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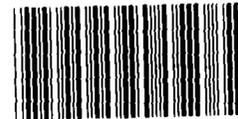
Report To The Chairman, Subcommittee On  
Commerce, Transportation And Tourism  
Committee On Energy And Commerce  
House Of Representatives

# Interim Report On Inspection, Enforcement, And Permitting Activities At Hazardous Waste Facilities

Owners or operators of facilities where hazardous waste is treated, stored, or disposed of are subject to federal controls. This interim report presents data on key elements of the federal hazardous waste regulatory program established by the Resource Conservation and Recovery Act of 1976.

Overall, GAO found that:

- Many facilities in the four states it sampled are not in compliance with the ground water monitoring and closure, postclosure, and financial responsibility requirements or their compliance status is unknown.
- While most major facilities in two of the four states it sampled were inspected, over half the facilities sampled have not been inspected by responsible state agencies and enforcement actions have not been extensive.
- The Environmental Protection Agency (EPA) and the states have issued relatively few final permits to the estimated 8,000 facilities requiring them--a process that because of the complexities involved could, according to EPA, take up to 10 years to complete. Because of the limited permitting experience, it is too early to assess EPA's current permitting priority system.



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RESOURCES, COMMUNITY,  
AND ECONOMIC DEVELOPMENT  
DIVISION

B-212808

The Honorable James J. Florio  
Chairman, Subcommittee on Commerce,  
Transportation and Tourism  
Committee on Energy and Commerce  
House of Representatives

Dear Mr. Chairman:

On January 11, 1983, you requested that we review key elements of the federal hazardous waste regulatory program. As agreed with your office, we are reviewing the regulatory program for hazardous waste treatment, storage, and disposal facilities with emphasis on

--compliance with ground water monitoring and financial responsibility requirements;

--the extent, type, and frequency of inspection and enforcement activities; and

--the approach to and accomplishments of the permitting program.

This letter responds to your June 14, 1983, request for an interim report. We are continuing our review and, as agreed with your office, expect to provide you with a final report in the spring of 1984. The results of our work to date are summarized below; more specific information on these results is presented in appendixes III through VI. To obtain the necessary information, we performed work at Environmental Protection Agency (EPA) headquarters in Washington, D.C.; EPA Regions I (Boston, Massachusetts), IV (Atlanta, Georgia), V (Chicago, Illinois), and IX (San Francisco, California); and in four states--Massachusetts, North Carolina, Illinois, and California. All four states involved in our review had primary inspection and enforcement responsibility under interim authorization from EPA. More specific information on our objectives, scope, and methodology can be found in appendix I.

COMPLIANCE WITH GROUND  
WATER MONITORING REQUIREMENTS

Under federal regulation, certain hazardous waste management facilities (about 1,350) must institute ground water monitoring

programs or document their eligibility to waive monitoring requirements. To claim a waiver, a facility owner or operator would have to document that there is low potential for ground water contamination. According to state records, 78 percent of these facilities (65) in two of the four states we visited were not in compliance with federal ground water monitoring requirements. The other two states did not know the extent of noncompliance because most of their facilities have not been inspected for compliance with these requirements.

A recent EPA study based on a nationwide sample concluded that there has been considerable noncompliance with ground water monitoring requirements. EPA also concluded that there may have been inadequate justification for some of the existing waivers to these requirements. To help correct this situation, EPA is emphasizing ground water monitoring in its guidance to regional offices and states. (See app. III.)

#### COMPLIANCE WITH CLOSURE, POSTCLOSURE, AND FINANCIAL RESPONSIBILITY REQUIREMENTS

Federal regulations require that hazardous waste facility owners or operators demonstrate their ability to finance closure and postclosure activities when the facility ceases operations and provide liability coverage for bodily injury and property damage to other parties resulting from facility operations. Closure and postclosure activities include decontamination of the facilities and care and maintenance of waste containment systems. The amount of financial assurance needed for closure and postclosure care depends on the owner's or operator's cost estimates to conduct these activities. The financial liability amounts are fixed by regulation.

None of the four states we reviewed required their inspectors to routinely evaluate in detail the adequacy of a facility's closure and postclosure plans or cost estimates because the states lacked adequate federal guidance on how to perform the evaluations, had limited inspection resources, or had not yet adopted financial responsibility requirements. Since the amount of financial assurance required is based on the plans and estimates, these states could not effectively evaluate the financial assurance instruments for adequacy. Although the extent of nationwide noncompliance is unknown, EPA officials have concluded that most closure and postclosure plans and cost estimates are inadequate. (See app. IV.)

INSPECTION AND  
ENFORCEMENT PROGRAM

Two years ago, we reported that EPA and state inspections have been limited. Of the 7,056 interim status<sup>1</sup> facilities in the four EPA regions we reviewed in 1981, only 830, or 12 percent, had been inspected. Inspections are important because they are the primary means to detect and document health and environmental violations at interim status facilities. Our current review shows that there may have been some improvements. As of December 31, 1982, 45 percent of the 1,398 facilities in the five state field offices<sup>2</sup> we reviewed had been inspected. Although 55 percent of these facilities had not been inspected, most major facilities (primarily land disposal facilities and incinerators) in two of the four states were inspected. Major facilities represent about 10 percent of all hazardous waste facilities.

We also reported earlier that enforcement efforts at these facilities had not been extensive. These actions consisted largely of issuing warning letters, notices of violations, and compliance orders against facilities violating interim status regulations. As of May 28, 1981, EPA had issued only 123 compliance orders nationwide. Penalties totaling \$466,250 had been assessed against 37 hazardous waste facilities. Our current review of 739 inspection reports from five state field offices showed similar results. Most violations (75 percent) resulted in the issuance of warning letters or notices of violation. Few compliance orders had been issued, and penalties totaling \$142,375 were assessed against nine facilities. (See app. V).

STATUS OF FACILITY PERMITTING

The Resource Conservation and Recovery Act requires that any person or company owning or operating a facility where hazardous waste is treated, stored, or disposed of must obtain a permit. The act also prescribes procedures whereby facilities that were in operation on or before November 19, 1980, may continue operating under "interim status" until a final hazardous waste permit is issued.

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<sup>1</sup>Interim status facilities are those facilities that are operating pending issuance of a permit. (See app. II.)

<sup>2</sup>We visited one major field office in California, Illinois, and Massachusetts. Since no single field office in North Carolina was responsible for a large number of facilities we visited two field offices to provide sufficient coverage.

Final permitting is important because interim status facilities need only comply with interim status requirements. Only when facilities receive final permits must they comply with all the technical and design standards that EPA believes may be necessary to protect human health and the environment. Through July 1983, only 24 of the estimated 8,000 facilities expected to require permits had received final permits. According to EPA officials, permitting of all facilities is expected to be completed by 1990 and could extend to 1993. Due to the long period of time involved, EPA has established priorities for permitting. Land disposal facilities are considered top priority, followed by incinerators. Storage and treatment facilities are assigned the lowest priority. Because so few permits have been issued, it is too early to evaluate the effectiveness of EPA's permitting process. (See app. VI.)

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At your request, we did not obtain agency comments; however, we did discuss matters in the report with agency officials and, where appropriate, included their views.

As arranged with your office, unless you publicly release its contents earlier, we plan no further distribution of this report until 15 days from the date of its issuance. At that time we will send copies to interested parties and make copies available to others upon request.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "J. Dexter Peach".

J. Dexter Peach  
Director

C o n t e n t s

APPENDIX		<u>Page</u>
I	OBJECTIVES, SCOPE, AND METHODOLOGY	1
II	APPLICABLE FEDERAL AND STATE ROLES AND RESPONSIBILITIES	3
III	COMPLIANCE WITH GROUND WATER MONITORING REQUIREMENTS	5
	Ground water monitoring requirements	5
	Extensive noncompliance in states reviewed	6
	EPA believes noncompliance is extensive nationwide	8
IV	COMPLIANCE WITH CLOSURE, POST- CLOSURE, AND FINANCIAL RESPONSIBILITY REQUIREMENTS	10
	Closure, postclosure, and financial responsibility requirements	10
	Evaluation of closure and post- closure plans and cost estimates	12
V	INSPECTION AND ENFORCEMENT PROGRAMS	14
	Inspection coverage	14
	Enforcement actions	15
VI	STATUS OF FACILITY PERMITTING	17
	permitting process	17
	Progress in final permitting of facilities	18

ABBREVIATIONS

EPA	Environmental Protection Agency
GAO	General Accounting Office
RCRA	Resource Conservation and Recovery Act



OBJECTIVES, SCOPE, AND METHODOLOGY

The objective was to obtain information on the issues contained in the January 11, 1983, letter from the Chairman, Subcommittee on Commerce, Transportation and Tourism, House Committee on Energy and Commerce, as modified by subsequent discussions with his office.

To accomplish these objectives, we performed work at Environmental Protection Agency (EPA) headquarters in Washington, D.C.; EPA Regions I (Boston, MA), IV (Atlanta, GA), V (Chicago, IL), and IX (San Francisco, CA); and in four states--Massachusetts, North Carolina, Illinois, and California. Before completing our review, we will be performing work in EPA Region II (New York, NY) and in two additional states--New Jersey and Tennessee. The five EPA regions are responsible for 26 states, Puerto Rico, the Virgin Islands, American Samoa, and Guam and account for about 68 percent of the total volume of hazardous waste generated in the Nation. The six states provide geographical distribution and account for 29 percent of the Nation's hazardous waste.

To determine compliance with the ground water monitoring and closure, postclosure, and financial responsibility requirements, and the extent, type, and frequency of inspection and enforcement activities, we reviewed regulations, files, and background and guidance documents obtained at EPA headquarters, the four EPA regional offices, and at the four state environmental agencies--California Department of Health Services, Illinois Environmental Protection Agency, Massachusetts Department of Environmental Quality Engineering, and North Carolina Department of Health. All four states included in our review had primary inspection and enforcement responsibility under interim authorization from EPA. We discussed the statutory and regulatory requirements and facility compliance with EPA headquarters and regional officials and state hazardous waste officials. We identified and reviewed the statistical data available on inspection and enforcement activities and on facility compliance. We interviewed 21 inspectors in the four states and observed 13 inspections of facilities subject to the ground water monitoring and/or closure, postclosure, and financial responsibility requirements.

To develop more detailed inspection and enforcement data not available from the EPA regions or the states, we visited the largest field office of each state agency.<sup>1</sup> The field offices we visited were California's southern region, Illinois' northern region, Massachusetts' northeast region, and North Carolina's western and north central regions. These field offices are

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<sup>1</sup>We visited two field offices in North Carolina in order to provide sufficient coverage since no single field office was responsible for a large number of facilities.

responsible for over 50 percent of the treatment, storage, and disposal facilities in each state except the Massachusetts field office which is responsible for 45 percent. We reviewed inspection files in the five field offices and collected information on all hazardous waste inspections performed by state inspectors prior to January 1, 1983. We identified the number of facilities inspected, the number and type of violations identified, and the number and type of violations unresolved at the time of our review. We also noted the extent of followup and enforcement actions used to obtain compliance.

To develop information concerning the approach to and accomplishments of the permitting program, we interviewed EPA headquarters and regional officials and state hazardous waste officials. We also reviewed permitting statutory and regulatory requirements, guidance documents, and summary statistics.

Our work was conducted from January through June 1983. As requested by the Chairman's office, we did not obtain official agency comments on the report. We did, however, discuss the matters contained in the report with EPA officials responsible for the hazardous waste program. Their comments have been incorporated in the report where appropriate. Except as noted above, our review was performed in accordance with generally accepted government auditing standards.

APPLICABLE FEDERAL AND STATEROLES AND RESPONSIBILITIES

The Congress enacted the Resource Conservation and Recovery Act of 1976 (RCRA) (as amended, 42 U.S.C. §§6901 et seq. (1976 & Supp. IV 1980)) to, among other things, regulate the management of hazardous waste and improve waste disposal practices. EPA's regulatory program has established reporting, recordkeeping, performance, and operating standards for each of the approximately 52,000 generators, 12,000 transporters, and 8,000 facilities that treat, store, or dispose of hazardous waste.

RCRA requires that any person or company owning or operating a facility where hazardous waste is treated, stored, or disposed of must obtain a permit. The act also prescribes a procedure whereby facilities in operation on or before November 19, 1980, may continue operating under "interim status" until a final hazardous waste permit is issued. Facilities with interim status must be in compliance with the interim status regulations until final administrative disposition of their permit is made, at which time the facilities must be brought into compliance with the final permit regulations.

The interim status regulations include requirements for preparing for and preventing hazards; contingency planning and emergency procedures; a manifest system for tracking waste; record-keeping and reporting; ground water monitoring; facility closure and postclosure care; financial responsibility requirements; the use and management of containers; and the design and operation of tanks, surface impoundments, waste piles, land treatment facilities, landfills, incinerators, and injection wells. In addition, the regulations include general requirements for waste analysis, security at facilities, inspection of facilities, and personnel training. According to EPA, the final permit regulations incorporate the interim status requirements and also include additional technical, design, construction, and operating requirements.

RCRA provides that after authorization by EPA, the states may administer their own hazardous waste programs.<sup>1</sup> The act also allows the states to obtain interim authorization from EPA for 2 years to administer their own hazardous waste programs while working toward final program authorization.<sup>2</sup> As of August 8,

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<sup>1</sup>A state program will not be authorized if it: is not equivalent to the federal program, is not consistent with the federal or other state programs applicable in other states, or does not provide adequate enforcement.

<sup>2</sup>Interim authorization will be granted only if the state program is substantially equivalent to the federal program.

1983, EPA had granted interim authorization to 40 states to carry out inspection and enforcement activities. Thirteen of the 40 states have been authorized to conduct some permitting activities. Most of the remaining states are carrying out various aspects of the hazardous waste program for EPA under cooperative arrangements, although EPA retains overall responsibility. The states received RCRA grant funds in the amount of \$42.3 million in fiscal year 1982 and were authorized \$44.1 million to conduct RCRA activities for fiscal year 1983.

RCRA also authorizes the EPA Administrator to issue compliance orders and assess penalties of up to \$25,000 for each day of facility noncompliance. The Administrator may initiate civil actions for appropriate relief for violations of any RCRA requirement, including temporary or permanent injunctions. Where the noncompliance knowingly endangers the public health, criminal actions may also be initiated. Although regulations promulgated by an EPA-authorized state may not impose any requirements that are less stringent than the federal requirements, states are free to adopt more stringent measures. States also enforce their RCRA programs through the use of compliance orders and civil and criminal actions.

COMPLIANCE WITH GROUND WATERMONITORING REQUIREMENTS

Although ground water contamination, according to EPA, is the most serious potential threat to human health and the environment posed by the disposal of hazardous waste, 78 percent of the hazardous waste facilities in two of the four states we reviewed were not in compliance with the federal ground water monitoring requirements. State officials attributed the high rate of noncompliance to the technical complexity and cost of the monitoring requirements. The other two states did not know the extent of noncompliance because most facilities had not been inspected for compliance with the monitoring requirements.

EPA has also found extensive nationwide noncompliance with ground water monitoring requirements, including a potential problem with facility owners or operators claiming waivers of these requirements without adequately demonstrating their eligibility to do so. Because of the extensive noncompliance, EPA is emphasizing ground water monitoring in its guidance to its regional offices and states.

GROUND WATER MONITORING REQUIREMENTS

The interim status ground water monitoring requirements apply to owners and operators of landfills, waste piles, surface impoundments, and land treatment facilities which are used to manage hazardous waste. Under the interim status regulations, by November 19, 1981, owners or operators of all the estimated 1,350 such facilities were to have instituted either a ground water monitoring program or an approved alternate ground water monitoring system, or were to have documented their eligibility to waive the monitoring requirements.

The ground water monitoring regulations for permitted facilities are similar to the interim status regulations and allow the use of the same ground water monitoring equipment installed to comply with the interim status standards.

EPA expected the basic ground water monitoring program to be implemented at most facilities. Its purpose is to determine if the facility is affecting the quality of ground water in the uppermost aquifer<sup>1</sup> underlying the facility. The regulations call for installing ground water monitoring wells, developing a sampling and analysis plan, interpreting monitoring data, and maintaining proper recordkeeping and reporting procedures. Facility owners or operators instituting monitoring programs are

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<sup>1</sup>An aquifer is a water-bearing layer of permeable rock, sand, or gravel.

required to enter alternate assessment programs, as explained below, if contamination is found.

Facility owners or operators who assume or know that monitoring will indicate contamination of the uppermost aquifer beneath the facility may implement an alternate ground water monitoring system with EPA approval. This program's purpose, according to EPA, is to determine not only the presence of hazardous waste in ground water as in the basic monitoring program, but also its rate and extent of migration.

Often, alternate assessment programs are implemented at EPA or state insistence if contamination is known or suspected. The regulations call for the submission of a plan, certified by a qualified geologist or geotechnical engineer, that specifies the number, location, and depth of wells; sampling and analytical methods for those hazardous wastes or hazardous waste constituents in the facility; evaluation procedures, including any use of previously gathered ground water quality information; and a schedule of implementation.

All or part of the ground water monitoring requirements may be waived if the owner or operator can demonstrate that there is a low potential for migration of hazardous waste from the facility to water supply wells or surface water. Although these waivers must be certified by a qualified professional, neither EPA nor the states are required to review the basis for the claim in advance. These written waivers must, by regulation, be kept at the facility.

#### EXTENSIVE NONCOMPLIANCE IN STATES REVIEWED

In two of the four states we reviewed, state records show that 78 percent of the facilities subject to the ground water monitoring requirements were not in compliance as of June 30, 1983, as set forth in the following table.

<u>State</u>	<u>Number of facilities subject to ground water monitoring requirements</u>	<u>Facilities in noncompliance</u>	
		<u>Number</u>	<u>Percent</u>
Illinois	38	33	87
North Carolina	<u>27</u>	<u>18</u>	<u>67</u>
Total	<u>65</u>	<u>51</u>	<u>78</u>

The extent of noncompliance at the Illinois and North Carolina facilities was significant. For example, of the 65 facilities subject to monitoring requirements, at least 29 percent (19) either lacked required monitoring wells or had wells incorrectly sited. Monitoring wells had not been installed at 7

facilities and were incorrectly sited by at least 12 facilities. Other deficiencies cited concerned sampling and analysis procedures and recordkeeping and reporting.

Massachusetts did not know the extent of noncompliance because it has not been inspecting its facilities for compliance with ground water monitoring requirements and had not yet developed a reliable list of facilities subject to these requirements. Twelve facilities have potentially been identified by Massachusetts state officials as subject to these requirements, but only two have installed ground water monitoring wells. EPA and state officials agree that a thorough review is needed to more accurately determine the number of facilities subject to these requirements.

Similarly the fourth state--California--did not know the extent of noncompliance because it had inspected only 22 of its estimated 105 facilities to determine compliance. However, 9 of the 22 facilities were found to be in noncompliance.

State officials in Illinois and North Carolina identified two primary reasons facilities were not complying with the ground water monitoring requirements. The first problem was the technical complexity surrounding the proper location and construction of wells. The regulations require that at least one well must be sited upgradient and three wells be sited downgradient in relation to the flow of ground water at the facility. However, according to state officials, the terrain and hydrogeological formations can make proper siting extremely difficult. The underground hydrogeological formations also make it more difficult to construct sampling wells with intakes at the proper level of the aquifer that are properly sealed to prevent surface water runoff and other ground water from entering.

Second, the cost to install the required four wells and to perform the quarterly sampling required during the first year of ground water monitoring has discouraged some facility owners and operators. North Carolina's geologist specializing in the ground water monitoring area estimated that it currently costs about \$4,000 to install the required wells and about \$12,800 to obtain and analyze the first year's quarterly samples.

State officials in Illinois and North Carolina told us that they have chosen to work with the facility owners and operators rather than take formal enforcement action because of the technical complexity and/or the cost of compliance. The Manager of the Illinois Division of Land Pollution Control told us that the state possesses the expertise but does not have enough staff to provide the amount of technical assistance that facilities have requested. North Carolina officials told us that resources were a problem until a second geologist was hired in April 1983. North Carolina is currently working with the six facilities that have not yet installed the required wells and is considering

issuing compliance orders to any facility which does not install wells by the end of October 1983.

Massachusetts has not enforced the ground water monitoring requirements. According to a Deputy Director in the Division of Hazardous Waste, the state's regional offices are responsible for ground water monitoring enforcement. However, the Deputy Regional Environmental Engineer in the northeast region stated that his region has not enforced the ground water monitoring requirements due to the lack of emphasis and guidance from state headquarters and a lack of technical expertise. Moreover, he stated that the northeast region has no staff qualified to review the placement of a well. The Massachusetts Division of Hazardous Waste has only one hydrogeologist. She has not been involved in conducting ground water monitoring inspections at RCRA facilities, however.

The compliance status for most California facilities had not yet been determined due to confusion over which agency was responsible for conducting the ground water monitoring inspections. The California Department of Health Services had conducted only a few ground water monitoring inspections because the State Water Resources Control Board has jurisdiction over ground water quality planning, monitoring, and protection. The State Water Board would not conduct these inspections until the Department of Health Services transferred funding in late May 1983. As of early July 1983, the State Water Board was still preparing to begin these inspections.

During this period the Department of Health Services did inspect 22 of the estimated 105 facilities subject to ground water monitoring requirements. Its monthly reports to EPA covering October 1982 through March 1983 indicated that nine facilities were not in compliance.

#### EPA BELIEVES NONCOMPLIANCE IS EXTENSIVE NATIONWIDE

Based on its own nationwide study, EPA has determined that there is extensive noncompliance with ground water monitoring requirements. To resolve this problem, EPA is emphasizing ground water monitoring as a top priority in its guidance to EPA regional offices and states.

In a recent report<sup>2</sup> to the Office of Management and Budget, EPA concluded that there has been considerable noncompliance with federal ground water monitoring requirements. The report was based on work performed between September 1982 and January 1983 at a sample of facilities. However, the report cautions that because sampling problems were encountered, confident

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<sup>2</sup>Evaluation of the Ground Water Monitoring Interim status Requirements: Phase II Report to the Office of Management and Budget on Implementation of the Requirements, Mar. 10, 1983.

extrapolations cannot be made from the sample to the total population of facilities. Specific problems<sup>3</sup> noted at 148 of the facilities sampled which had implemented basic detection monitoring programs included:

- 36 facilities (24 percent) that did not have adequate upgradient wells,
- 48 facilities (32 percent) that did not have adequate downgradient wells,
- 37 facilities (25 percent) that had problems related to sampling and analysis procedures,
- 53 facilities (36 percent) that did not maintain required records; and
- 59 facilities (40 percent) that did not submit required reports.

The report also identified ground water monitoring waiver claims as a potential problem. The report found that eight of the facilities sampled had claimed waivers but only four actually qualified. The geology at the other four facilities was not considered adequate to preclude the migration of contaminants.

For fiscal years 1983 and 1984, EPA headquarters emphasized the importance of compliance with the ground water monitoring requirements in its guidance to the EPA regions and states. The 1983 guidance stated that every land disposal facility should be inspected during fiscal year 1983 to determine compliance with ground water monitoring requirements. It also provided for quarterly reporting of ground water monitoring compliance data. The fiscal year 1984 guidance established as the top national inspection priority those facilities subject to ground water monitoring requirements, and again called for inspection of all such facilities in 1984. The 1984 inspections are to include a detailed technical analysis of the monitoring systems and may include sampling to determine the quality of owner- or operator-collected data.

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<sup>3</sup>The number of problems identified exceeds the number of facilities sampled because more than one problem was noted at some facilities.

COMPLIANCE WITH CLOSURE, POSTCLOSURE, AND  
FINANCIAL RESPONSIBILITY REQUIREMENTS

The closure, postclosure, and financial responsibility requirements are designed to assure that when hazardous waste facilities cease operations, their owners or operators have adequate plans and funds for closure and postclosure activities.<sup>1</sup> The amount of financial assurance needed depends on the owner's or operator's estimate of closure and postclosure costs.

The four states we reviewed did not routinely perform detailed evaluations of the closure and postclosure plans and cost estimates during inspections because the states (1) lacked adequate guidance on how to perform the reviews, (2) used their limited inspection resources on higher priorities, or (3) had not yet adopted financial responsibility requirements. Currently, the four states routinely perform these detailed evaluations only during final permitting of facilities. In accordance with new EPA fiscal year 1984 guidance, however, the states plan to start performing these detailed evaluations even prior to facility permitting. Since the amount of financial assurance required is based on these plans and estimates, the amount cannot be adequately assessed before such detailed evaluations are made.

EPA has recently concluded that a substantial number of facility owners and operators are not complying with the requirements for closure and postclosure plans and cost estimates. EPA is currently planning to reissue its general guidance documents and provide additional training to help states review closure and postclosure plans and cost estimates.

CLOSURE, POSTCLOSURE, AND  
FINANCIAL RESPONSIBILITY REQUIREMENTS

The closure, postclosure, and financial responsibility regulations issued by EPA for both interim status and permitted facilities are similar and include requirements for financial assurance and financial liability. All hazardous waste facility owners and operators must demonstrate their ability to finance closure activities and provide liability coverage for bodily injury and property damage to other parties resulting from facility operations. In addition, owners or operators of disposal

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<sup>1</sup>Closure refers to the period during which all facility equipment and structures are properly disposed of or decontaminated by removing all hazardous waste and residues. Postclosure is the 30-year period after closure during which monitoring, reporting, and maintenance is performed.

facilities<sup>2</sup> must demonstrate the ability to finance postclosure activities. In order to meet closure, postclosure, and financial responsibility requirements, six specific actions are required:

- Develop an adequate closure plan for securing or removing all hazardous waste and for decontaminating all equipment and facilities affected.
- Develop an adequate postclosure plan that ensures the care and maintenance of the waste containment system, such as the clay or synthetic liners, covering, and vegetation, for a 30-year period (disposal facilities only).
- Develop adequate closure cost estimates and, for land disposal facilities, estimates of the cost of postclosure care.
- Execute a financial assurance mechanism based on these cost estimates. (The mechanisms could be a trust fund, surety bond, letter of credit, insurance, financial test or corporate guarantee which demonstrate the firm's ability to pay for the cost of closure and, if required, postclosure care and maintenance, and which meet the regulatory specifications for the mechanism chosen.)
- Have and maintain liability coverage for bodily injury and property damage to other parties in the event of sudden accidents resulting from facility operations.
- Establish liability coverage for bodily injury and property damage to other parties in the event of nonsudden accidental occurrences resulting from facility operations (disposal facilities only).

While the amounts of financial assurance for closure and postclosure care are based on cost estimates, the amounts of financial liability coverage are fixed by regulation: at least \$1 million for each sudden occurrence, with an annual aggregate of at least \$2 million; and \$3 million for each nonsudden occurrence, with an annual aggregate of at least \$6 million. The compliance dates for demonstrating liability coverage range from January 15, 1983, to January 15, 1985, depending upon size and type of facility.

The closure, postclosure, and financial responsibility regulations apply to both the owner and the operator of a hazardous waste facility. EPA considers both parties responsible for carrying out the requirements and leaves it up to the parties themselves to undertake, share, or divide the actual provision of

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<sup>2</sup>EPA defines disposal facilities to mean a facility or part of a facility where hazardous waste is intentionally placed into or on any land or water, and at which waste will remain after closure.

financial assurance. Federal and state facilities are exempt from these requirements.

Interim authorization will be granted only if the state program is substantially equivalent to the federal program. However, according to EPA, states which received interim authorization to conduct inspection and enforcement activities prior to the issuance of federal financial responsibility regulations in April 1982 are not currently required to adopt substantially equivalent regulations until they receive additional permitting authority. Illinois and North Carolina have adopted substantially equivalent regulations. Massachusetts has not issued either financial assurance or financial liability regulations. California has adopted substantially equivalent financial assurance regulations but has yet to issue financial liability regulations. According to senior Massachusetts and California hazardous waste officials, these states expect to adopt the necessary additional regulations in early fiscal year 1984.

#### EVALUATION OF CLOSURE AND POSTCLOSURE PLANS AND COST ESTIMATES

The four states we reviewed had not required their inspectors to routinely perform detailed evaluations of closure and post-closure plans and cost estimates during inspections. These detailed evaluations had been only routinely performed during final permitting of the facilities according to senior state hazardous waste officials. The reasons cited by the state officials were a lack of EPA procedures and guidance and limited inspection resources which were used on other higher priority activities. A Deputy Director of the Massachusetts Division of Hazardous Waste told us that such detailed reviews would not be worthwhile until Massachusetts issues financial responsibility regulations in early fiscal year 1984. In accordance with EPA guidance, the four states plan to begin performing these detailed evaluations in 1984.

We asked 21 inspectors in the four states how they evaluated closure and postclosure plans and cost estimates. Eight inspectors said that they looked for the presence or absence of the required plans and estimates, while 12 said that they made only cursory evaluations to determine that the plans and estimates were complete. Only one inspector claimed to make a thorough evaluation. Most inspectors stated that they lacked the time, training, detailed criteria, and cost estimation guides necessary to adequately evaluate the plans and cost estimates. According to the EPA Region IV Division of Air and Waste Management RCRA Branch Chief, a comprehensive review would be time consuming. He estimated that 30 or more hours would be required to review each facility's closure plan and cost estimate. Additional time would be required for land disposal facilities with postclosure requirements.

Since thorough evaluations of plans and estimates had not been routinely performed, the specific extent of noncompliance is unknown. EPA has recently developed information indicating that this is a significant problem. Evaluations conducted by EPA headquarters personnel during 1-week visits to 6 of the 10 EPA regions between December 1982 and June 1983 found that most closure and postclosure plans are inadequate and that many facility owners and operators are not complying with financial assurance requirements. In addition, a July 7, 1983, memorandum from EPA's Assistant Administrator of the Office of Solid Waste and Emergency Response reported that:

"The results of this survey and evaluation indicate a somewhat surprising lack of compliance by the regulated community with the closure and post-closure care plan and cost estimate regulations. Preliminary results show that the implementation rates of the closure plan, postclosure plan, and post-closure cost estimates regulations are only about 50 percent: implementation of the closure cost requirements is even lower. In addition, the completed checklists suggest that many plans and estimates provide insufficient information to allow them to be critically evaluated for adequacy. This is especially disturbing given that the closure and post-closure care regulations serve as the basis for the financial responsibility requirements."

The EPA headquarters official responsible for implementing the closure plans, postclosure plans, cost estimates, and financial responsibility requirements has acknowledged that facility compliance is a problem. She told us that the recent evaluations conducted by EPA headquarters personnel at the regional offices indicated that EPA and states lack the resources and training to perform such evaluations. She also told us that EPA will be reissuing general guidance on closure and postclosure plans and cost estimation by December 1983, because copies are no longer available. EPA is planning to provide additional training guidance.

INSPECTION AND ENFORCEMENT PROGRAMS

In September 1981, we reported<sup>1</sup> that EPA and state inspection and enforcement efforts for facilities with interim status have been limited. Only about 12 percent of the interim status facilities in the regions we reviewed in 1981 had been inspected. Although our current work indicates that there may have been some improvement, about 55 percent of the facilities in the five state field offices we reviewed still had not been inspected by the states as of December 31, 1982.

Our earlier report also showed that EPA and state inspection efforts resulted primarily in the issuance of warning letters, notices of violations, and compliance orders. The number and amount of fines levied for noncompliance with the interim status regulations were small. We found similar results in our ongoing review.

INSPECTION COVERAGE

Monitoring of hazardous waste facilities through inspections represents an important aspect of the enforcement system. Inspections are used to detect and document health and environmental violations, and they provide the basis for enforcement actions which ensure the adequacy of facility operations. In our earlier report on this matter, we found that few facilities had been inspected. Of the 7,056 interim status facilities located in the four EPA regions we reviewed in 1981, only about 830, or 12 percent, had been inspected by EPA and/or the states.

It is important to note that at the time of our earlier review, EPA had only recently begun to delegate the inspection and enforcement program to the states, while today most states have the primary role in this program, with EPA assuming an oversight role. In the current review, therefore, we have focused on state inspection and enforcement activities since EPA primarily performed a limited number of oversight inspections.

Our current review shows that there may be some limited improvement from our earlier report. As of December 31, 1982, more than 2 years after the effective date of the interim status regulations, only 45 percent of the facilities in the five state field offices have been inspected by the states. However, the percent of facilities inspected varied widely from 18 to 88 percent, as shown in the following table.

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<sup>1</sup>Hazardous Waste Facilities with Interim Status May Be Endangering Public Health and the Environment (GAO/CED-81-158, Sept. 28, 1981).

<u>State</u>	<u>Number of facilities</u>	<u>Number of facilities inspected</u>	<u>Percentage of facilities inspected</u>
California	554	102	18
Illinois	459	328	71
Massachusetts	203	41	20
North Carolina	<u>182</u>	<u>160</u>	<u>88</u>
Total	<u>1,398</u>	<u>631</u>	<u>45</u>

The figures included in this table represent inspections performed by state inspectors and do not include a limited number of independent inspections performed by EPA as part of its oversight responsibility.

According to EPA guidance, state enforcement programs would be considered adequate if nonmajor facilities were inspected at least once every 2 years, with major facilities inspected at least annually. EPA guidance currently provides that 10 percent of the hazardous waste facilities are to be classified as major. Major facilities would include all land disposal facilities and incinerators and some other selected treatment and storage facilities. As previously indicated the state field offices we visited had not inspected 55 percent of their facilities. The Illinois and North Carolina field offices had inspected most major facilities during fiscal year 1982, but the California and Massachusetts field offices had inspected less than half of their major facilities.

Senior state inspection and enforcement officials in California, Illinois, and Massachusetts cited limited staff resources as the reason so many facilities had not been inspected. Several of the 22 uninspected North Carolina facilities were facilities that may be eligible for exemption from regulation under RCRA. However, the program director of the North Carolina Solid and Hazardous Waste Management Branch said that a few facilities had been missed and should have been inspected.

#### ENFORCEMENT ACTIONS

In September 1981, we also reported that EPA's enforcement efforts at facilities with interim status had not been extensive. These actions consisted largely of issuing warning letters, notices of violations, and compliance orders against facilities

which violated the interim status regulations.<sup>2</sup> As of May 28, 1981, EPA had issued only 123 compliance orders nationwide, with penalties ranging from \$100 for a violation of personnel training and recordkeeping requirements to \$25,000 for a violation of surface water control requirements. Penalties totaling \$466,250 were assessed against 37 hazardous waste facilities.

Our current review shows a similar situation. The five state field offices we reviewed performed 739 inspections of facilities through December 31, 1982. One or more violations of the treatment, storage, and disposal facility regulations were found in 393 inspections. Notices of violations were sent to facilities in response to 296 (75 percent) of these inspections. More stringent enforcement options were used in 40 instances, including 25 compliance orders, as shown below.

<u>Enforcement options</u>	<u>California</u>	<u>Illinois</u>	<u>Massachusetts</u>	<u>North Carolina</u>	<u>Totals</u>
Compliance order	0	17	2	6	25
Compliance order with penalty	0	0	0	0	0
Civil actions initiated	1	4	0	0	5
Civil penalty	1	1	0	6	8
Criminal actions initiated	1	0	0	0	1
Criminal penalty	1	0	0	0	1
Penalties assessed	\$130,000	\$10,000	\$0	\$2,375	\$142,375

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<sup>2</sup>Notices of violations and warning letters are the same. They are used by EPA and the states to notify a facility owner or operator of noncompliance, specifying the date by which compliance must be achieved. They are generally used for minor violations where voluntary compliance is expected. Compliance orders may or may not have a penalty attached and can be enforced through further administrative or judicial action.

STATUS OF FACILITY PERMITTING

One of the most important aspects of the hazardous waste regulatory program is the final permitting of hazardous waste treatment, storage, and disposal facilities. During interim status, facilities need only comply with the interim status standards. It is not until these facilities receive final permits that they must comply with the permitting standards. The permitting standards represent more detail and design standards that are intended to provide greater assurance that the environment is adequately protected. Relatively few of the estimated 8,000 facilities have been issued permits--a process expected to take up to 10 years. Because of the lengthy permitting process, EPA intends to give permitting priority to those facilities posing the greatest potential hazards. It is too early to assess the system's effectiveness because of the limited permitting experience by EPA and the states.

PERMITTING PROCESS

In developing the interim status regulations, EPA did not believe that facilities with interim status should be expected to meet detailed operating and construction requirements. These more detailed requirements, addressing such areas as liner systems; leachate detection, collection, and removal systems; and air quality monitoring, are intended to be incorporated in each facility's final permit. EPA has stated that decisions regarding technical standards and individual compliance schedules should be made only in the permit issuance process where there is opportunity for public participation and for greater interaction among EPA, the states, and the permit applicant.

The permitting process is currently a combined effort of EPA and the states. Most states either have interim authorization to issue permits or are participating in the permitting process through cooperative arrangements with EPA. As of June 8, 1983, 10 states<sup>1</sup> had interim authorization to issue permits. Most of them were authorized to permit storage and treatment facilities and incinerators, but not land disposal facilities. Nine other states had applied for various stages of interim permit authorization. Eventually EPA hopes to assume an oversight role in this area similar to its role in inspection and enforcement activities.

In simplified terms, the permitting process begins when EPA or the state requires an interim status facility to apply for a final permit. After notice from EPA or the state, the facility is given at least 6 months to submit its application, and EPA or the

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<sup>1</sup>The 10 states are Arkansas, California, Georgia, Kentucky, Mississippi, New Hampshire, North Carolina, Oklahoma, South Carolina, and Texas.

state is allowed 2 months to review the application and notify the facility of any deficiencies. After EPA or the state determines that the application is complete, a draft permit is prepared and 45 days are allowed for written public comment. A public hearing must be held if written notice of opposition to the draft permit is received. After the comment period has closed, EPA or the state responds to comments and issues the final permit decision. The states are only required to issue a response to comments, however, if a final permit is issued.

The final permit process described takes many months under the best of circumstances. The Director of EPA's State Programs and Resource Recovery Division estimated that final permitting will require 18 months for storage and treatment facilities, 24 to 30 months for incinerators, and 36 to 48 months for land disposal facilities. These estimates are based on the limited number of permits already issued, primarily for storage and treatment facilities.

Delays can occur in the permitting process if the applications are deficient. According to EPA and state officials, deficient applications are a problem. Almost all applications submitted to date have been deficient and must be returned to the applicant and revised several times before being accepted. EPA and state officials told us that they are providing more oral and written guidance to the facility owners and operators to improve the quality of future applications.

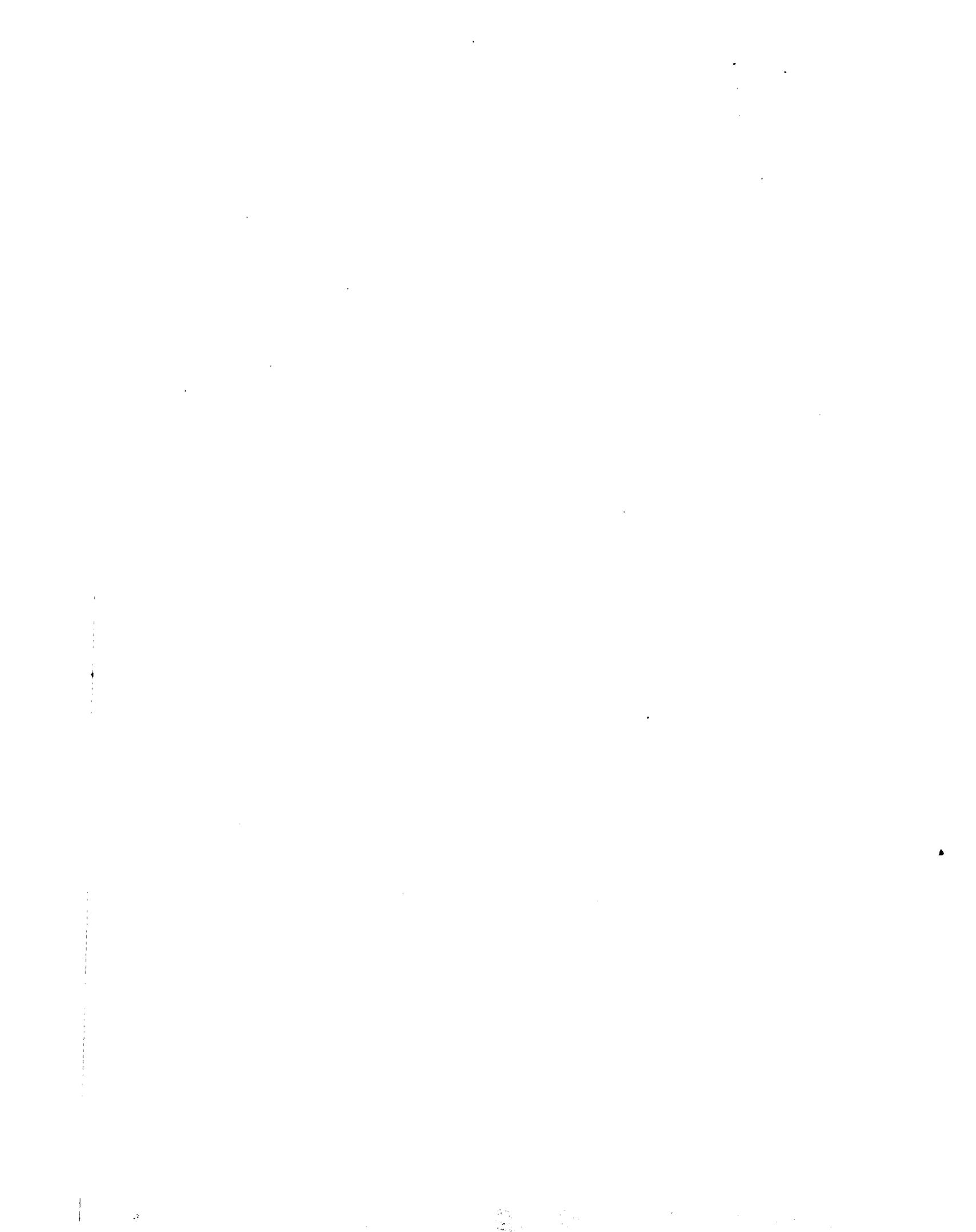
#### PROGRESS IN FINAL PERMITTING OF FACILITIES

As of July 31, 1983, permits had been issued to only 24 facilities of the estimated 8,000 facilities expected to need final permits. These covered 20 storage and treatment facilities, 1 landfill, and 3 incinerators. Final permitting of all facilities is expected to be completed by 1990, according to the Director of EPA's State Programs and Resource Recovery Division, but could extend to 1993 according to current estimates by senior permitting officials in three EPA regions.

Due to the long period of time involved before all facilities are expected to be permitted, EPA policy states that treatment, storage, and disposal facilities should be required to apply for permits in a way that will provide maximum health and environmental benefits. Disposal facilities are considered to be the top permitting priority in fiscal year 1983, followed by incinerators; storage and treatment facilities are to be assigned the lowest priority. Priorities have also been established within each type of facility. EPA's guidance has repeatedly stated that facilities near ground water or surface water used as a drinking water supply should be given priority. EPA's goal is to make final permit decisions for 234 facilities in fiscal year 1984, including 10 land disposal facilities, 58 incinerators, and 166 treatment and storage facilities.

The initial types of facilities requested to submit permit applications were storage and treatment facilities because the applicable final regulations were the first to become effective on July 13, 1981. Since the land disposal regulations did not become effective until January 26, 1983, land disposal facilities have only recently been given permitting priority. Because so few permits have been issued, it is too early to assess the effectiveness of EPA's priority process.

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