPA claiming that the beverage container guidelines, which were issued under the Solid Waste Disposal Act as amended in 1970, did not meet the requirements for guidelines under RCRA (Section 1008). Oral arguments were heard in the U.S. District Court of Appeals for the District of Columbia in December 1978; a decision is expected in early 1979.

Resource Recovery Facilities Guidelines, promulgated September 21, 1976, contain requirements and recommended procedures for Federal agencies regarding establishment and use of resource recovery facilities.

Decisions on whether or not to implement the guidelines were required for installations (nearly all belonging to the Defense Department) in 14 metropolitan areas by November 21, 1977. Some degree of implementation was reported for nine areas, two areas reported a decision not to implement, and the three remaining areas are still in the process of making a determination. Periodic status reports are required from all these areas.

Procurement Guidelines are currently being developed under Section 6002 of RCRA. All agencies procuring with Federal funds (including State and local governments, grantees, and contractors as well as the Federal agencies) must "procure items composed of the highest percentage of recovered materials practicable."

The guidelines for recommended procurement practices will contain information regarding suppliers, demand, price, delivery time, performance, and certification techniques.

We are now gathering data on products purchased by the government that may have high potential in the use of waste materials. Four major product categories are under study:

- o Cement and concrete: use of fly ash and blast furnace slag as a partial cement replacement in cement manufacture and concrete mixing.
- o Construction products: use of recovered materials, including wastepaper in insulation and board; waste rubber in asphalt pavements; and waste glass in bricks, asphalt, and concrete. We are also looking at the use of waste ferrous metals, plastics, aluminum, and fly ash (other than in cement and concrete).
- o Paper products: use of wastepaper and other secondary fibrous materials in printing and writing papers, sanitary papers, envelopes, boxes, tabulating paper, and duplicating papers.
- o Composted sewage sludge used as a soil conditioner and low-grade fertilizer (in nonagricultural applications, such as parklands).

The first guideline, scheduled to be proposed in April 1979, will be on use of fly ash and blast furnace slag in cement and concrete.

We are providing education and assistance on the requirements of the Act and EPA's approach to compliance to Federal procuring agencies, State officials, and industry representatives. We have also formed an interagency working group consisting of representatives from the General Services Administration, the Department of Defense, Office of Federal Procurement Policy, Government Printing Office, and National Bureau of Standards. The working group will assure the active involvement of affected agencies throughout the development of the guidelines.

The National Bureau of Standards, the National Governors' Association, and EPA sponsored a 2-day seminar on procurement of recycled products for State purchasing, solid waste, and energy officials on May 30 and 31, 1978. The seminar dealt with procurement of paper, tires, oil, construction products, textiles, glass, metals, and chemical and petroleum products. Over 100 people, representing 18 States and private industry, participated.

Resource Conservation Committee

The interagency Resource Conservation Committee, chaired by the EPA Administrator, was established by Section 8002(j) and is required to conduct "a full and complete investigation and study of all aspects of the economic, social, and environmental consequences of resource conservation." The Committee completed its analysis of beverage container deposit legislation and is completing analyses of solid waste disposal charge legislation. The Committee staff, composed of Office of Solid Waste personnel, is evaluating several other incentives and disincentives for resource conservation.

To obtain public comment, the Committee held several hearings to receive input from the public on beverage container deposits, solid waste disposal charges, the effect of existing Federal tax and transportation policies on the use of virgin and secondary materials, recycling and resource recovery subsidies, deposits or bounties on durable goods, local user fees, litter taxes, severance taxes, and product regulation. During the year the Committee staff held informal open meetings each month so that interested parties could ask questions or make suggestions about the work of the Committee. The meetings of the full Committee were also open to the public.

The first resource conservation issue taken up by the Committee was beverage container deposits. In its January 1978 report to the President and Congress entitled Committee Findings and Staff Papers on National Beverage Container Deposits, the Committee presented a recommended design for beverage container deposit legislation. The Committee did not recommend that legislation be passed, however; a decision on this issue was postponed until the relationship between deposits and solid waste disposal charges could be more clearly understood.

The staff studies found that a national uniform deposit law enacted in 1978 would, by 1985:

- o Reduce amount of solid waste disposed of by up to 2 million tons per year.
- o Reduce total litter volume by 40 percent; 20 percent of the number of individual items littered would be eliminated.
- o Save 400,000 tons of aluminum, reducing bauxite imports by a potential 1.6 million tons.

- o Reduce steel consumption by about 1.5 million tons.
- o Reduce industrial atmospheric emissions by 750 million to 1.2 billion pounds.
- o Reduce waterborne wastes by between 140 and 210 million pounds.
- o Save 70 to 130 trillion BTU, equivalent to 33,000 to 61,000 barrels of oil per day.
- o Reduce the retail price of beverages an average of $\frac{1}{2}$ to $1\frac{1}{2}$ cents per container.
- o Cause between 4,900 and 10,400 job dislocations in the glass container production industry and between 14,200 and 22,000 job dislocations in the metal can production industry over a 4-year period.
- o Create between 80,000 and 100,000 new jobs in the beverage distribution and retail sectors.
- o Cause some unquantifiable amount of inconvenience to those beverage consumers who presently purchase beverages in nonrefillable containers and discard those containers when they are empty.

These estimates may be altered by subsequent analyses.

In July 1978 the Committee issued its Status Report on Solid Waste Disposal Charge Analysis. This report included staff papers on the current status of solid waste management, the rationale for national solid waste disposal charge legislation, and disposal charge design issues. The analysis of disposal charges was delayed by the need for more detailed analysis of the costs of local solid waste management and the need to improve the computer model of industries that would be affected by the charge. Both steps are essential in quantifying the costs and benefits of alternative product charge proposals.

While work continued on the solid waste disposal charge, the staff and contractors also prepared analyses on local user fees, on resource recovery subsidies, on deposits and bounties on hazardous and durable goods, on litter taxes, on product regulation, and on severance taxes. The results of these analyses will be presented in the Committee's final report along with the Committee's policy recommendations. This report is scheduled to be submitted to the President and the Congress in March 1979.

Research, Evaluations, Demonstrations, Studies

The Office of Solid Waste and the Office of Research and Development continue to carry out a range of activities to develop the systems and knowledge needed to expand resource recovery.

Technology Evaluations. The evaluations include detailed technical, economic, and environmental assessments of EPA-supported demonstrations of resource recovery systems, but we are also conducting evaluations of other commercial-scale resource recovery facilities: refuse-derived fuel (RDF) plants in Lane County, Oregon, and Chicago, Illinois; small modular incinerators with heat recovery; waterwall combustion units in Europe; a plant for codisposal of sewage sludge and municipal solid waste in Duluth; and a pyrolysis system in Frankfort, Germany. Evaluations of system components are also underway: one study will comprehensively evaluate and compare the performance of full-scale operational air classifiers at several resource recovery facilities, while another project is examining the fundamental operating and performance characteristics of six shredders used to prepare refuse for resource recovery. A project has been initiated to evaluate a full-scale preprocessing system which will be used to fire a cement kiln. A number of technology-related studies are underway looking at codisposal, RDF facilities costs, compatibility of source separation of paper with energy recovery systems, and shredder design.

Demonstrations. Two of the early demonstration projects developed technologies that are being replicated in a number of communities. The first, in Franklin, Ohio, determined the feasibility of using the wet-pulping method of separating

mixed municipal solid waste into organic (paper fiber) and inorganic (steel cans, aluminum, and glass) fractions. The low-grade paper fiber was used as a raw material at a roofing felt plant nearby, but as the market for low-grade paper fiber is limited, the follow-on applications of this technology (as at Hempstead, New York, and Dade County, Florida) will use the organic fraction of the solid waste as a fuel.

The second demonstration, in St. Louis, Missouri, developed the technology of recovering a portion of the organic fraction of the mixed municipal waste stream for use as a supplement to coal in large boilers. This RDF technology is being replicated in 10 locations. Two of the second-generation plants are operating (at Ames, Iowa, and Milwaukee, Wisconsin), two are in shakedown, and the others are under construction. An extension of this concept that includes utilization of sewage sludge is being demonstrated under a grant to the State of Delaware.

Two systems for recovering energy from mixed municipal solid waste through pyrolysis (decomposition of organic matter into combustible gases and liquids by heat in an oxygen-deficient atmosphere) were demonstrated in Baltimore, Maryland, and San Diego County, California. The Baltimore plant produces steam by combusting the pyrolysis gases onsite. This plant has had numerous mechanical and air pollution problems and is presently undergoing an extensive modification program. The problems are in the most part

attributable to errors in expanding from a small pilot plant to the large commercial size. The city has been operating and modifying the plant since the system designer, Monsanto Enviro-Chem Systems, Inc., discontinued its involvement. EPA has completed an evaluation of the process in its original configuration during the reasonably successful 9-month run last year. Although it is doubtful that this technology will be replicated in toto, much was learned concerning pyrolysis of solid waste and the viability of using a large rotary kiln as a reduction device. After modifications are completed this year, it is anticipated that the process will operate in an economically and environmentally sound manner.

Six grant projects to develop source separation systems are now nearing completion. The demonstration grants to Marblehead and Somerville, Massachusetts, were funded 3 years ago to determine the feasibility of separate collection techniques to recover several materials from municipal waste streams. These two programs have proven that residents will separate recyclable materials into up to three categories for separate collection. It is possible to maintain high participation rates (recovering between 25 and 30 percent of the residential waste stream) in suburban communities with reliable collection, proper program management, and minimal ongoing public education. Collection, processing, and

marketing of source-separated materials is possible on a commercial scale. Approximately 15 to 20 other multimaterial collection programs have begun in the New England area as a result of the increased municipal and industry interest created by the Marblehead/Somerville projects. A final report presenting the results of this project will be issued in fiscal year 1979.

Small implementation grants were awarded 2 years ago to four communities to start a variety of source separation programs. The programs and techniques are: multimaterial collection through private contract; multimaterial collection from apartment buildings; source separation and materials marketing for low-density rural areas; and the use of handicapped laborers for processing materials. The grantees will write final reports in 1979.

"Wastes-as-Fuels" Program. As a result of funding from the Interagency Energy/Environment R&D Program, a number of new projects were initiated in the "Wastes-as-Fuels" research program in 1978. However, greatly reduced funding in 1979 will result in substantial deemphasis of this program. New projects include research to (1) develop processes for removing lead and other heavy metals from RDF and (2) investigate advanced concepts for improving the fuel quality of RDF. Several ongoing projects were supplemented, including:

(1) expansion of an evaluation of firing pelletized refuse into an industrial stoker-type boiler, (2) construction and testing of a 1-ton per day pilot plant for acid hydrolysis of refuse and subsequent conversion to ethanol and methane, and (3) an evaluation of emissions from the refuse processing system at St. Louis.

Studies. In response to Section 8002 of the Act, EPA is conducting six studies related to resource recovery:

- o We are currently analyzing the economic, environmental, conservation, technological, and institutional effects of combining various source separation and mixed-waste processing options. This analysis will result in a compatibility assessment methodology for local communities and regions to use in designing comprehensive resource recovery programs.
- o Small-scale and low-technology approaches to resource recovery are being studied to determine the state of the art of recovery from waste streams of up to 50 tons per day generated by institutional, commercial, and multiple-unit residential sources. The waste streams are being characterized to determine the availability of

marketable materials and the feasibility of energy recovery. In addition we are investigating the application of commercially available materials processing and energy recovery equipment to this scale of resource recovery to determine further research and development needs. This study is nearing completion.

- o In a study of research priorities, we are reviewing various existing and promising techniques of energy and materials recovery from solid waste. The results will enable us to set research priorities and develop research, development, and demonstration strategies. The study also evaluates the need for Federal action.
- o Three additional studies required under Section 8002 were initiated in fiscal year 1978: an assessment of trends in and impediments to the collection and recovery of discarded tires; a review of technological, economic, environmental, and social factors involved in developing improved approaches for recovering glass and plastics from solid waste; and an evaluation of the economics of and impediments to the operation of resource recovery facilities.

A National Survey of Separate Collection Programs was conducted in 1978. The number of cities known to collect recyclables separately has increased from 2 in 1970 to 216 in October 1978. Of these, 35 have multimaterial programs. A full report on the survey is scheduled for November 1978.

Case studies are in progress of three northern New England, rural, municipally sponsored source separation programs. These programs, brought into operation as a result of regulations requiring the closing of open dumps, are becoming increasingly common in many rural sections of the United States. We are collecting information on program operations and costs and will issue a report that should be helpful to rural areas. The study will also serve as a basis for a series of conferences on rural solid waste management to be held in northern New England in fiscal year 1979.

Coordination With Other Federal Agencies

Interagency Agreement with Department of Commerce.

Subtitle E of RCRA assigns certain duties and responsibilities to the Secretary of Commerce. In order to ensure coordination of that department's programs with EPA responsibilities under RCRA, the two agencies signed an interagency agreement in 1978. The Agreement describes methods of program coordination and clarifies the respective roles of the two agencies. The

Department of Commerce's role will be mainly in developing specifications for recovered materials and encouraging commercialization of new uses for recovered materials.

Working Agreement With Department of Energy. Both EPA and the Department of Energy have responsibilities in the general area of resource recovery as denoted in the interagency agreement of May 1976. To ensure an effective overall Federal program, the two agencies are developing a joint plan, including statements of program responsibilities and means of coordination.

Under this joint plan, DOE's primary objective in resource recovery is to develop and demonstrate technically, economically, and environmentally sound technologies to recover energy and materials from solid waste. The EPA's primary objective is to develop State and local capability for resource recovery implementation through technical and financial assistance for recovery planning and project development. For coordination of activities between the agencies in these two basic areas, working groups have been established for transfer of information, joint planning, and proposal review.

PROBLEMS

Federal Procurement Program

Section 6002 of the Act requires all procuring agencies to comply with its procurement provisions by October 21, 1978. While efforts have been made by some procuring agencies to comply with this deadline and EPA has attempted to assist them with their compliance, the requirement will not be met. Even if procuring agencies made a concerted effort to comply, the affected industries are not yet prepared to supply all of the recycled products that the government would need. Detailed information on technical performance and economic feasibility needs to be gathered before rational procurement decisions can be made. For example, over 45,000 Federal product and material specifications must be reviewed and evaluated. Even the seemingly clear term "recovered material" still does not mean the same thing to everyone who uses it.

While we are working to overcome these problems, it does appear that the statutory deadline is not realistic. Furthermore, it could well discourage, rather than ensure, a careful, complete look at all the issues. A more practical approach may be to apply compliance requirements that relate directly to publication of the necessary guidelines.

Source Separation Guidelines

In implementing the source separation guidelines, we have experienced difficulties resulting from three problem areas:

- o Paper prices are not as steady or as high as we had expected and local paper dealers are not providing as much support and assistance as we had hoped they would.
- o In an effort to hold down cost, the government is buying computer and tablet paper that is high in groundwood fiber content. Unfortunately, this paper cannot be recycled with other higher-grade office paper. Thus, its presence can lead to the rejection of an entire load of office paper. This reduces both quantities recycled and revenues to the program.
- o At present, all revenues generated through the office paper recycling program revert directly to the U.S. Treasury. This seriously dilutes the

potential incentives in these programs. It is likely that facility managers would give the program much more support, time, and interest if the revenues went back into building management.

PLANS FOR FISCAL YEAR 1979

Most of the planned resource conservation and recovery activities in fiscal year 1979 will involve further development or followup of 1978 programs. Among them are:

State and Local Programs. We will continue to promote, through the technical and financial assistance programs described above, the development of strong State and local resource conservation and recovery programs.

Market Development. Efforts to encourage more rapid development of markets for recovered materials will include preparation of the procurement guidelines. We will also continue to push for increased use of waste-based fuels. This activity will involve close coordination with the Department of Commerce.

Development of Technology and Techniques. We will continue to develop, evaluate, and report on resource recovery technologies and methods. One area of particular interest in fiscal year 1979 will be thermal codisposal of solid waste and sewage sludge.

Resource Conservation Committee. The Committee is scheduled to complete its work in March 1979 and submit its findings and recommendations to the President and the Congress. In January 1979, the Committee will hold a conference focusing on how the nation should define its future resource conservation efforts. The conference will bring together leaders from academia, business, labor, interest groups, and government.

Economic Incentives. With the completion of the work of the Resource Conservation Committee, it will become the responsibility of EPA to follow up on the Committee's recommendations. What form these followup activities might take is not yet clear; they will probably include some further study of economic approaches to resource conservation.

VI. PUBLIC PARTICIPATION AND EDUCATION

As the previous chapters indicate, the RCRA programs can have various important environmental, health, and economic effects. All interested citizens should therefore have clear opportunities to become informed about the programs and participate in their development. Furthermore, an informed and supportive public is essential to successful implementation of RCRA. Without public awareness and support, the authorities and resources needed at State and local levels may not be forthcoming, and the siting of disposal and processing facilities will continue to be stymied in many places around the country.

RCRA contains broad mandates for public participation and education:

Section 7004 requires that public participation be "provided for, encouraged, and assisted" in implementation of all parts of the Act by EPA and the States. EPA guidelines for such participation are required.

Section 8003 requires EPA to develop information in key areas of solid waste management, rapidly disseminate this information, implement programs to promote citizen understanding of the issues, and establish a central reference library on solid waste management.

OBJECTIVES

The objectives for fiscal year 1978 were as follows:

- Provide opportunities for public participation in EPA programs under the Act.
- Promulgate and implement guidelines for public participation.
- Develop citizen education activities.
- Develop and distribute information materials.
- Provide library and literature search services.

PROGRAMS

Public Participation

Public participation has been incorporated into EPA activities under RCRA through numerous public meetings and hearings and through the distribution for comment of draft copies of regulations, reports, and plans. As a result a great many groups and individuals have contributed views and information for consideration in development of regulations and programs and have thereby helped to improve the quality of these efforts significantly.

Meetings and hearings. Twenty-nine public meetings and twelve public hearings were held from October 1977 through September 1978 on proposed regulations and other issues related to RCRA implementation. (Hearings differ from meetings in that they must always be recorded and have more formal scheduling of presentations.) These events were attended by over 3,000 people representing a variety of public interest groups, private citizens, State and local governments, environmental groups, industry, trade associations, etc.

Invitations to all the meetings and hearings were distributed to thousands of individuals and organizations. Draft copies of the regulations, guidelines, etc., under development and reprints of proposals in the Federal Register were distributed prior to meetings and hearings. Transcripts of the meetings and hearings were made available to all interested persons. An analysis of major comments on proposed regulations will be included in the preamble to final rules.

All 10 EPA Regional Offices have designated staff to work with headquarters personnel and the States in carrying out public participation activities. They assisted in conducting all the meetings and hearings.

Several States held meetings to receive public comment on their draft 1979 work program. Almost all States held widely publicized meetings concerning the identification of regions and agencies for solid waste management. Some State agencies have developed and are using extensive mailing lists keyed to interests of the public. Repositories of State solid waste management documents have been established in some States. Plans are being developed for charting the status of public participation in State RCRA activities and otherwise evaluating the effectiveness of efforts to encourage public participation and incorporate it into development.

The following public hearings and meetings were held by EPA on proposed regulations and other issues during fiscal year 1978.

Hearings

Section 3003, hazardous waste transportation regulations:

June 20, 1978, Alexandria, Va.

Section 3006, State hazardous waste guidelines:

March 9, 1978, New Orleans, La.

March 13, 1978, Boston, Mass.

March 16, 1978, Seattle, Wash.

Section 3010, hazardous waste management notification regulations:

August 18, 1978, Cleveland, Ohio

August 21, 1978, Charleston, S.C.

August 24, 1978, San Francisco, Calif.

Section 4004, land disposal criteria:

March 1, 1978, San Diego, Calif.

April 21, 1978, Washington, D.C.

April 24, 1978, Kansas City, Mo.

April 26, 1978, Portland, Oreg.

Section 4004, environmental impact statement for the criteria:

June 5, 1978, Cincinnati, Ohio

Public Meetings

Subtitle C, hazardous waste regulatory issues:

October 11-12, 1977, Arlington, Va.

October 13-14, 1977, St. Louis, Mo.

October 17-18, 1977, Scottsdale, Ariz.

Section 3003, hazardous waste transportation regulations:

October 26, 1977, Chicago, Ill.

Section 4002, State plan guidelines:

September 13, 1978, Kansas City, Mo.
September 18, 1978, Seattle, Wash.
September 19, 1978, San Francisco, Calif.
September 21, 1978, Denver, Colo.
September 26, 1978, Atlanta, Ga.

Section 4004, land disposal criteria: (Specific groups were invited to attend specific meetings, which were also open to the general public.)

February 23, 1978, San Diego, Calif.
March 8, 15, 20, 22, and April 19, 1978, Washington, D.C.
March 30, 1978, Dallas, Tex.
April 3, 1978, New York, N.Y.
April 13, 1978, Atlanta, Ga.
April 17, 1978, Chicago, Ill.
April 28-29, 1978, St. Louis, Mo.

Resource Conservation Committee, beverage container issue:

October 19, 1977, Washington, D.C.

Resource Conservation Committee, product charge issue:

November 17, 1977, Washington, D.C.
November 18, 1977, Cincinnati, Ohio
November 21, 1977, Portland, Oreg.

Resource Conservation Committee, remaining issues:

June 23, 1978, Chicago, Ill.
June 26, 1978, Washington, D.C.
June 30, 1978, San Francisco, Calif.

Urban resource recovery project grants, policy and procedures:

August 18, 1978, Washington, D.C.

Proposed schedule for EPA rulemaking under RCRA:

September 15, 1978, Washington, D.C.

Guidelines. On January 12, 1978, EPA published interim Guidelines on Public Participation in Solid Waste Management (40 CFR 249), which are applicable to activities conducted under RCRA by Federal, State, and substate entities. The guidelines contain requirements for meetings, information and education activity, consulting with interested parties regarding development of rules and programs, notifying the public of hearings, and other measures. Every regulation, guideline, or program plan issued by EPA under the Act is to contain a section implementing the requirements of the public participation guidelines.

On August 7, 1978, EPA proposed overall public participation regulations for the Resource Conservation and Recovery Act, the Safe Drinking Water Act, and the Clean Water Act (Federal Register, 93:34794). These regulations, when promulgated, will replace existing regulations for public participation under these acts. The proposed regulations are basically similar to the interim solid waste guidelines but tend to be more detailed and include provisions that are applicable mainly or solely to the water programs. EPA is considering the feasibility of applying these regulations, in modified form, to all programs of the agency.

Citizen Education Grants

The general purpose of the citizen education grants is to provide programs whereby citizens can develop an understanding of the issues in RCRA implementation and solid waste management and thereby participate constructively in the decision-making process at local, State, and Federal levels.

Near the end of fiscal year 1977, funds amounting to \$150,000 were granted to two nonprofit organizations for work to be carried out in 1978. One grant was to the League of Women Voters Education Fund to sponsor statewide conferences on RCRA implementation in Georgia, New Jersey, Oregon, South Carolina, Texas, and Washington. The League also sponsored special educational projects on hazardous wastes and other subjects in the communities of West Lafayette (Indiana), Manhattan (Kansas), Syracuse (New York), Bloomington (Indiana), and Waltham (Massachusetts). The other grant was awarded to Environmental Action Foundation to conduct a 1-day training conference for citizen leaders, maintain a citizens information and assistance service, and periodically distribute summaries on specific solid waste issues.

Seven grants totaling \$218,300 were funded in fiscal year 1978. Five were directed to support of conferences and workshops on solid waste issues and RCRA implementation, with emphasis on the hazardous waste management provisions. These grants were awarded to: (1) American Public Health Association for development and national distribution of the

detailed format for a model State citizen training conference on RCRA and holding two training sessions at the APHA national convention; (2) Izaak Walton League of America for 3 State and 11 local seminars on methods of utilizing and disposing of sludge; (3) National Wildlife Federation for one six-State Regional meeting, and a statewide conference and a series of local programs across another State; (4) Technical Information Project for 2-day statewide conferences in Florida, Alaska, and Wisconsin and a conference in Pittsburgh; and (5) West Michigan Environmental Action Council for a conference in Lansing. Also grants were made to the Boston Childrens' Museum for an exhibit which shows conservation of materials and which is to be shared with other museums in Massachusetts and Connecticut, and to the Portland (Oreg.) Recycling Team for a guidebook on how to operate a recycling center.

Information Program

EPA continued its program of information materials development and distribution in all major areas of solid waste management. Numerous publications were produced (see Appendix). The Office of Solid Waste distributed approximately 622,000 copies in response to requests. Slide presentations, exhibits, and news releases were also produced. Many information materials were used in public participation activities by EPA and the States and in the educational programs carried on by the OSW grantees.

The Solid Waste Information Retrieval System (SWIRS) conducted over 1,126 literature searches in fiscal year 1978. Users were in government, universities, industry, Congress, etc. The information bank contains over 47,950 abstracts dating from 1964. Approximately 5,950 new abstracts were added in 1978. The Office of Solid Waste library contains all of the abstracted documents as well as approximately 6,000 nonperiodical documents, all of which are available through the interlibrary loan system.

PLANS FOR FISCAL YEAR 1979

Public participation activities in fiscal year 1979 will include approximately 26 public meetings and hearings on proposed regulations and guidelines. Among these will be five 3-day hearings following the proposal of hazardous waste management regulations.

The new guidelines covering public participation in programs under RCRA and the water laws will be promulgated. An intensive effort will be made to assure the implementation of public participation requirements in the State programs supported under RCRA.

A 4-year public education program on RCRA implementation with an emphasis on hazardous waste facilities siting issues will begin in fiscal year 1979. The education program is intended to clearly set forth the issues and alternatives and so

encourage constructive, realistic approaches. Four grantee organizations will assist the Office of Solid Waste in conducting the 1979 program, which will include conferences in four EPA Regions and several States. A newsletter will be issued from time to time for the duration of the program to inform and encourage citizens concerned about solid waste problems.

The production and distribution of information materials will continue in support of the foregoing and other activities related to RCRA implementation. In addition to a number of publications, two films that are being developed as part of citizen education grant projects are due to be completed; one is on hazardous waste management and the other depicts one rural county's efforts to eliminate open dumps.

Due to lack of funds the literature search component of SWIRS is scheduled to be terminated as of March 31, 1978. The possibility of having the service resumed under other auspices is being investigated. The library will be continued, but since it must be moved from its present quarters there will be disruption in service.

VII. BRIEF REPORTS FROM THE REGIONAL OFFICES

The following are reports from the 10 EPA Regional Offices of notable RCRA-related activities and circumstances in their respective geographic areas. The Regional Offices have the lead responsibility in EPA for working with the State and local governments to achieve implementation of RCRA. This includes overseeing the Federal grants, assisting in developing programs under Subtitles C and D, and providing technical assistance. Among the major activities in 1978 were assistance to States and local governments in identifying regional boundaries and the agencies responsible for RCRA planning and implementation in accordance with Section 4006, establishment of the Technical Assistance Panels, and guidance on State legislation and regulations to enable RCRA implementation. Active assistance to the Office of Solid Waste in developing EPA regulations, policies, and programs continued to require substantial portions of Regional staff time.

REGION I

(Connecticut, Maine, Massachusetts,
New Hampshire, Rhode Island, Vermont)

Planning and Development. In accordance with the Interim Guidelines for Identification of Regions and Agencies for Solid Waste Management, all six New England States made their identifications. Maine and Connecticut are in the process of updating their State Solid Waste Management Plan. Close consultation with the Regional Office has been necessary in State plan development, especially since the State plan guidelines (Section 4002(b)) are not yet available in final form.

The Technical Assistance Panels Program was formally initiated in 1978 in the Regional Office. Using consultants obtained through the Office of Solid Waste, we entered into several major technical assistance projects. The most notable assignments were for the city of Auburn, Maine, the States of Rhode Island and Massachusetts, and for rural New England. All projects were in the field of resource recovery. It is anticipated that future Panels activity will cover all aspects of solid and hazardous waste management.

Resource Recovery and Conservation. Community recycling programs in New England are rapidly increasing, with over 260 known programs in existence. There are 43 programs of separate curbside collection of recyclable materials, according to an October 1977 survey. The Regional Office is updating its New England Recycling Directory, which was first published in 1977.

Region I now has 14 rural resource recovery facilities in operation--double that of last year. Many more facilities are in planning and construction phases, especially in northern New England. The main impetus is the closing of many disposal facilities for environmental reasons. A study is being completed of these recovery systems, which consist of accumulating source-separated material and simple processing such as baling of paper and crushing of cans and glass. The systems also generally include modular incineration with land disposal of the ash and noncombustible fraction of the waste. The city of Auburn, Maine, will shortly be negotiating with a systems vendor for a full-service contract to design, construct, and operate a steam-generating plant utilizing modular incineration. Facilities in various stages of planning are in Pittsfield and Northampton, Massachusetts and Windham, Connecticut.

The planning and implementation activities for large-scale resource recovery facilities are increasing dramatically in the three southern New England States. In Connecticut, construction of the Greater Bridgeport facility is nearing completion, and in planning are two facilities for the Hartford metropolitan area and a regional facility at New Haven. The Rhode Island Solid Waste Management Corporation is completing review of three proposals for an energy recovery facility to satisfy the municipal solid waste disposal needs of the entire State. Massachusetts is soliciting towns to contract with UOP, Inc., for a 3,000-ton-per-day facility in North Andover. The State Bureau of Solid Waste is also in various stages of implementation for facilities to serve the needs of West Suburban Boston, the Greater Worcester area, and the Greater Springfield area. Private enterprise is also planning several facilities in the Region.

Region I now has three States with beverage container legislation, since Connecticut recently passed a bill following the example of Vermont and Maine. The Massachusetts bill was narrowly defeated but is expected to be raised for consideration again in the new legislative year.

The high-grade office paper recycling program at the John F. Kennedy Federal Building has been in operation for 1 year. During the year about 88 tons of high-grade paper

were recovered, returning approximately \$4,600 to the government and saving nearly \$2,000 in waste disposal costs. Two additional Federal buildings located in Boston will begin office paper recycling programs in fiscal year 1979.

Land Disposal. The Vermont Agency of Environmental Conservation developed new solid waste disposal regulations and guidelines which went into effect in June. The proposed 4004 criteria were consulted during the development of these two documents.

The Regional Office responded to many requests from States to evaluate the effects of the proposed 4004 criteria on specific land disposal sites within their borders. Numerous meetings were attended by the solid waste staff to explain the proposed criteria and their effect on land disposal practices in New England.

There are currently underway in the Region two solid waste land disposal research projects. The Enfield, Connecticut, leachate collection and treatment facility began operation in mid-April 1978. A remedial action study to minimize the environmental impact of unacceptable land disposal sites commenced in Windham, Connecticut. Both of these projects are funded through the Office of Solid Waste.

Hazardous Waste Management. During fiscal year 1978 all the New England States completed their hazardous waste surveys. These surveys will be essential in the development of comprehensive hazardous waste management programs. The surveys will also assist in the notification and permitting requirements of Subtitle C.

The New England States are moving forward with legislation which will provide them with authority to comprehensively regulate hazardous waste management. Currently all of the States in Region I have legislation which enables control of all or some of the elements of hazardous waste management.

PCB disposal is still a serious regional problem. Comprehensive PCB regulations, promulgated this year, require the Regional Administrator to approve incinerators or chemical waste landfills before they can be used for PCB disposal. The Regional Office has received one application for incineration.

Incidents of improper disposal of hazardous wastes continue to occur in the Region. State agencies, with

Regional Office technical assistance, have been successful in cleaning up and properly disposing of hazardous wastes at dump sites in Plainfield, Connecticut, and Rehoboth, Massachusetts. Technical assistance was also provided to the Maine Department of Environmental Protection in analyzing a water contamination incident in the town of Grey due to the improper disposal of hazardous wastes. The community and State governments are currently taking steps to provide an alternate water supply to those affected by the incident.

The Massachusetts Division of Water Pollution Control, with technical assistance from the Regional Office, inspected, analyzed, and formed a strategy plan for the cleanup and proper disposal of a diverse assortment of chemicals accumulated at the now defunct Silresim Corporation facility at Lowell, Massachusetts.

Public Education. During the year the solid waste staff made presentations to many groups on RCRA, hazardous waste management, landfilling, and resource recovery.

REGION II

(New Jersey, New York, Puerto Rico, Virgin Islands)

Planning and Development. In New York the first draft of the State plan was submitted to the legislature for review. The document includes the regional planning boundaries and identification of agencies which will have regional and local implementation responsibilities. The New Jersey Solid Waste Administration also identified regional boundaries and agency responsibilities. The Administration plans to increase its staff by 13 positions, including 3 for planning. A significant achievement in New Jersey was the Joint District Planning Agreement, which provides for joint planning by five counties and the Hackensack Meadowlands Development Commission. The Regional Office assisted in this effort. In Puerto Rico, legislation creating a Solid Waste Authority to encourage regional land disposal and resource recovery facilities was signed by the Governor on June 23, 1978. The Virgin Islands identified all the Islands as a single region for planning purposes. An important step in implementing RCRA was made when substantial changes to the current legislation for the Islands were submitted to the legislature.

Land Disposal. The New York State Department of Conservation (DEC) set up a computerized retrieval system for information on land disposal sites. Information is being

collected now and will be used for the inventory. The State agency created four junior engineering positions to assist in the evaluation. DEC initiated enforcement actions against many municipal landfills for failure to apply for an operation permit by February 1978, as required by the State's Environmental Conservation Law of May 1977.

Recent designation by EPA of Nassau and Suffolk Counties in New York as sole-source aquifer areas will have an impact on existing solid waste management practices on Long Island. EPA's proposed land disposal criteria require that such aquifers be protected.

The Regional Office is once again working on the bird hazard problem at JFK Airport in New York City. Meetings were held with other Federal agencies, the State, and the City Department of Sanitation to start a bird patrol program at the Fountain Avenue landfill in Brooklyn.

Present studies in New York include: leachate attenuation modeling conducted by Cornell University, an OSW leachate attenuation study involving landfills in Monroe and Yates Counties, and an OSW study of leachate treatment alternatives involving the Port Washington landfill on Long Island.

New Jersey has identified all registered disposal sites by latitude and longitude, established contact with other agencies with potential involvement in the planning and/or inventory process, and has prepared lists of those sites which will be classified during the first year of the inventory process. The State plans to add six positions to carry out the inventory process.

Puerto Rico conducted a 2-week training course for all personnel that will be performing evaluations for the open dump inventory. Information has already been gathered regarding land use, geology, hydrology, and physical characteristics for many of the sites, including municipal landfills, industrial sludge impoundments, hog farms, and composting centers. Other preliminary steps taken include preparation of site location maps and assignment of a project manager and an interagency liaison officer. The U.S. Geologic Survey completed an aerial survey of 50 of Puerto Rico's 68 landfills. Surface water pollution was found at eight of the surveyed sites. Open burning is still a severe problem.

Virgin Islands also took initial steps toward the inventory process. In conjunction with an airport expansion program, development of a landfill is expected to proceed off the coast of St. Thomas.

Hazardous Waste Management. At present all States in the Region are expected to seek both limited interim and interim authorization under Subtitle C. Through the 1978 grant program New York was assisted in conducting a hazardous waste survey and drafting legislation under which regulations could be promulgated. Other activities in New York included: assisting the State in closure of Pollution Abatement Services in Oswego, assisting in minimizing the threat from disposal sites such as the one at Love Canal, working with the State in conducting inspections of facilities seeking approval for disposal of PCB, and assisting local farmers in Monroe County in disposal of waste pesticides and pesticide containers.

New Jersey also conducted a hazardous waste survey, initiated a hazard assessment study of hazardous waste management facilities, and implemented a manifest system for tracking hazardous wastes. The Regional Office worked with OSW in followup inspection of the Rollins Environmental Services explosion site to determine what standards should be included in RCRA rules to prevent such occurrences. In Puerto Rico, regulations are being revised to conform to upcoming RCRA requirements. The Regional Office recommended to OSW that the possibility of establishing a waste exchange in Puerto Rico be investigated since there is a severe shortage of acceptable disposal facilities on the island. In the Virgin Islands the Regional staff is assisting in development of basic legislation; at present it seems that the scope of the program will be small since there are only two major industries that may be affected.

In meeting the requirements of the PCB site approval rule, the Regional staff has developed implementation strategy plans, conducted a public meeting, and is evaluating applications from three major hazardous waste management facilities along with one for onsite disposal and one for disposal of dredge spoil material.

Resource Recovery and Conservation. To support office paper recycling in Federal buildings, we are mounting training sessions and providing publicity and education. The U.S. Customs House in New York City was the first Region II facility to implement recycling.

Existing laws in New York State were evaluated and recommendations made to correct present barriers to resource recovery. A contract utilizing EPA grant funds

to the State was established to institute a resource recovery system in Cattaraugus County, New York.

The Region is participating in the planning of the resource recovery element of the South Bronx redevelopment project. We are also giving technical assistance to Bronx Frontier Development Corp., and Peoples' Development Corp. in source separation and composting. EPA staff located a source of bulking agent (leaves) for the Bronx Frontier composting project. Regional staff are currently meeting with the City of New York on revival of city-sponsored source separation programs. The Port Authority of New York and New Jersey was assisted in exploring funding alternatives for codisposal of sewage sludge and refuse in energy recovery. In Westchester County, EPA personnel offered advice to the county legislature in establishing a balanced solid waste plan, including refuse-to-energy and source separation. Regional personnel helped initiate a request for an EPA source separation seminar in the county.

Technical assistance relating to resource recovery was provided to New Jersey, Puerto Rico, and the Virgin Islands. The Region influenced the Environmental Quality Board of Puerto Rico to establish a Source Separation Task Force complementary to the Solid Waste Authority. A major goal of the Task Force is curbside source separation with collection by scavengers. At present the scavengers pick glass and aluminum from packer trucks as they eject their loads at disposal sites--a dangerous and inefficient practice. The Region has alerted Fomento, Puerto Rico's Economic Development Administration, to the job-creating possibilities of recycling, especially where it includes small-scale labor-intensive intermediate processing of glass and metals. The Virgin Islands was aided in attracting bidders for a resource recovery feasibility study; energy recovered may be used for desalinization.

Public Participation and Education. The Regional staff participated in 35 meetings and hearings during the year to discuss the RCRA program and obtain views of the public. The staff also participated in three television presentations.

REGION III

(Delaware, Maryland, Pennsylvania, Virginia, West Virginia)

Planning and Development. Region III staff were in constant contact with our State counterparts to aid in

program development. The staff responded, for example, to a request from Virginia to review and provide technical and legal comments on their proposed legislation establishing authority to implement RCRA. The identification of regional boundaries and responsible agencies required many discussions with State officials. In most cases, we obtained the identification or nomination of the lead agency to implement RCRA from the Governors. On several occasions we were thwarted by legislative and other types of restraint within the States. We are still awaiting the lead agency designation from one State.

We met with the State solid waste directors to discuss the proposed automated data-processing system for regional solid waste management. Consideration was given to how such a system could be adapted to existing computer systems and what changes would be necessary.

We reviewed and provided technical advice on 10 grants to Appalachian communities in Region III by the Department of Health, Education, and Welfare.

Land Disposal. Our States are kept abreast of the Agency's progress in preparing for the dump inventory and the surface impoundment assessment program through quarterly meetings.

The Regional solid waste program and the Office of Solid Waste have been deeply involved in preparing and reviewing an environmental impact assessment for three solid waste disposal facilities. These facilities are located in Bradford, Sullivan, and Tioga Counties in Pennsylvania.

The now famous Army Creek Landfill located in New Castle County, Delaware, is still a gnawing issue in this Region; many technical discussions are still being held regarding the leachate's impact on ground water that supplies nearby residents. Staff members have also been involved in identifying and offering suggestions to correct potential solid waste disposal problems at the proposed U.S. Steel's Conneaut plant. We provided assistance to a Department of Defense facility by helping them locate a new solid waste disposal site on their base. Loudoun County, Virginia, was provided technical assistance on the operation of a demolition waste landfill that was creating a potential leachate problem.

Hazardous Waste Management. The Regional staff reviewed and commented on existing and proposed hazardous waste legislation for Pennsylvania, Virginia, and Maryland.

Kepone is still an important issue in this Region. We reviewed the results of the test burn of Kepone that was performed in Toledo, Ohio. We were also involved in Virginia's feasibility study of the use of the oceangoing vessel, Mathias III, for kepone destruction. We also worked with the Pennsylvania Department of Environmental Resources in resolving a disposal problem involving the Koppers Company and a vanadium oxide spill; we suggested that the vanadium oxide be recycled, reprocessed, or returned to the manufacturer. A somewhat similar incident occurred when a derailment caused the spillage of epichlorohydrin in Point Pleasant, West Virginia. The contaminated soil was finally shipped, by rail, to Dow's Texas Plant for reprocessing.

The various program offices within the Regional Office, namely Surveillance & Analysis and Enforcement, cooperated with us when we were called to investigate the contamination of a tributary of the Susquehanna River. Effluent from an oil reprocessor was seeping through the overburden of an abandoned strip mine into the tributary. We have also become very involved with the Regional Office of the Occupational Safety and Health Administration in areas that relate specifically to hazardous waste management.

During the past year, with the assistance of the Regional Administrator and the Office of Solid Waste, we have made every effort possible to encourage the State of Pennsylvania to accept all the responsibilities of RCRA, especially Subtitle C. Our efforts included meetings with the Governor, the Secretary of the department designated by the Governor as the lead agency to implement RCRA, and several State Legislators. We still have no positive assurances that the State will accept the regulatory sections of RCRA. In the event it does not accept Subtitle C, we have advised headquarters of our estimates of monies and staff the Regional Office would require to operate the program in the State.

Resource Recovery and Conservation. The Federal office paper recycling program was initiated in the Philadelphia area by headquarters with assistance from the Regional Office. Strong employee participation has developed.

Representatives of the federally funded Teledyne Resource Recovery Plant, located in Baltimore County, discussed with Regional personnel their plans to install additional shredders to develop a more efficient size and rate of production of refuse-derived fuel (RDF) for use in cement kilns. As part of the review of the proposed U.S. Steel

Conneaut Plant in northwestern Pennsylvania, we discussed the potential use of RDF in the operation of the plant. We are also currently involved in working with James City County, Virginia, through the Technical Assistance Panels Program, on an energy recovery program.

Regional staff discussed with the JACA Corporation's environmental consultants issues related to the recycling of demolition and construction waste in northeast Pennsylvania.

Public Participation and Education. Some of the most productive presentations on RCRA were made to private industry. Numerous industries located in this Region were interested in how the Act would affect them. The majority of the presentations were made to groups of two or more industries. Three presentations were made to constituent groups of two Congressmen.

Other presentations were made at an American Public Works Association training course, to a northwestern Pennsylvania planning and development commission, and at a Solid Waste Management Seminar in Morgantown, West Virginia. A combined presentation on RCRA and pretreatment of industrial waste was given at a public officials meeting in Philadelphia. The West Virginia Chapter of the American Public Works Association held a seminar in Charleston, West Virginia, on solid waste management; regional personnel made a presentation on the activities the Agency expects West Virginia to carry out with their grant funds.

In another form of interaction, Regional personnel serve on the Pennsylvania Governor's Solid Waste Advisory Committee. RCRA issues are discussed at the committee's monthly meetings.

REGION IV

(Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee)

Planning and Development. The identification of regions and responsible agencies in accordance with Section 4006 was a major objective. The State solid waste management agency in each State was designated to develop the State plan. Regional or multijurisdictional planning agencies were designated to do regional or local solid waste management planning in Alabama, Mississippi, North Carolina, Georgia, and South Carolina. In Florida, local or county governments are responsible for local planning. In Tennessee and Kentucky

the State solid waste agencies were given responsibility for regional planning with the option to contract with regional authorities.

As for implementation, county and/or municipal governments were designated the responsible agencies in Alabama, Florida, Georgia, Kentucky, North Carolina, and Tennessee. In Mississippi and South Carolina, the county and municipal governments were designated as responsible for only solid waste disposal at this time. In Georgia, South Carolina, and Tennessee, the State solid waste agencies were designated to perform hazardous waste management planning.

A 5-year State plan was developed by all eight States during the early 1970's with Federal financial assistance. Each State has since produced a strategy document that updated each State's solid waste program objectives. All of the fiscal 1979 draft work programs for Region IV contain an element for the development of a State plan in conformance with the guidelines for the Development and Implementation of State Solid Waste Management Plans.

State solid waste agencies in North Carolina and Georgia have contracted with regional planning agencies to develop regional plans that will be included as part of the State plan. Kentucky's plan will be developed by an outside consultant over a 3-year period.

The Technical Assistance Panels Program was established in Region IV. We received 31 major technical assistance requests. Thus far consultant support has been provided for seven of the requests, peer-matching for two, and EPA staff assistance for nine.

Land Disposal. The broader definition of solid waste in RCRA caused all States in Region IV to evaluate their regulations and legislation to determine if revisions were necessary for the new areas of responsibility. Florida, Mississippi, Kentucky, North Carolina, South Carolina, and Tennessee passed new legislation or developed new regulations during fiscal 1978. The emphasis in the past has been on municipal solid waste processing and disposal, but the State programs are now accepting increased responsibility for other wastes, such as industrial waste and pollution control residuals.

All eight States have committed manpower and resources for the open dump inventory. Preliminary work for the inventory was initiated in all States.

Hazardous Waste Management. The Solid Waste Management Section of the Regional Staff was reorganized early in 1978 by function instead of by State. As a result, a Hazardous Waste Management Coordinator was selected to assist the Section Chief in tracking developments with EPA headquarters and the States relating to hazardous waste management. Two additional full-time engineers were added to the staff.

Because there are eight States in Region IV, it is difficult to track the development of State programs and give the necessary technical assistance to each State. Manpower and travel fund shortages have hampered State-Federal interaction. However, the States in Region IV have made good progress in moving towards hazardous waste programs as described below:

All States have completed or are about to complete hazardous waste (or special waste) surveys. The hazardous waste surveys have resulted in industry contacting the States to seek advice on disposal of hazardous wastes. Also the surveys have shown the States that comprehensive hazardous waste legislation is needed.

Five States--Alabama, Kentucky, North Carolina, South Carolina, and Tennessee--recently enacted specific hazardous waste legislation. In two States--Florida and Mississippi--hazardous waste legislation was introduced but did not pass. Georgia chose to wait until the next legislative session to introduce comprehensive hazardous waste legislation.

Tennessee drafted new hazardous waste regulations. Kentucky is developing new regulations. South Carolina and North Carolina have not yet started writing new regulations. The other States use very general sanitary landfill regulations to control hazardous waste disposal on a case-by-case basis.

There has been an upsurge in interest in hazardous waste disposal sites in the Region. Hazardous waste disposal sites have been permitted (by the State) in Alabama and South Carolina. These sites are all presently burial sites but incineration and treatment may be added in the future when the Federal regulations become effective.

The States are using EPA grant money to hire staff for hazardous waste management. Significant increases in most States have already been achieved and additional personnel are anticipated. Some States have problems in

hiring technical personnel in hazardous waste management because of low State salaries. The idea of using EPA assignees as in the air program is very appealing to most of our States.

The Solid Waste Section was assigned the responsibility for making the technical reviews of all PCB disposal site applications. The Regional Administrator approved Waste Management of Alabama, Inc., as a chemical waste landfill per 40 CFR 761 under the authority of the Toxic Substances Control Act. Sangamo Electric has applied for approval to dispose of its own PCB waste on Sangamo property. The initial application was deficient and is being corrected by Sangamo.

In order to improve the capabilities of the Regional Response Team (RRT), the Regional Office recommended that each State assign a State solid waste representative to the RRT. This action is necessary to improve coordination of spill cleanup and disposal efforts. In some States, the solid waste group was not contacted until the cleanup group was ready to dispose of spill residues. This delay slowed up the entire process, since the State solid waste group needs to know exactly what is to be disposed of. In many cases, the cleanup branch is not able to afford shipment of hazardous materials spill residues to acceptable out-of-State hazardous waste facilities. As more hazardous waste facilities are established in the Region, this problem should ease.

The implementation of the Hazardous Materials Spill Regulations under Section 311 of the Clean Water Act will greatly increase the demand for disposal of hazardous residues, as will implementation of the Agency's pretreatment program.

Resource Recovery and Conservation. Metropolitan Dade County has a Solid Waste Master Plan designed to centralize disposal activities and discontinue current environmentally unacceptable disposal methods. Over 80 percent of Dade's solid waste is disposed of in various private and public landfills. The problems with landfills and potential effects on the aquifer have led to a move away from heavy dependence on landfilling. Under the master plan, the major facility is a 3,000-ton-per-day resource recovery unit which will separate the solid waste stream, utilize the combustible portion as fuel for a 77-megawatt electric generating plant, and recover metals and glass. It is expected to be operational by 1980. The plan also includes a landfill and three transfer stations; one of the transfer stations is already in operation.

The demonstration plant in Pompano Beach, Florida, designed to test the feasibility of turning urban refuse and sewage sludge into methane-rich gas, completed equipment shakedown on June 26, 1978, and has embarked on a 25-month experimentation phase of operation. The project is funded by the U.S. Department of Energy.

Public Participation and Information. Regional Office personnel are working with the States to familiarize them with requirements for public participation under RCRA.

The Regional Office required as a condition to the fiscal year 1978 grants that the State submit a plan for public participation in the development of the fiscal year 1979 work plan.

In Mississippi, the solid waste director set up an ad hoc committee to assist in developing new solid waste regulations, inviting representatives from local government, industry, other State agencies, and public interest groups. Florida announced several public meetings to be held around the State to receive public comment on its draft 1979 work program. Other States in the Region are planning actions similar to Florida's.

The Regional Office in coordination with the State solid waste programs began publishing a Regional Solid Waste Newsletter which is distributed on a quarterly basis to planning agencies, engineering consultant firms, public interest groups, and private individuals who have expressed an interest in solid waste management. Several States held public information meetings on the Section 4004 land disposal criteria and Section 3006 guidelines for State hazardous waste programs.

State chapters of the League of Women Voters in South Carolina and Georgia received EPA grants to promote citizen involvement in solid waste management. In South Carolina, the League of Women Voters developed a brochure on hazardous waste management and held three public meetings around the State on hazardous waste management issues. The Georgia League of Women Voters developed a pamphlet entitled Georgia Roadmap to RCRA which describes the paths to public participation in solid waste management.

REGION V

(Illinois, Indiana, Ohio, Michigan, Minnesota, Wisconsin)

Planning and Development. The identification processes under Section 4004 constituted the main planning activity for fiscal year 1978; the highlights are as follows: In Illinois, the State is identified as an interim region and the agency responsible for municipal waste management planning. Substate regions and divisions of responsibilities will be identified after EPA guidelines on the State plans are finalized. Meanwhile the State is completing a statewide assessment of disposal facility needs by reviewing State permits containing site-life capacity data. In Indiana, the University of Indiana is conducting the identification process under contract. Michigan incorporated extensive public participation into the identification process. Minnesota identified as regions the Twin Cities and the Duluth area, with the rest of the State as an interim region. Further designations will await attention by the Legislature after appropriate studies are complete. In Ohio, recommendations were sent to the Governor in May 1978 on designations for 40 percent of the State for planning purposes, designations for a somewhat lower percentage for implementation purposes, and a schedule for completing identifications. Wisconsin's recommendations and findings were sent to the Governor and is notable for the level of detail of the analysis of current institutional arrangements in the State. The preliminary identifications contained in the Executive Order are in the general order of funding priority. As a prerequisite to substate receipt of grant funds, the State intends to encourage specific written agreements between local planning and implementation agencies, thereby encouraging planning efforts which are implementable and nonduplicative.

Land Disposal. There was major emphasis in the Region on publicizing, reviewing, and commenting on the proposed land disposal criteria. To promote public awareness of the proposed regulations at the State and local levels, Regional staff was made available to State agencies to participate in public meetings. Four States (Indiana, Michigan, Minnesota, and Wisconsin) scheduled such meetings, where Regional staff presented the "EPA Criteria for Land Disposal" slide show. Following the presentation, questions were answered by EPA and the State staff. Audiences varied in size from 30 to over 200 participants representing virtually all interested parties in solid waste management. Major issues discussed included the concern over Indiana's classification of all sludges from wastewater treatment

plants as hazardous waste, Michigan's current exemption of small communities from open burning and ground water monitoring requirements (the criteria would require removal of these exemptions), long-term care responsibilities for land disposal sites (how to insure that sites will be maintained in an environmentally acceptable condition after they are closed), and the requirements for monitoring explosive gases.

In addition to summarizing these issues for headquarters, consolidated Regional Office comments were submitted. The comments included those from the Water and Enforcement Divisions, which were received in response to our request.

Hazardous Waste Management. In the area of hazardous waste management, Region V staff has been highly active in development of the Subtitle C regulations and has greatly expanded technical assistance. The staff provided review comments and testimony regarding Minnesota's proposed hazardous waste management regulations and reviewed Indiana's existing legislation for conformance with RCRA. Presentations regarding the meaning and implementation of Subtitle C were given to a legislative committee in Michigan, the Cincinnati Chamber of Commerce, the University of Wisconsin Hazardous Waste Seminar, and others.

The staff met with the Water Quality Board of the International Joint Commission in Ontario, Canada, to discuss mutual problems concerning hazardous wastes and their transportation across international borders.

Region V became involved in the activities of the Governor's Task Force on Hazardous and Toxic Wastes in Michigan at their request. The Task Force was assisted in developing siting criteria for a hazardous waste disposal facility.

Staff presented testimony to the Circuit Court for the County of Oscoda, Michigan, regarding a landfill which is to be used for the disposal of cattle contaminated by polybrominated biphenyl. The landfill was constructed and designed by the Michigan Department of Natural Resources.

Resource Recovery and Conservation. The cornerstone of Region V's program in resource recovery and conservation is now the Technical Assistance Panels Program. The ability of EPA to respond to requests for assistance has been greatly enhanced by this program.

In setting up the Panels program, an operating hand-book was prepared for use by the staff. Meetings were held with State agencies in late winter and again in July to enlist State involvement in reviewing candidates for Panel assistance. The first instance of Panel assistance in the Region involved evaluation of the proposed operating program for the Western Lake Superior Sanitary District codisposal facility under construction in Duluth. Estimates of the project-related collection costs to be incurred by the 30 private haulers in the area were also a subject of evaluation.

Extended Panel activities began in May in response to a request from Red Wing, Minnesota. The city is considering modular incineration for disposal of municipal refuse and requested assistance in resolving such crucial issues as form of procurement, supply of waste, and financing alternatives. The Panel prepared an implementation outline and information material and suggested items to be included in the scope of work to be undertaken by the City's own consultants.

A number of requests were fulfilled through short-term assignments, including peer matches. Staff worked with the Monroe County Solid Waste District (Indiana); the City of Fairmont (Minnesota); the City of Detroit; the Ohio EPA's project in Cuyahoga County; and Kent County, Michigan. Peer matches were arranged at the request of State governments of Michigan and Minnesota, as well as Oakland County, Michigan; Battle Creek, Michigan; and Itasca County, Minnesota.

The staff expanded its activities also in the area of low-technology resource recovery. The number of Federal buildings implementing office paper recycling was increased to seven and staff provided technical assistance to General Services Administration. We were quite active in preparing and making presentations about curbside source separation projects and recycling centers. Finally, a dialogue was established with paper industry representatives to determine how to obtain the scrap products desired by the industry.

Public Participation and Education. Of all the activities in Region V related to RCRA, the most visible has been the disposal of hazardous wastes at specific sites. The inability of the Minnesota Pollution Control Agency to obtain a site that would demonstrate the safe disposal of hazardous waste was well documented in the local media.

The disposal of PBB-contaminated cows has become a gubernatorial campaign issue in Michigan. Disposing of PCB material at Wilsonville, Illinois, led to roadblocks set up by the local citizenry. In all instances, little public education was done by EPA or the State agency.

Public notices will be published shortly on EPA evaluation and possible approval of chemical waste disposal facilities to handle PCB material. Response to the public notices will dictate the amount and type of public education required, which could become massive.

Educational briefings to State legislators and their staff have led to the passage of hazardous waste legislation in Wisconsin and the introduction of similar bills in the Michigan legislature. Additional briefings are planned for the Ohio legislature and may be necessary for any State needing new statutes that compare to RCRA.

Lectures were given at numerous solid waste seminars held throughout the Region.

REGION VI

(Arkansas, Louisiana, New Mexico, Oklahoma, Texas)

Planning and Development. The Region VI Solid Waste Branch has been actively assisting States and municipalities in planning for full development of all phases of RCRA. The staff has made numerous visits to the State agencies to advise them of grant coordination and other program activities. We have also met with gathered representatives from appropriate State and local entities in "give-and-take" sessions. Regionwide meetings have taken place in Dallas, Austin, and Santa Fe, and a most productive statewide conference was held in Baton Rouge. Region VI is unique in having large petrochemical industries, high population growth concentrations, extensive wetlands, and large energy-producing States. Region VI also encompasses large rural areas, especially in New Mexico and West Texas. The various programs have necessarily been flexible due to the diversity of the terrain, population, and economics of the five States. Planning regions have been identified formally or informally in each State.

The Regional Office sponsored meetings in Arkansas, New Mexico, and Louisiana in conjunction with State and local officials to inform the public and substate officials about RCRA with emphasis on the technical assistance program.

Requests for technical assistance were subsequently received by the Region, and consultant services and peer matches were utilized. On July 13, the Regional office held its first Technical Assistance Panel Meeting in Santa Fe. It was attended by State personnel, Regional personnel, headquarters representatives, and the consultants to discuss Panel strategy and evaluation.

Although the Panel program got a late start, Region VI utilized the technical assistance mechanism vigorously. Recipients thus far include Arkadelphia and Pulaski Counties, Arkansas; Police Jury Association of Louisiana; Taos County, New Mexico; in Oklahoma, the cities of Duncan, Ft. Towson, and Tulsa, Le Flore County, Arbuckle Trust, Southern Oklahoma Waste Disposal Authority, and Oklahoma State Department of Health; and in Texas, the cities of Denton, Fort Worth, Richardson, Midland, and Mesquite and the Texas Department of Health.

Resource Recovery and Land Disposal. The Region VI States consider resource recovery the best approach to waste management. Various forms of recovery and volume reduction are being considered and should result in fewer and smaller landfills. Waste heat recovery is the most widely accepted recovery process. There is interest also in use of sludge in agriculture. We have developed programs to coordinate closely with the 208 residuals management staff and others associated with sludge management.

Arkansas and Oklahoma have expressed particular interest in establishing waste exchanges. Such a program is presently operating successfully in Houston. Meetings were held this spring in Oklahoma City and Little Rock involving headquarters experts on waste exchange, Regional personnel, State officials and the private sector to expedite implementation of waste exchanges.

Hazardous Waste Management. Only when final regulations are promulgated under Subtitle C will the States be prepared to identify and quantify hazardous wastes and fulfill the "cradle-to-grave" concept of hazardous waste regulation. Texas is a very active participant in work groups to develop the hazardous waste regulations. We expect only Texas to qualify early for authorization, but Oklahoma should be able to qualify in late 1980. Our three other States remain unknowns in the area of full authorization.

Notable recent achievements in Region VI include important legislative endeavors. Oklahoma has further refined the Controlled Industrial Act of 1977, New Mexico has passed legislation enabling development of State regulations, and Louisiana has passed a Waste Management Act, while Arkansas is investigating the capabilities of the Department of Pollution Control and Ecology to regulate hazardous waste more efficiently.

Region VI contains the only three commercial incinerators in operation in the nation for potential PCB disposal. These are the Rollins facilities at Deer Park, Texas, and Baton Rouge, Louisiana; and ENSCO at El Dorado, Arkansas. Applications for approval of these have been received.

Public Education. Early this year the Regional staff filled speaking engagements in every State regarding RCRA implementation. A public information position is being added to the Solid Waste Branch of the Regional Office. With the aid of the EPA Office of Public Awareness and with OMB approval, the first Region VI Solid Waste News Summary was released on August 7, 1978. By issuing the News Summary periodically, we hope to keep all interested persons in the Region informed about the latest developments regarding RCRA.

REGION VII

(Iowa, Kansas, Missouri, Nebraska)

Planning and Development. All the States in the Region undertook activities to identify regions and responsible agencies pursuant to Section 4006. In each State, numerous meetings with public and private organizations have been necessary to establish the basic identifications. The identification of planning and implementing agencies is nearly complete and will cover disposal of municipal waste and the management of hazardous waste. Additional identifications will be made as planning takes place and some incentive for participation of local governments is made available. In three States, expansion of the identifications to include other waste streams will require legislation permitting such assignment of responsibility.

The four States received solid waste management program support grants in fiscal year 1978 which approximated the 1977 amounts, and they have begun developing State plans which meet the requirements of RCRA. Only in Missouri was adequate funding provided to allow any local/regional participation in the planning process (contract funds which averaged \$3,000 per region). Thus, the ability of the States and local/regional agencies to successfully carry out the planning and implementation mandates of RCRA in Region VII is seriously in doubt without additional assistance. The shifting of funds into the hazardous waste programs in fiscal 1979 will result in a net decrease in the Region VII State funds available for planning.

The Technical Assistance Panels program got underway when the contract for consultants was awarded in August. Assistance is being offered to several communities.

Land Disposal. The Regional Office made presentations explaining the proposed land disposal criteria, as well as participating in the work group for developing the criteria and assisting at hearings and public meetings.

Missouri updated and published their list of permitted land disposal sites, and Kansas initiated such a listing with a survey. With the lists prepared by Iowa and Nebraska, the preparation of Region VII States for initiation of the land disposal inventory is nearly complete. Minor regulatory changes are anticipated in each State, but procedural requirements are the State's purview. Each State has unique priorities for sites in the second year of the inventory.

The four States completed legislative reviews to determine the coverage of State laws over the land disposal practices included by the RCRA definitions. Iowa, Kansas, and Missouri have complete control over municipal solid waste facilities. Nebraska's statutes allow second-class cities and villages to operate municipal solid waste facilities with limited controls. Iowa promulgated sewage sludge disposal regulations which require permits for high-rate application sites and provide standards for all sites. Kansas and Missouri have legislative authority over such sites but no regulations, and Nebraska has limited authority over such sites. Iowa statutes allow unpermitted industrial waste disposal sites on the property of the facility. Definitive regulatory control of agriculture and mining wastes and industrial impoundments are lacking in the four States. In addition, State controls of individual household and agricultural wastes are not attainable in Region VII.

Missouri completed a survey of sewage sludge quantities and locations and is preparing to examine sludge composition in fiscal 1979 and determine the responsible agency in State government. Iowa has surveyed sewage sludge disposal sites and promulgated regulations as noted. Nebraska revised their regulations for municipal waste disposal by adding numerous provisions on site location and operation. Kansas also strengthened their land disposal controls as part of the hazardous waste regulation development process. The State solid waste agencies are coordinating with the Assessment of Surface Impoundments, and staff will attend a training course in Kansas City early in fiscal 1979.

Hazardous Waste Management. In 1978 the Regional Office prepared a strategy to guide hazardous waste program development and implemented the PCB disposal program as well as actively participating in development of Subtitle C regulations.

Kansas promulgated regulations implementing hazardous waste management legislation passed in 1977. With the permit program in place, an additional 30 industries surveyed, and a year of experience monitoring the Kansas Industrial Environmental Services (KIES) disposal site near Wichita, the Kansas Department of Health and Environment determined they had the knowledge necessary to fully implement their program without waiting for the Federal program. Minor changes in the regulations are anticipated, but the basic program including manifests and surveillance activities are in effect. The Department expects to apply for full authorization under RCRA and authority for the notification program. The staff for the new program has expanded to four persons with additions anticipated as Federal funds allow. A unique program of aerial surveillance is being used to monitor the KEIS facility.

The Missouri Department of Natural Resources initiated regulation development by activating the ad hoc Hazardous Waste Legislative Committee. The appointment of the Waste Management Commission in April 1978 enabled the Department to proceed with implementation of the Missouri Hazardous Waste Management Act passed in 1977. Completion of the hazardous waste survey report and its approval by the Commission is anticipated in fiscal 1979. With the addition of a permitted industrial waste facility near St. Louis, the State is now served by four disposal sites and anticipates development of an incinerator. The Department will apply for interim authorization and the authority for the notification program. Staff development is progressing with employment of six full-time persons. Experience with the surveillance of existing facilities has provided invaluable background.

The Iowa Department of Environmental Quality and Iowa Legislative Research Bureau participated in development of hazardous waste legislation which was introduced in the 1978 session. The bill passed the Iowa House of Representatives by a substantial margin, but failed passage in the Senate. The Department anticipates introducing the legislation again in 1979 as their highest priority bill. Without legislation, the IDEQ is reluctant to initiate a State hazardous waste program and has declined to conduct the notification program. However, the Department does require that special wastes, including hazardous, industrial, or toxic wastes, must be accompanied by Department instructions to be accepted at a permitted facility (off-site). In addition, the Department has an extensive spill control program which assists in control of some hazardous wastes.

Efforts of the Nebraska Department of Environmental Control to obtain hazardous waste legislation were unsuccessful in 1978, but another effort will be mounted in 1979. The interest of the Department is evidenced by their development of a program and preparation of the legal justification to obtain interim authorization and conduct the notification program. Using existing authorities, Nebraska has adopted special waste rules and has permitted several disposal sites to handle selected industrial wastes. The application by a private firm for a permit to develop an industrial waste disposal site may aid the Department in obtaining legislation.

Resource Recovery and Conservation. In Missouri, the Bi-State Development Agency (St. Louis) hired consultants and obtained local financial support toward implementation of the 4,000-ton-per-day Union Electric Resource Recovery Project. Also in the St. Louis area, the Gateway Recyclers, a consortium of groups, was formed to promote greater materials

recovery. Elsewhere in the State, Columbia and Springfield have shown renewed interest in energy recovery concepts, and the Mid-America Regional Council (Kansas City) completed a study and recommended the establishment of a multiple facility concept which could maximize private participation. The first energy recovery installation by Allis Chalmers is now operational and uses plant waste to produce steam. Fort Leonard Wood has requested an appropriation to construct a steam recovery system using the base wastes as fuel. Under contract to the Missouri Department of Natural Resources, the Missouri Municipal League surveyed the resource recovery practices of local governments and will publish the results of the survey. In addition, the Department updated its market survey and is actively working with the Energy Program to develop an energy conservation and recovery strategy. Expansion of the St. Louis Industrial Waste Exchange to encompass Kansas City, through the Kansas City Chamber of Commerce, is a major accomplishment of 1978.

Iowa enacted a "bottle bill" which will be effective in 1979 and calls for minimum deposits on containers for mineral water, carbonated beverages, and liquor. The Iowa law affects a greater variety of beverage containers than any other State's law. In 1978 the Iowa Department of Environmental Quality consolidated the rules, "Sanitary Disposal Projects with Processing Facilities," "Composting Facilities," and "Recycling Operations." At the local level, Des Moines, Waterloo, Dubuque, and Fort Madison have, to different degrees, indicated a renewed interest in resource recovery; and John Deere and Company installed an energy recovery system at their Davenport facility utilizing plant wastes. In addition, the Ames Resource Recovery Facility completed their second year of operation and received an EPA grant to improve the facility.

In Kansas, the Department of Health and Environment maintains a list of known markets for recovered materials and has promulgated regulations requiring disposal facility operators to maintain records of materials handled. This should provide a helpful data base for resource recovery planning. In addition, the Department is actively assisting Kansas University and the City of Lawrence in evaluating the feasibility of a refuse incineration system to provide steam to meet the needs of the campus. Kansas State University is also investigating refuse-as-fuel alternatives, as is the City of Wichita. To stimulate interest in resource recovery, the Department is soliciting proposals from local governments for innovative solid waste planning programs and may try to fund worthwhile projects. They currently support Mid-America Regional Council implementation of their resource recovery plan.

In Nebraska, the Solid Waste Division published "A Market Directory to Recycling" which lists buyers of recycled materials and recycling centers. In addition, the Division offers technical assistance to public and private agencies interested in resource recovery. The Department is promulgating requirements for composting operations. Half a dozen sites utilizing sewage sludge for composting may be operable by the end of 1979.

The resource recovery planning grants for urban areas have elicited great interest; the Regional Office anticipates working with several communities to develop grant applications.

Public Participation and Education. The Iowa State agency held 16 widely publicized meetings concerning the identification of regions and agencies and developed an extensive mailing list. During the development of the sludge disposal rules, the Air and Land Quality Division met with all 158 members of the advisory committees for Water Quality Planning, 208 Grants, and solicited their input on the rules. The Solid Waste Disposal Commission furthermore provides the Department with a built-in public participation program which includes meetings throughout the State.

Kansas published a directory of sanitary landfills, transfer stations, and collectors in Kansas which includes a survey of solid waste disposed of in the State in 1977. This complements the resource recovery markets publication, the State solid waste management plan, and State hazardous waste practices survey published in previous years. In addition, meetings were held throughout the State on the designations of regions and agencies, and two public hearings were held on the revised Solid Waste Management Regulations and Standards. Eighteen repositories of State solid waste management documents have been established around the State, and a mailing list of 1,600 persons interested in solid waste management has been established for future information distributions.

Missouri held 18 meetings with extensive public notification for the purpose of identification of regions and agencies, and their regional contractors held an additional five meetings for the same purpose. The Department of Natural Resources published Sanitary Landfills and Geological Considerations in Missouri, a revised list of permitted facilities for solid waste disposal and processing, and a revised list of resource recovery markets. In addition, a list was compiled of over 1,000 persons interested in solid waste management issues and distributions. The issuance of sanitary landfill permits will, in the future, require a public meeting to provide for input by the public to the site design considerations--a major change in Department policy. The Solid Waste Program will also hold a public meeting on the State work program in conjunction with the Annual Solid Waste Management Conference sponsored by the Department.

In Nebraska, 16 highly publicized public meetings were held on the identification of regions and agencies, and further meetings were held to finalize the identifications. As a result, the Department of Environmental Control compiled a mailing list of over 700 interested persons. A public hearing on changes to DEC rules and regulations and a public meeting on the composting rules were both well publicized and attended.

REGION VIII

(Colorado, Montana, Utah, Wyoming, North Dakota, South Dakota)

The casual observer might predict that Region VIII has no significant solid waste management problems due to sparse population and vast Federal ownership. In recent years, however, the Region has experienced a boom in mining activities (oil, shale, coal, and uranium). Also, there has been increased development in the lumbering and forest product industry. Recreation, including skiing and other outdoor sports, has created huge seasonal population increases. These activities have increased waste generation and have added to waste disposal problems.

State legislators in Region VIII are cognizant of the increasing problems of waste disposal as evidenced by new responsibilities assigned to solid waste programs and the provision of additional funds and personnel.

Planning and Development. Solid waste grants to the States in fiscal 1978 totaled \$575,530, an increase of 44 percent over 1977. With these increased funds, the States are developing programs capable of compliance with RCRA.

The Regional staff is assisting Utah with the development of new legislation. The other States need changes in their legislation and are expecting to work on them within the next year.

All the Region VIII States identified solid waste planning and implementation agencies for municipal solid waste and sewage sludge. With the exception of Wyoming, all States have designated existing substate regional planning bodies for solid waste planning, while counties and municipalities were identified as having the implementation responsibility. In Wyoming the sparse population makes multicounty planning less feasible. In the absence of substate regions,

the Wyoming Solid Waste Program has been temporarily designated as the agency for planning and implementation. Further designations at the State, regional, or local level are being assessed by the State solid waste programs.

Each State had public participation input in the identification process. Two States utilized advisory committees for designation proposals. All used the OMB A-95 process to cover existing planning bodies and developed correspondence to local and regional levels to provide additional input opportunity. Colorado and Montana held public meetings throughout the State. Public notification in daily newspapers was also utilized in Montana. In summary, the identification process in Region VIII has progressed satisfactorily.

The Technical Assistance Panels program is in full swing. In the period January through June 1978, over 60 requests were received. Communities are becoming much more aware of their solid waste problems. Almost 50 percent of all requests deal with land disposal, 40 percent relate to resource recovery, and 10 percent to hazardous waste problems. Hazardous waste requests are expected to increase after Subtitle C regulations are finalized. Peer matching was used approximately 15 times by the Region in 1978. The peer match program is very positive and popular with local and State agencies.

Consultant services were limited in 1978 to major program activities and hazardous waste areas, such as the methane gas problem in Denver, where a determination of the hazard was made and recommendations were submitted. This effort was successful in defining a problem, and the Intergovernmental Methane Task Force, consisting of State, Federal, and local officials, began programs to reduce the hazards involved in gas migration. The Eagle County, Colorado, project to convert sawmill residue and municipal waste to steam was also assisted by a contractor. Technical assistance monies were used to sponsor a synthetic liner training conference in Afton, Wyoming. The conference was oriented towards community planners and local government officials. It was videotaped by Region VIII and will be consolidated into training programs on the uses of synthetic liners.

Land Disposal. During 1978 the Regional staff continued to work closely with the private and public sectors in the management of landfill operations. We maintain close contact with the Federal land management agencies. Bureau of Land Management landfill plans and lease stipulations are reviewed by this office. Field inspections are made when appropriate. Similar involvements encompass military reservations, national parks, Fish and Wildlife Service sites, and other areas.

Particularly noteworthy during the past year has been the contacts with Indian reservation personnel at Ft. Peck, Ft. Belknap, Ft. Berthold, Blackfeet, Flandreau, Rocky Boy, Pine Ridge, Rosebud, and Southern Ute.

The Solid Waste Section held four public meetings (Denver, Salt Lake City, Billings, and Sioux Falls) to review and receive comments on the Proposed Classification Criteria for Solid Waste Disposal Facilities (Section 4004). Approximately 4,000 invitations and Federal Register notices were mailed to all levels of local government. Personnel from all six States participated with Regional office personnel in the meetings to present the Criteria and answer questions. The public's comments were recorded, and sent to Washington for consideration.

The Regional staff and State solid waste personnel attended EPA meetings and workshops sponsored under the Clean Water Act and the Safe Drinking Water Act. The workshops were designed to orient personnel in both conducting ground water evaluations for the solid waste inventory and making surface impoundment assessments. As a result we expect to see considerable more liaison between the water and solid waste programs at the State and Federal levels in the future.

Hazardous Waste Management. Fiscal 1978 was a year of slow but steady development of State hazardous waste programs in Region VIII. Generally, the States expressed the opinion that the draft Section 3001 Criteria encompass too broad an area unless provisions are included to provide for more than one level of control, i.e., Class I and Class II hazardous waste sites. However, the States have been moving toward developing hazardous waste programs, and we expect all of them to apply for interim authorization. Regional Counsel review of legislative authority of the six States indicates that all should qualify with minor regulatory changes. Montana has the most complete legislative authority for hazardous waste management in the Region and recently promulgated regulations similar to California's. North Dakota also has fairly comprehensive authority, but the other States will need major changes to gain full authorization. Wyoming, Utah, and possibly Colorado will submit bills for 1979 legislative sessions.

All the States added new positions to their staffs for hazardous waste management, and several will be seeking more positions and resources from their 1979 legislatures.

Montana and Utah completed hazardous waste surveys. The other States are planning to do preliminary surveys prior to the introduction of hazardous waste legislation. Utah is also using data being gained from a voluntary manifest system instituted in Salt Lake City and County.

Colorado, Utah, and North Dakota have special advisory committees studying RCRA and making recommendations to their Departments of Health. Colorado, which has the biggest hazardous waste problem in the Region, went one step further and established an ad hoc committee for hazardous waste as a subcommittee of the advisory group. A seminar on hazardous waste legislation options sponsored by the Colorado League of Women Voters generated considerable interest and is being evaluated for other States in the Region.

Resource Recovery. Strides were made in resource recovery both in urban and rural settings. This momentum is due to the increased awareness at both the State and local levels of effective alternatives to land disposal. Region VIII was chosen for a 3-day Resource Recovery Technology and Implementation Seminar which provided many communities with new information. The Regional Office is in the third year of its office paper recycling program. The program has resulted in the collection and sale of 42 tons of high-grade white paper from approximately 300 employees. The activity of the local GSA office in the program has been immensely helpful in getting other GSA facilities in Denver and Logan, Utah, (IRS) to initiate programs. DOD installations in Colorado Springs and Denver have taken initial steps to begin paper recycling.

One of the major ongoing programs in resource recovery is in Lamar, Colorado, where BioGas is attempting to convert feedlot manure into methane gas to be used as supplementary fuel at the municipally owned power generation station. In addition, this facility is to produce animal feed for use as a salable byproduct. In Denver, a major paper drive sponsored in part by Mountain Bell of Colorado was initiated to reduce the wastepaper tonnage represented by the annual landfilling of telephone books. This program developed public awareness of recycling and was implemented in other Mountain Bell areas. Eagle, Colorado, is planning, through a joint private industry-county effort, to convert waste from the local sawmill and the surrounding community to steam for use by the wood-processing plant and the school system. Breckenridge, Colorado, is conducting a feasibility study with the Forest Service to evaluate use of an incinerator with heat recovery to serve steam heat users.

In Montana the abandoned auto program has been working well for several years. The program is funded by a titling/registration fee. Malstrom Air Force Base in Great Falls was one of the DOD's 10 demonstration sites for the returnable beverage container implementation program. Great Falls, in a joint endeavor with Malstrom Air Force Base, is evaluating a resource recovery system that utilizes a shredder. Helena instituted a citywide newspaper source separation program with implementation assistance from the National Wildlife Federation. In Montana newsprint is used in the manufacturing of insulation. Missoula is pursuing a composting operation which will reduce waste volume and extend landfill life.

North Dakota's abandoned auto program continues to be a success. Montana and North Dakota are both looking at tire recycling activities with a firm in Regina, Canada, and a joint project may be on the horizon. Fargo is in the secondary planning stages and is now committed to resource recovery. The availability of markets for recovered materials and energy is the major stumbling block.

Sioux Falls, South Dakota, is evaluating a 450-tons-per-day waste processing plant contingent upon the marketing of log briquettes for use in a Northern States Power coal-fed stoker boiler system. The Wasatch Regional Planning District in Utah has been investigating resource recovery activities along the entire Wasatch front range. Teledyne, Inc., the City of Ogden, and Weber County have undertaken a project to develop a resource recovery facility utilizing city-owned incinerators. The incinerators are operating on an air pollution variance until the plan can be implemented.

In Wyoming the only major ongoing activity is at the University of Wyoming in Laramie where they are pursuing a system using county-wide municipal waste as a supplement to coal to heat the University buildings.

Public Participation and Education. A major effort was made by the Regional and State offices to involve and inform the public on solid waste matters through sponsorship of public meetings and issuance of information. The Regional Office sponsored public meetings throughout the Region. Some of the major public relations programs funded were a 3-day landfill liner conference at Jackson Hole and a series of solid waste training sessions conducted by the Colorado Department of Health. These and other meetings were accomplished through funds from the State grants programs, technical assistance programs, and other special funds, such as

demonstration grants. The Region VIII Rural Solid Waste Management slide series was distributed to the States for their use. This series has received wide use. It was shown by the Regional staff at RCRA meetings at many county, city and organizational meetings. The Indian Health Service in South Dakota and Colorado used the set for various meetings with Indian groups. An EPA public education grant was awarded to the National Wildlife Federation to produce a 25-minute movie documenting a successful solid waste collection and disposal program in Stillwater county, Montana. This movie is expected to receive wide usage in Region VIII states.

REGION IX

(Arizona, California, Hawaii, Nevada, Pacific Island Territories)

Planning and Development. Arizona has significant legislative authority for the development of RCRA programs. The principal thrust at present is to obtain a hazardous waste disposal facility in the State and to develop the necessary regulations for a hazardous waste enforcement program that meets the requirements of RCRA. Due to institutional and political problems the State Department of Health Services has had difficulty in designating the responsible local planning agencies, but this task is now nearing completion. Strained relations with the Indian nations is a persistent problem, and the State will likely seek Federal assistance in implementing RCRA on Indian lands.

In California the Solid Waste Management Board has an advanced program that includes approved and enforceable plans for virtually all counties. The State Department of Health is responsible for the hazardous waste program and is a national leader in State hazardous waste control program development. In 1978 regional boundaries and responsible agencies were identified, although there is still some room for interpretation. The Solid Waste Management Board designated that local cities are responsible for local issues, counties are responsible for county issues, and the "208" regions are responsible for regional issues. The State Board will determine whether a particular issue is local, county, or regional in nature and hold the appropriate level responsible.

In June 1978 Californians passed the Jarvis-Gann initiative (Proposition 13) which will cut property taxes by about 60 percent. The predicted impact of this cut in revenues on solid waste management services is as follows: (1) overall collection and disposal of municipal solid waste is not expected to be materially affected because, of the \$500 million cost statewide, only \$50 million comes from property taxes; (2) both enforcement and planning are usually property-tax supported, and it is expected that less enforcement will be provided which may lead to future disposal problems, and updating of county plans will probably be deferred; and (3) most recycling centers are subsidized by tax revenue and are expected to suffer. However, revenues generated under the Litter Control, Recycling and Resource Recovery Act of 1977 (see below) should soften this last problem.

In Hawaii, the State Department of Health was designated as responsible for land disposal and hazardous waste planning. The planning boundaries are the counties. Each county has a solid waste management plan, and these will be updated in 1979. Some uncertainty still exists regarding the split of responsibilities between the counties and the State, especially on hazardous waste management. A State/local RCRA Advisory Committee has been charged with resolving differences.

The Nevada Department of Conservation and Natural Resources is preparing an extensive legislative package permitting development of their RCRA program for introduction into the State's legislative session in January 1979. The Department designated the counties as planning areas and the county commissioners as the planning agents for municipal solid waste except for Washoe (Reno) and Clark (Las Vegas) counties, where boards of health will prepare the county plans.

For American Samoa the principal accomplishment was the training (with RCRA funds and arrangements made by the Regional Office) of a landfill operator and a collection supervisor by a sanitation district in California. Also, a contractor began preparation of an updated State plan.

In Guam the solid waste regulations are generally adequate but there is a need for better coordination between civilian and military operations. The northern part of the island is a sole-source aquifer that must be protected from leachate and other pollutants.

The Northern Mariana Islands became a government in January 1978 and for many months governmental organization was not finalized. It has now been decided there will be an Office of Planning and Budget, where all environmental planning will occur, and an environmental protection agency for implementation. Because of this organizational delay and the lack of any legislation or regulations, RCRA implementation in NMI will lag behind that in the other territories.

Land Disposal. Arizona, California, and Hawaii have permit systems for land disposal; in Nevada, where there is no permit program as such, no disposal facility can be constructed without the State's concurrence. All the States are preparing to begin the inventory process when the criteria become available.

Hazardous Waste Management. In Arizona, over the past few years EPA funds and technical assistance supported contractor studies which led to the selection of a site for the State's first hazardous waste disposal facility. The first study, completed in 1976, was an inventory of hazardous wastes. A second study looked into disposal of pesticide containers and recommended that the State find a hazardous waste landfill site. Next, criteria for evaluating potential sites were developed by a Task Force of the Western Federal Regional Council with EPA technical assistance. The two final contracts narrowed 12 general locations down to a specific site which is currently undergoing detailed hydro-geologic and archeologic scrutiny. The selected site is on land owned by the Bureau of Land Management, and it is planned that title of this land will be transferred to the State. The selection of a private firm to operate the site is anticipated during 1979. This is believed to be the first time a State has used a systematic statewide approach to finding an optimum site. It should lead to much better siting than the typical approach of finding an available site and determining if it meets minimum criteria.

Arizona also drafted regulations modeled after California's hazardous waste regulations. Public hearings on these draft regulations were held in July.

Minimal changes are anticipated in California's hazardous waste regulations to comply with eventual Federal standards. A contracted hazardous waste inventory report was completed which covers Hawaii, Guam, American Samoa, and the Northern Marianas. This report provides the basic data needed for planning development of Hawaii's hazardous waste program. Nevada is preparing to seek full authorization for the hazardous waste regulatory program, and EPA is now reviewing their proposed hazardous waste legislation and regulations.

Source notification letters were sent to 500 potential users of PCBs in Region IX. Approximately 200 facilities replied in writing or by phone. Presently there are no certified disposal sites nor incinerators for PCB disposal in Region IX. Formal applications were received from one disposal site in California and one in Nevada. Close coordination is continuing with the Industrial Environmental Research Laboratory in Cincinnati and private industry to establish a program to incinerate PCBs in cement kilns. Two companies in California have expressed interest and indications are that one of these companies will soon be ready to make its facilities available for a series of test burns.

The Federal Task Force for Hazardous Materials Management, a working group sponsored by the Western Federal Regional Council of Region IX, published its final report in March 1978. In 1973 several Federal agencies identified hazardous waste management problems which needed immediate attention. EPA, Region IX, called a conference and chaired the resulting task force to provide technical assistance to these agencies, and to assist in planning interim solutions which could be implemented until a national program under RCRA was instituted. This report describes the establishment, organization, objectives, and results of this effort.

Resource Recovery. An Office Paper Separation Program was initiated in the Regional Office in March 1978 and is operating smoothly. We collect about a ton of white ledger paper per month and are paid \$22 per ton for the service contract. Regionwide GSA owns or leases 109 buildings with 100 or more employees. The program was implemented in the first seven buildings in 1978.

A highly successful beverage container buy-back program originated in Arizona. This program called BIRP (Beverage Industry Recycling Program), is a voluntary program in which citizens are paid to bring aluminum, steel, glass, and newspapers to one of 10 collection depots. This program is being considered in several other western States.

California has a very active resource recovery program and new legislation. The Litter Control, Recycling, and Resource Recovery Act of 1977 went into effect in January 1978. This bill is expected to generate about \$18 million in revenue from annual assessments of \$10 to \$2,000 on manufacturers, wholesalers, and retailers in the State and from a 25-cent-per-ton surcharge on all solid waste disposed of in landfills. The bill requires that this revenue be expended in specific portions to support litter control programs (45 percent), resource recovery projects (20 percent), recycling centers (25 percent), research and development (5 percent), and administration (5 percent). This bill is being administered by the State Solid Waste Management Board and expires in 1983.

There are numerous recycling centers in California and a couple of sizeable separate collection programs. The Board has endorsed six large energy recovery projects in Alameda, Contra Costa County, Humboldt County, Los Angeles County, San Diego, and San Francisco. These projects are all in the planning phase. The Board has also implemented the office paper recovery guidelines in all State office buildings. Finally, the State is contributing \$500,000 in addition to \$850,000 from EPA's Office of Research and Development to demonstrate a portable pyrolysis unit for agricultural wastes.

The California State Department of Health is operating a highly successful industrial waste recycling program. This one-man operation is not a clearinghouse for information but rather a hands-on brokerage which identifies waste streams and then seeks out potential users and initiates a dialogue between the two companies. The DOH feels that this approach is far superior to an information clearinghouse and plans to add a second man to the program.

In Hawaii energy recovery from sugar cane wastes is common in industrial operations, and there is a large municipal solid waste energy recovery project being planned for Honolulu. Two contractor studies have been completed, and the State is now trying to modify legislation to allow long-term contracts, permit negotiated procurement, and aid financing.

Guam has a litter control law and there has been much legislative interest in a bottle bill, which was defeated in October 1977. Because most beverage containers on the island are sold at military bases, cooperation at those facilities will be necessary for a viable program.

Public Participation and Information. The Regional Office sponsored three public meetings on the work of the Resource Conservation Committee, the proposed hazardous waste notification procedures, and the proposed State planning guidelines. In addition to public meetings, all relevant Federal Register notices, guidelines, and information are mailed to about 1,500 individuals on our regional mailing list, and our staff is regularly asked to make presentations on RCRA to local constituent groups.

REGION X

(Alaska, Idaho, Oregon, Washington)

Planning and Development. All four States presently have programs for solid waste planning and will be updating their practices to conform with RCRA requirements. Agencies and areas responsible for solid waste planning were identified.

Land Disposal. The majority of the population of the Region lives west of the Cascade Mountains, an area with many wetlands and floodplains and much rainfall. The Regional Office has attempted to resolve problems from leachate for some time and expects more success as guidelines under RCRA are promulgated.

In 1978 Region X continued several projects dealing with land disposal problems. Assistance was given in design of a landfill in Snohomish County, Washington, which is being engineered to collect and treat leachate while minimizing potential percolation. This landfill, now under construction, will hopefully be a model for other high precipitation areas. Construction of a similar carefully designed landfill incorporating leachate collection and treatment was completed in Lane County, Oregon.

The Tulalip landfill, the disposal site for most of the industrial solid waste from Seattle, was ordered by the U.S. District Court to cease operations by May 1979. This action culminated several years of effort by the Regional Office to close the site, which is situated in wetlands and has created severe odor and leaching problems. We are also working with the City of Portland and the Oregon Department of Environmental Quality to find alternatives to expansion of the St. Johns Landfill, located in wetlands of the Columbia River.

The Region X computer-based disposal site information system was continuously expanded as new data came in from the States. The system contains much information on active and inactive disposal sites and will give the Region a head start on completion of the open dump inventory. All four States have agreed to assume inventory duties and landfill regulation under Subtitle D.

Hazardous Waste Management. Much of the Regional staff effort in 1978 was directed toward involvement of State and local governments and the public in the development of Subtitle C regulations. Region X hosted a hearing on Section 3006 and held numerous public meetings on regulations and guidelines.

Oregon, Idaho, and Washington indicated they will apply for interim authorization to operate hazardous waste management programs. Oregon and Idaho have licensed hazardous waste

disposal sites near Arlington, Oregon, and Grand View, Idaho. Both sites were approved as PCB chemical waste landfills by Region X. Currently, the Washington Department of Ecology is negotiating for a hazardous waste disposal site on the Department of Energy Hanford Reservation.

Resource Recovery and Conservation. A combination of a strong recycling industry and enthusiasm by involved government agencies is resulting in much activity in resource recovery and conservation programs.

In fiscal 1978, eight Federal buildings, with nearly 7,000 employees, recycled over 200 tons of high-grade paper. Twenty more buildings, with approximately 3,000 people, are scheduled to implement office paper recovery by early 1979. The Region X staff assisted implementation of similar programs in offices of the City of Seattle, King County, State of Oregon, and State of Washington.

All non-Alaskan Region X military bases are presently involved in source separation programs, some with office paper only and others including cans, glass, corrugated paper, newsprint, and waste oil. Adak Naval Air Station in the Aleutian Islands even goes so far as to bale their aluminum and ship it to Seattle for recycling.

The beverage container deposit guidelines were implemented in the Region's 10 National Parks and National Forests with varying degrees of success. One Forest Service concessionaire was granted an exemption from compliance. Major problems seem to result from the presence of nearby competition on private land and low return rates, but these problems are expected to lessen over time. Passage of proposed beverage container deposit legislation in Alaska and Washington, joining that passed in Oregon several years ago, would do much to increase the effectiveness of these programs. Two other beverage container deposit test programs were also in effect during the past year: a GSA test program in Walla Walla was initiated in February 1978 with monthly return rates of up to 85 percent, and a one-year DOD test project on Whidbey Island Naval Air Station ended in June with an average return rate of 81 percent.

A number of resource recovery technical assistance projects took place during the year. These included assisting the Portland Metropolitan Service District in contract negotiations for a material and energy recovery facility, assisting Lane County, Oregon, in development of its RDF processing facility, and working with the Municipality of Anchorage in coordinating resource recovery efforts with its two neighboring military bases, Fort Richardson and Elmendorf Air Force Base. Two source separation programs were also assisted. The largest project is a program funded by the

City of Seattle to test the effectiveness of Collection of source-separated materials from homes. This pilot program, which began in June 1978, includes 12,000 homes throughout the city. Region X assisted in design and evaluation of proposals. Assistance was also given to Union County, Oregon, in establishing a source separation program.

A second waste information exchange was established in Region X by the Portland Recycling Team in Oregon. The first is being managed by the Western Environmental Trade Association in Seattle. The Portland Recycling Team is also developing a manual on running a recycling center under a grant from EPA headquarters.

Public Participation and Education. In addition to numerous meetings with the public on proposed regulations, criteria, and programs, the Regional Office developed a computerized mailing list of nearly 700 interested parties. These people receive notices of RCRA guidelines, public meetings, and hearings. A newsletter is also sent out twice yearly to inform the public of developments in RCRA implementation. Many publication requests and questions regarding RCRA are handled daily.

Solid waste workshops were held by the League of Women Voters in Oregon and Washington supported by public education grants from EPA's Office of Solid Waste. The Regional Office participated extensively in both workshops in supplying information, equipment, and speakers.

APPENDIX

EPA PUBLICATIONS ON RCRA AND SOLID WASTE MANAGEMENT FISCAL YEAR 1978

This list is divided into two main parts: Office of Solid Waste publications, and Office of Research and Development publications. Publications with order numbers prefixed by PB are available for purchase from the National Technical Information Service, Springfield, Virginia 22161. Unless otherwise noted, all other publications are available from Solid Waste Information, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268. A list of information materials produced since 1966 is available from the Cincinnati address.

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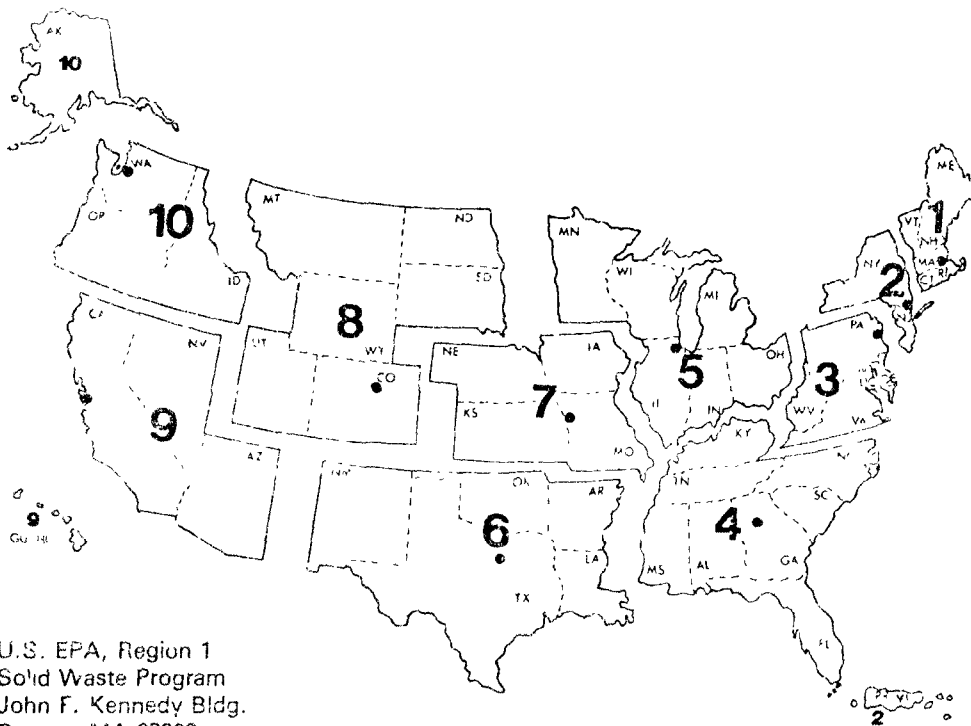
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