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GAO

United States General Accounting Office Washington, D.C. 20548

Comptroller General of the United States

B-213706

May 19, 1986

To the President of the Senate and the Speaker of the House of Representatives

This report describes the Department of Defense's efforts to manage hazardous waste generation, storage, and disposal at its installations in the United States. We made the review to determine if the Department's hazardous waste program complied with the Resource Conservation and Recovery Act. In a draft of this report we proposed implementation of a policy to correct some of the deficiencies in compliance we identified. The Department has now adopted that policy and is working on developing implementing guidance for the services. We are sending this report to you to assist you in your ongoing oversight of the Department's compliance with the Act.

We are sending copies of this report to the Director, Office of Management and Budget, and the Secretary of Defense.

Charles A. Bowsher Comptroller General of the United States

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Executive Summary

	Hazardous waste can seep into water supplies, contaminate land, and escape into the air, thereby posing potential threats to the environment or adverse health effects. The Department of Defense (DOD) generates over 500,000 tons of hazardous waste annually at 333 installations in the United States. The Resource Conservation and Recovery Act of 1976 regulates management of hazardous waste. In response to congressional interest in DOD's compliance with the law, GAO reviewed the
	 extent to which selected DOD installations are meeting the Act's requirements, effectiveness of the Defense Logistics Agency (DLA) in disposing of waste and constructing storage facilities, and progress being made in reducing the volume of hazardous waste requiring disposal.
Background	Under DOD policy, installation commanders have responsibility for assuring that installation activities comply with the Act. DLA through its Defense Reutilization and Marketing Service has responsibility for assisting the commanders by disposing of certain hazardous wastes and constructing necessary storage facilities.
	Also under DOD policy, all units are to reduce the volume of hazardous waste requiring disposal in landfills to avoid future liability for landfill cleanup. Plans to reduce the volume of waste include treating it so that only a small amount of residue remains hazardous and requires disposal. Among the methods of treatment used by DOD are processing wastes through industrial waste treatment plants and recycling.
Results in Brief	DOD installations have made progress toward coming into compliance with the Act's requirements since the Environmental Protection Agency published its implementing regulations in May 1980. However, many installations have yet to achieve full compliance for a number of rea- sons, including the inability of DLA to dispose of hazardous waste and construct storage facilities in a timely manner. In addition, DOD could do more to reduce the volume of waste requiring disposal.
	During GAO's review, DOD took actions to address the situations described above. The major action was a policy change that emphasizes that the services, their commands, and installation commanders have maximum authority and flexibility to achieve compliance with the Act.

GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

	Executive Sammary
	DOD also adopted a policy requiring audits of installation compliance, and plans to change its environmental management information system so it can measure the success of the services in carrying out DOD policies and programs. These actions should provide DOD with the ability to con- duct necessary oversight concerning compliance.
Principal Findings	
Compliance With the Act	Twelve of 14 installations GAO visited had been cited for at least one violation of the Act in 1984. Officials in the seven states where the 14 installations were located, considered 41 of the 75 DOD installations they inspected to be out of compliance with the Act. Also, Navy audits show 90 percent of Navy hazardous waste generators examined were not in compliance. DOD's Environmental Directorate generally was unaware of the compliance status of the installations. (See pp. 18 to 29.)
Disposal of Waste by DLA	In 1980 DLA was assigned responsibility for providing disposal service to all installations and did so by 1984. However, at the time of GAO's visits, much of the hazardous waste generated was stored for long periods of time because contractors did not pick it up in a timely manner, contrac- tors defaulted on their contracts, and delivery orders were not issued in a timely manner.
	To prevent operational shutdowns and regulatory violations, some installations contracted for disposal on their own rather than rely on DLA. DLA officials attribute untimely and unreliable service to inadequate staff. DLA plans to improve disposal services but additional staff will be required. (See pp. 30 to 43.)
DLA Storage Facilities	DLA determined that it needed to construct 143 hazardous wastes storage facilities costing about \$63 million. As of February 28, 1985, 12 of the facilities were constructed, and 13 were under construction. The remaining 118 facilities are scheduled for completion by the end of fisca year 1989. However, DLA may not be able to meet this schedule because of the need to reevaluate the design of some facilities and to incorporate recent DLA directed design changes in others.

	Executive Summary
	DLA has not met the needs of DOD installations which are storing most of their hazardous waste. Rather than waiting for DLA facilities, some installations built new storage facilities, with more planned. This is being done to bring installations into compliance with the Act's require- ments as quickly as possible. (See pp. 45 to 53.)
Reducing the Volume of Waste	Most installations GAO visited had waste treatment plants, and, with few exceptions, these plants had unused capacity. At the same time, four of these installations were contracting for disposal of wastes similar to those being treated. With equipment modifications, these wastes could be processed at the treatment plants, thus reducing waste disposal and saving as much as \$127,000 in disposal costs in the first year and up to \$276,000 annually thereafter.
	In January 1984, DOD established a program to recycle solvents. GAO found that 4 of 14 installations recycled about 490,000 gallons of solvents in 1984—about one-half of the amount that could have been recycled. The recycling efforts identified were operational prior to the start of the January 1984 program. Each of the services plan to have their program to recycle solvents fully operational at the larger waste generators before October 1, 1986. (See pp. 54 to 63.)
Agency Comments and GAO Evaluation	DOD believes, and GAO concurs, that the new policy responds to the intent of the GAO proposals contained in a draft of this report to bring together, within the services, the authority and responsibility for compliance with the Act. DOD is exploring several issues it believes must be resolved before issuing guidance to implement the new policy. GAO believes that these issues need to be resolved in a manner consistent with the policy emphasis of giving the services and their commands maximum authority and flexibility to comply with environmental laws. (See pp. 41 and 42.)
Recommendation	GAO recommends that the Secretary of Defense monitor the implementa- tion of the new policy to assure that in practice it succeeds in providing the services, commands, and installations with the authority and flexi- bility needed to accomplish DOD's goals and the requirements of the Act with regard to the generation, storage, and disposal of hazardous waste. (See p. 63.)

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GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

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GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

Contents

Executive Summary		2
Chapter 1 Introduction	DOD Is a Large Generator of Hazardous Waste DOD Is Required to Comply With the Resource Conservation and Recovery Act DOD Plans for Complying With RCRA Objectives, Scope, and Methodology	10 10 11 12 14
Chapter 2 Many DOD Installations Are Out of Compliance With RCRA Requirements	Most Installations Visited Were Not in Compliance Seven States Consider Many Installations Out of Compliance Navy Reports That Many of Its Generators Are Not in Compliance DOD Plans to Improve Its Oversight of Compliance With RCRA Conclusions Agencies Comments and Our Evaluation	18 19 23 25 26 28 29
Chapter 3 The Defense Reutilization and Marketing Service Has Not Provided Timely and Reliable Service for Disposal of Hazardous Waste	DRMS Needed to Establish an Organization to Contract for Disposal of Waste DRMS Disposal Service Frequently Is Not Timely and Reliable Procurement Management Review Surfaces Many Problems DRMS Comments DOD Has Established a New Policy on Management of Hazardous Waste Conclusions DOD Comments and Our Evaluation	30 30 31 36 37 39 41 42

Contents

Chapter 4 The Defense Reutilization and Marketing Service Is Not Meeting Installations' Hazardous Waste Storage Needs	DRMS Plans to Construct 143 Storage Facilities Possible Delay in Storage Facility Construction The Services Are Building Storage Facilities Rather Than Waiting for DRMS DLA/DRMS Proposed Actions DOD Actions Conclusions DOD Comments and Our Evaluation	44 44 45 47 51 52 52 52
Chapter 5 DOD Needs to Place Greater Emphasis on Treatment of Hazardous Waste to Reduce the Quantity Requiring Disposal	Greater Use Can Be Made of Industrial Waste Treatment Plants Used Solvent Elimination Program DOD Proposes Eliminating the Disposal of Untreated Hazardous Waste by 1992 Conclusions DOD Comments and Our Evaluation Recommendation	54 55 58 61 62 63 63
Appendixes	Appendix I: Overview of RCRA Requirements and Their Enforcement Appendix II: Status of Facility Permits at DOD Installations	64 67
	Appendix III: States and Defense Installations Included in GAO Review Appendix IV: Comments From the Assistant Secretary of Defense (Acquisition and Logistics) Appendix V: Comments From the Assistant	70 71 91
	Administrator for Policy, Planning and Evaluation, Environmental Protection Agency	
Tables	Table 2.1: RCRA Violations by Installation Table 2.2: Types of Violations in 1984 Table 2.3: Violations at Installations Visited Table 2.4: Installation Compliance Status by State as of 1984 Table 3.1: Hazardous Waste Inventory Aging Data	19 20 21 24 32

GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

Contents

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	Table 4.1: DRMS Construction Schedule	45
	Table 4.2: Waste Transferred to DRMS for Disposal in1984	48
	Table 5.1: Treatment Plant Annual Capacity and Usage	55
	Table 5.2: Hazardous Waste Contracted for Disposal	56
	Table 5.3: Estimated Volume of Recyclable Solvents	60
	Table II.1: Installations Requiring Permits	68
	Table II.2: Number and Type of Facility That May Require a Permit	69
Figures	Figure 2.1: Hazardous Waste Improperly Stored at Tinker Air Force Base	21
	Figure 2.2: Hazardous Waste Improperly Stored at Corpus Christi Naval Air Station	22
	Figure 3.1: Hazardous Waste Stored Over 250 Days at the Alameda Naval Air Rework Facility	33
	Figure 4.1: Hazardous Waste Improperly Stored at Alameda Naval Air Rework Facility Awaiting Shipment	48
	Figure 4.2: Hazardous Waste Storage Facility Built by the Sacramento Army Depot	50

Abbreviations

DLA	Defense Logistics Agency
DOD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
DRMS	Defense Reutilization and Marketing Service
EPA	Environmental Protection Agency
GAO	General Accounting Office
RCRA	Resource Conservation and Recovery Act of 1976
USE	Used Solvent Elimination

Page 8

GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

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Introduction

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· · ·	Hazardous waste, if disposed of improperly, can present potential dan- gers to environmental quality and human health. If improperly con- trolled, such waste can pollute valuable ground and surface waters, contaminate soil, and be released into the atmosphere. The effects of such environmental contamination threaten natural resources and endanger public health.
	Hazardous wastes can be in the form of solids, liquids, sludges, or con- tained gases. A hazardous waste may be ignitable, corrosive, reactive, and/or toxic. Ignitable wastes catch fire easily. Corrosive wastes eat away materials and living tissue by chemical action. Reactive wastes may react spontaneously or vigorously with air or water, be unstable to shock or heat, generate toxic gases, or explode. Toxic wastes are poi- sonous to living beings.
DOD Is a Large Generator of Hazardous Waste	Department of Defense (DOD) records show that it generated over 530,000 tons of hazardous waste at installations in the United States during 1984. DOD records show that 333 of its 888 installations in the United States produced hazardous waste in 1984. The types of haz- ardous waste that may be found at these installations include, among others, the following.
	 solvents alkalies paints munitions polychlorinated biphenyls (PCB) contaminated sludges acids metals cyanides fuel and oil decontaminating agents phenols
	Various types of operations performed at DOD installations use many products that, when discarded, become hazardous waste. In some instances, DOD has industrial-type manufacturing operations to repair, overhaul, and/or rebuild major items, including combat tanks, aircraft, aircraft engines, and naval vessels. Other operations that can generate hazardous waste and are frequently found at DOD installations include

	Chapter 1 Introduction
	vehicle motor pools, paint shops, fire departments, hospitals and med- ical clinics, and laundries. Hazardous waste is usually a by-product of activities such as cleaning, degreasing, stripping, painting, or metal plating.
DOD Is Required to Comply With the Resource Conservation and Recovery Act	In 1976 the Congress enacted the Resource Conservation and Recovery Act (RCRA) which provides for regulatory controls over the generation, transportation, treatment, storage, and disposal of hazardous wastes. One objective of RCRA was to regulate the management of hazardous waste and improve waste disposal practices. DOD, being a generator' of hazardous waste and an operator of treatment, storage, and disposal facilities, must comply with RCRA requirements. Generally, DOD considers each installation to be a separate entity for regulatory purposes.
	The Environmental Protection Agency (EPA) has primary responsibility under RCRA for regulating the management of hazardous waste and mon- itoring compliance. EPA regulations, initially published in May 1980, govern hazardous waste generators as well as owners and operators of hazardous waste treatment, storage, and disposal facilities. Throughout this report we refer to EPA regulations as RCRA requirements or regulations.
	In implementing RCRA, EPA established regulations for reporting, record- keeping, performance, and facility operations for hazardous waste han- dlers. RCRA requires that any person ² owning or operating a facility where hazardous waste is treated, stored, or disposed of must obtain a permit. In 1984, 320 of DOD's 333 hazardous waste producing installa- tions were required to obtain a permit and comply with EPA's regulations for treatment, storage, and disposal facilities. Of these installations, 295 are operating under interim status and 25 have final permits. ³ The other 13 installations were not required to obtain a permit because they did not treat, store, or dispose of hazardous waste on-site. They were, how- ever, required to comply with EPA's generator regulations, including
	¹ A generator is an individual or organization whose act or process produces hazardous waste.
	² EPA regulations define person as an individual, firm, corporation, federal agency, partnership, state, municipality, etc.
	³ Interim status is a category of regulatory requirements established under RCRA for facilities that were in operation or under construction on or before November 19, 1980, and are less comprehensive than those applicable to facilities with final permits. Under the 1984 amendments to RCRA, facilities were required to certify compliance with interim status groundwater monitoring and financial assurance requirements and submit final permit applications by November 8, 1985.

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	Chapter 1 Introduction	
.,	obtaining an EPA accompany wast facilities.	identification number and preparing manifests to e transported to treatment, storage, or disposal
	The 1984 RCRA an quantity of hazar must comply wit number of additi this amendment,	nendments, among other things, reduced the minimum rdous waste which determines whether a generator h RCRA requirements. DOD is unable to estimate the onal installations that will be subject to RCRA because of but believes it will be substantial.
	RCRA allowed EPA tory agencies pro as stringent and authority, EPA ha ting, inspecting, a As a result, state most DOD installa	to delegate much of its responsibility to state regula- ovided the state's hazardous waste program was at least comprehensive as the federal program. Using this is delegated to most states the responsibility for permit- and regulating hazardous waste within their borders. is carry out inspection and enforcement activities at tions.
	A further discuss activities is prov and the status of permits are in ap	sion of RCRA regulations and inspection and enforcement ided in appendix I. Details on the permitting process DOD installations in obtaining final hazardous waste opendix II.
DOD Plans for Complying With RCRA	The Office of the and monitors the Logistics Agency this report, we re the services.	Secretary of Defense develops environmental policy Army, Navy, Air Force, Marine Corps, and Defense (DLA) programs to carry out policy. In the remainder of efer to the Army, Navy, Air Force, and Marine Corps as
	On October 21, 1 RCRA regulations to:	980, DOD established an overall policy to implement the published by EPA in May 1980. Specifically, the policy is
	implement within that EPA publishe authorization;	n DOD the hazardous waste management regulations ed under RCRA or that states enact under EPA
•	reuse, reclaim, of practical and thu limit the generat ment practices at mentally yet are	tous waste in an environmentally acceptable manner; r recycle resources, including hazardous wastes, where is conserve on total raw material usage; and ion of hazardous waste through alternative procure- nd operational procedures that are attractive environ- fiscally competitive.
	Page 12	GAO/NSIAD-86-60 Hazardous Waste at DOD Installation

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Under this policy, DOD designated the installation commander as the facility owner for regulatory purposes. Accordingly, installation commanders are responsible for ensuring that all installation operations, including those of tenants,⁴ comply with all RCRA requirements. Installation commanders are responsible for developing and implementing a hazardous waste management plan consistent with RCRA requirements. Tenants are to insure that their operations are consistent with the installation's plan.

Under a 1980 policy, DOD had assigned responsibility for disposing of many types of hazardous waste to DLA because the DOD believed "the single manager concept" was the most effective approach to disposal of hazardous waste. DLA was also given responsibility for constructing and operating the necessary storage facilities to support its disposal mission. DLA delegated the operational responsibility for disposal and storage facilities to its Defense Reutilization and Marketing Service (DRMS),⁵ headquartered in Battle Creek, Michigan. DRMS operates many property disposal offices on military installations.

Though DLA was given responsibility to dispose of many categories of hazardous waste, certain categories, such as sludges from industrial plant processes and biological materials, remained the responsibility of the generating organization.

The bulk of the hazardous waste produced by DOD operations is disposed of by DOD organizations other than DLA. DRMS records show that it disposed of 12 million pounds of solids and 4 million gallons of liquid hazardous waste through contracts with commercial firms in fiscal year 1984. Based on 1984 data reported to DOD by the services, we estimate that the waste disposed of by DRMS represented about 4 percent of the hazardous waste generated by DOD operations, and 19 percent of the hazardous waste disposed of through contracts by all DOD components.

Consistent with its policy to recover, recycle, and reuse resources, DOD, in January 1984, established a Used Solvent⁶ Elimination (USE) program

⁴Tenants are defense components located at an installation that are responsible to a different organization within the DOD hierarchical structure than the installation commander.

⁵Prior to July 1, 1985, DRMS was the Defense Property Disposal Service.

⁶Solvents are chemicals used to dissolve various other substances such as grease and oil on mechanical parts. When these chemicals reach the drinking water supply through the contamination of surface or groundwater, they pose an unacceptable health risk to those drinking the water for an extended period.

	Chapter 1 Introduction	
	to eliminate the di October 1, 1986. U initiate organic so are properly segre quently took on a generally bans the mines that such a and the environm	sposal of recyclable solvents as a hazardous waste by Inder this program, DOD components were directed to Ivent management programs to ensure that solvents egated, stored, and recycled. This program subse- ided significance because RCRA, as amended in 1984, e land disposal of solvents after 1986 unless EPA deter- prohibition is not required to protect human health ent.
	DOD has an enviro monitor installation and certain DOD in among other thing nature of RCRA vio and the status of vices aggregate the their jurisdiction	nmental management information system to help it on compliance with environmental laws such as RCRA itiatives. Installation commanders annually report, gs, total hazardous waste generations, the number and lations cited by EPA or state agencies, permit status, the installation's solvent recycling program. The ser- e data submitted by the various organizations under and transmit it to DOD.
Objectives, Scope, and Methodology	To meet the speci ardous waste in the determine	ic congressional interest in DOD's management of haz- ne United States the objectives of our review were to
	 the extent to which the effectiveness the progress made the volume of haz 	ch DOD installations are meeting RCRA requirements, Df DLA's disposal and storage functions, and by installations in carrying out DOD's policy to reduce ardous waste requiring disposal.
	We judgmentally the United States The installations s and are geograph include various si operations, e.g., in tion center, engine	selected and visited 14 of the 333 DOD installations in that are required to comply with RCRA (see app. III). selected included at least one in each of the services cally dispersed. Further, the installations selected ze generators of hazardous waste and varying types of idustrial-type manufacturing, a world-wide distribu- sering centers, and training centers.
	To determine how requirements, we from officials at t waste. We also rev respondence for 1 compliance with F seven states in wh	well these DOD installations were complying with RCR4 obtained data, studies, records, reports, and comments the 14 installations on their management of hazardous viewed state environmental inspection reports and cor- 982, 1983, and 1984. To gain a greater perspective on ECRA, we contacted state environmental officials for the the 14 installations are located (see app. III), to
	Page 14	GAO/NSIAD-86-60 Hazardous Waste at DOD Installation

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determine (1) the methodology used to inspect DOD installations' operations involving hazardous waste, (2) the frequency of state inspections and follow-up actions on violations, and (3) the compliance with RCRA requirements for the 95 DOD installations in these states.

To evaluate the effectiveness of DRMS's operations in carrying out its disposal and storage responsibilities, we reviewed its contracting and contract administration processes and procedures. We obtained data for 1982 through 1984 on, among other things, the number of contracts awarded and administered, dollar value of such contracts, and volume of wastes disposed of through commercial firms. Though we concentrated on the contracts covering the 14 installations we visited, these contracts also covered many other installations in the same general geographical areas. At the 14 installations visited, we inquired into their contracting for the disposal of those hazardous wastes for which they have responsibility.

In evaluating the DRMS program to construct storage facilities, we obtained data on the DRMS hazardous waste storage plan, DRMS processes and procedures to construct the facilities, and the current status of the program in relation to the DRMS plan. We also obtained correspondence from DLA, DRMS, and the services dealing with coordination between DOD organizations, and the timeliness of DRMS actions to meet needs at the installation level.

To determine the progress made by DOD in reducing the volume of hazardous waste, we assessed whether industrial waste treatment plants could treat more waste and how rapidly installations/generators were implementing the USE program. At those installations we visited with industrial waste treatment plants, we obtained data for each plant on treatment capacity, actual usage, type of wastes being treated, and the volume of similar wastes being disposed of rather than treated. We also reviewed studies funded by DOD showing that greater use could be made of such plants to reduce the volume of hazardous waste requiring disposal at less cost. Under the USE program, we identified the types and volumes of solvents being recovered, recycled and reused at each installation visited. We also obtained data on solvents being disposed of rather than being recycled and, through interviews with installations and generator officials, the reasons for the pace of progress in recycling all solvents.

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Chapter 1 Introduction

We also met with officials of DOD, the services, and DLA to obtain data on policies, actions taken, and results obtained in hazardous waste management. We also inquired into recent DOD initiatives and how they fit into DOD's long range plans to manage hazardous waste.

Our review was conducted in accordance with generally accepted government auditing standards.

In addition to this report, we are reviewing federal civilian agencies' efforts to comply with regulatory requirements.

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Page 17

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GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

DOD must comply with RCRA, which was enacted to regulate, among other things, the management of hazardous waste and improve waste disposal practices. Under DOD policy, each installation commander is responsible for ensuring that installation operations comply with RCRA requirements.

DOD installations have made progress toward coming into compliance with RCRA requirements since EPA published its implementing regulations in May 1980. However, many installations were not in compliance with RCRA requirements. Twelve of the 14 installations we visited were out of compliance. In the seven states where the 14 installations are located, state regulatory officials considered 41 of the 75 DOD installations they inspected to be out of compliance with RCRA. This included the 12 installations we found to be out of compliance. Also Navy audits of 73 Navy waste generators showed that about 90 percent were out of compliance.

Officials at the installations and state regulatory agencies attributed noncompliance to a number of factors, including the lack of command level emphasis on management of hazardous waste, the lack of storage facilities conforming with RCRA requirements, and the installation commanders' lack of authority over tenants. Regarding the latter, this is further discussed in chapters 3 and 4 on contracting for disposal of hazardous waste and construction of storage facilities.

The DOD Director of Environmental Policy, with whom we discussed our findings, stated that the Environmental Policy Directorate¹ was unaware of the overall compliance status of installations because it did not have the data to make a determination. To improve oversight of hazardous waste management, DOD recently established a policy requiring the services to audit installations to determine compliance with RCRA. In addition, DOD plans to make substantial changes in its environmental management information system to obtain data that will enable it to monitor the services' programs to achieve compliance with RCRA at their installations.

¹The Directorate formulates policy and oversees the services implementation of it.

Most Installations Visited Were Not in Compliance

Data from state regulatory agencies, mainly inspection reports, for the 14 installations we visited showed 2 installations—Anniston and Sacramento Army Depots—were in compliance with RCRA requirements during 1984. The remaining 12 installations were out of compliance as each had been cited for one or more violations.² Five of the installations had incurred three or less violations each when last inspected. The remaining 7 installations had incurred between 4 and 17 violations each.

As shown in table 2.1, a comparison of state inspection data on each installation for 1982 through 1984 revealed that most of the 12 installations had fewer violations in 1984 than earlier.

Table 2.1: RCRA Violations by Installation

	Number	ber of Violations*	
Installation	1982	1983	1984
Naval Air Station, Alameda	21	b	13
Philadelphia Naval Shipyard	5	6	9
Marine Corps Air Station, Cherry Point	15	13	8
Kelly Air Force Base	16	13	5
Mare Island Naval Shipyard	ь	8	17
Tinker Air Force Base	7	b	5
Naval Air Station, Corpus Christi	b	9	4
Naval Air Engineering Center	b	b	3
Randolph Air Force Base	7	7	3
Bergstrom Air Force Base	1	9	3
Naval Air Development Center	b	3	1
Navy Ships Parts Control Center	4	4	1

^aBased on annual inspections.

^bNo inspection reports were available.

When RCRA violations are found by state inspectors, the state generally sends a letter to the installation commander notifying him of the violations found during the inspection and requesting that corrective action be taken. In general, the seven state regulatory agencies, recognizing that compliance with RCRA requirements may require several years, attempted to work with the commanders to bring the installations into compliance within a reasonable period of time. However, the states expected the installations to show progress toward compliance.

²A violation is one or more deficiencies under a specific section of a category of regulatory requirements.

The most recent state inspection data for the 12 out-of-compliance Most Violations at the 12 installations show a total of 72 RCRA violations. Using EPA's policy guid-**Installations Were Serious** ance on classifying violations, 47 of the 72 violations, or 65 percent, were Class I violations, the most serious type. EPA guidance defines a Class I violation as one that results in a release or serious threat of release of hazardous waste to the environment, or involves the failure to assure that (1) groundwater will be protected, (2)proper closure and post-closure activities will be undertaken, or (3) hazardous wastes will be destined for and delivered to approved facilities. A Class II violation is one that does not meet the criteria for Class I violations. As shown in table 2.2, the two most common Class I violations at the installations we visited involved pre-transport and use and management of container requirements. Pre-transport violations involved the failure to meet the packaging, labeling, marking, and placarding requirements for containers holding waste. "Use and Management of Containers" violations involve storage of waste in containers that were in poor condition or were leaking.

Table 2.2: Types of Violations in 1984			
	Requirement	Class I	Tota
	Hazardous waste determination	3	3
	Manifest	5	5
	Pre-transport	11	11
	Recordkeeping/reporting	0	3
	Use/management of containers	8	10
	Tanks	1	4
	General facility standards	2	11
	Preparedness/prevention	2	e
	Contingency plan	1	4
	Groundwater monitoring	4	4
	Closure/post-closure	4	E
	Storage	3	3
	Treatment	1	1
	Disposal	2	2
	Total	47	72

As shown in table 2.3, 11 of the installations we visited had at least one Class I violation in 1984.

Table 2.3 :	Violations	at I	Installations
Visited			

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Installation	Class I	Tota
Naval Air Station, Alameda	7	13
Philadelphia Naval Shipyard	7	
Marine Corps Air Station, Cherry Point	6	
Kelly Air Force Base	4	
Mare Island Naval Shipyard	10	17
Tinker Air Force Base	4	Ę
Naval Air Station, Corpus Christi	3	4
Naval Air Engineering Center	3	3
Randolph Air Force Base	1	3
Bergstrom Air Force Base	1	
Naval Air Development Center	1	1
Navy Ships Parts Control Center	0	1
Anniston Army Depot	0	(
Sacramento Army Depot	0	(
Total	47	72

An example of hazardous waste improperly stored in leaking containers beside a storm drain with no impermeable floor, roof, or spill containment at Tinker Air Force Base, Oklahoma is shown in figure 2.1.

Figure 2.1: Hazardous Waste Improperty Stored at Tinker Air Force Base



An example of hazardous waste improperly stored at Corpus Christi Naval Air Station, Texas with no impermeable floor, roof, or spill containment is shown in figure 2.2.

Figure 2.2: Hazardous Waste Improperly Stored at Corpus Christi Naval Air Station

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DOD, in commenting on a draft of this report (see app. IV), stated that violations we noted were of a transitory nature, and either have been cleared with the state agency or EPA or are under a compliance plan. We agree that some violations may have lasted for just a brief period of time or were corrected shortly after their disclosure by state inspectors. However, as shown previously, the 12 out-of-compliance installations had violations each time they were inspected. Generally, the inspections were conducted annually during the 3 years included in our review. Regarding the transitory nature of the violations, our analysis of state inspection reports showed that 34 of the 72 violations cited in 1984 were of a repetitive nature.

Causes of RCRA Violations as Identified by Installation Officials

Officials at 5 of the 12 out-of-compliance installations gave us their opinions of why their particular installations were in violation of RCRA. Though not necessarily applicable to each installation, the causes cited by the installation officials were (1) lack of command level emphasis on

Page 22

GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

	Chapter 2 Many DOD Installations Are Out of Compliance With RCRA Requirements	
	effective hazardou tenants who repor installation comma ulatory agencies at ters by base person to inspect generato meet RCRA requirer	s waste management, (2) lack of cooperation by t to a major command other than the one to which the inder reports, (3) conflicting directions from state reg- nd commands, (4) inattention to administrative mat- nnel handling hazardous waste, (5) insufficient staff ors regularly, and (6) lack of storage facilities that nents.
	We did not attemp established DOD po pliance, which are lations, should dise	t to validate these statements. We believe the recently licy requiring audits at installations to determine com- to be performed by groups independent of the instal- close the underlying causes.
	In commenting on administrative req DOD stated that con quite high. Examp numerous commen in 1985 received fu tions have environ installation officia RCRA violations ide	a draft of this report, DOD agreed that execution of uirements has sometimes been incomplete. However, nmand emphasis on hazardous waste management is les of command emphasis cited by DOD included (1) ts on DOD's proposed hazardous waste policy change rom all levels of command and (2) that most installa- mental protection committees chaired by ranking ls. DOD did not comment on the other four causes of ntified by installation officials.
	The causes of the yout-of-compliance tion. However, off- lack of compliance a December 1984 r generators review high levels of comp activity and major cates that commar pliance with hazar	violations were the opinions of officials at 5 of the 12 installations and were not applicable to each installa- icials from three states cited similar reasons for the with RCRA. Further, the Chief of Naval Operations, in eport which disclosed that 90 percent of the Navy ed were out of compliance, stated that activities with bliance generally have excellent command support at command level. In our opinion, this statement indi- ds must place greater emphasis on the need for com- dous waste regulations.
Seven States Consider Many Installations Out of Compliance	We contacted regulations we visited a subject to RCRA in the states consider with RCRA. The removed and the states consider with RCRA. The removed and the states compliance and the states definitions for the states of the stat	latory officials from the 7 states where the 14 instal- are located. Seventy-five of the 95 DOD installations chose states had been inspected. As shown in table 2.4, red 41 of the 75 installations to be out of compliance maining 34 installations were in or substantially in rms "out of," "in," and "substantially in" compliance regulatory officials, but they provided no precise se terms.
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Table 2.4: Installation Compliance Status by State as of 1984

State		Number of installations				
	Not in compliance	Substantially in compliance	Status Unknown	Tota		
Alabama	0	6	0	6		
California	13	6	15	34		
New Jersey	2	6	1	ç		
North Carolina	2	3	0	5		
Oklahoma	3	0	2	5		
Pennsylvania	4	9	0	13		
Texas	17	4	2	23		
Total	41	34	20	95		

State regulatory officials from North Carolina, Oklahoma, and Pennsylvania stated that the degree of compliance with RCRA requirements by DOD installations in their states was comparable to that of private industry. A New Jersey official said installation compliance was much better than private industry. And, an official of the State of Alabama said the state was favorably impressed by installation personnel as they exhibited a good attitude and concern toward the need to comply with RCRA.

On the other hand, a California official stated that DOD installations are coming into compliance at a slow pace because some installation commanders have not been involved with hazardous waste management, personnel changes had delayed progress, and there has been resistance to state efforts to bring the installations into compliance. The Oklahoma official stated that factors affecting compliance at the major installations in the state were the lack of (1) personnel training on the proper handling of hazardous waste, (2) emphasis by installation commanders on hazardous waste management, and (3) authority by installation environmental coordinators to require operators of hazardous waste facilities to comply with RCRA requirements. Further, a North Carolina official said the complex organizational structure of DOD installations may impede compliance with RCRA because their compliance problems generally center around the installation commander's lack of authority over tenants who generate most of the hazardous waste.

In commenting on a draft of this report, DOD did not agree with reported state regulatory agencies' views on the causes for DOD non-compliance, especially in regard to the lack of command level authority and involvement. Further, DOD noted that officials from two states found DOD to be

	Chapter 2 Many DOD Installations Are Out of Compliance With RCRA Requirements
	ahead and none found DOD to be behind in compliance efforts when com- pared to private entities.
Navy Reports That Many of Its Generators Are Not in Compliance	The Chief of Naval Operations, in a December 1984 report, found that a large percentage of Navy hazardous waste generating facilities were out of compliance. The report summarized on-site reviews of 73 Navy generators of hazardous waste. These reviews, performed by the Engineering Field Divisions of the Naval Facilities Engineering Command between July 1, 1982, and June 30, 1984, were conducted using criteria similar to those used by EPA. The report showed that 90 percent of the generators were out of compliance. The 73 generators represented about 50 percent of the total Navy generators.
	In commenting on bringing all generators into compliance with RCRA requirements, the Chief of Naval Operations in the report stated that few of the problems were insurmountable and that active involvement by major commands was essential. His specific comments in this regard follow.
	"Few of the problems are insurmountable. Although some of the problems can be fixed with the construction of better storage facilities, activities can usually correct the problems quickly if they chose to do so.
	"Hazardous waste management is everyone's job. It requires command support. Activities that show high levels of compliance generally have excellent command support at activity and major command level. At several activities, the major com- mand has taken an active interest in the compliance assessments by asking the activity for a written plan on how they intend to follow up on the Engineering Field Division's recommendations for improvement. Such involvement by major com- mands is essential."
	In commenting on a draft of this report, DOD pointed out that this report by the Chief of Naval Operations resulted in a considerable increase in command attention at major command and lower echelon levels. Whether the Navy has increased the command attention given to com- pliance subsequent to the December 1984 report will be reflected in later state inspection reports.

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DOD Plans to Improve Its Oversight of Compliance With RCRA	The Director of Environmental Policy advised us that his office was unaware of the overall compliance status of the installations because it lacked the data necessary to make that determination. To achieve better oversight, DOD established a policy requiring periodic audits at all instal- lations to determine compliance with RCRA. Also, DOD plans to signifi- cantly revise its environmental management information system to provide data that will enable it to measure the success of its hazardous waste management policies and programs, including compliance with RCRA.
The Services Are Now Required to Audit Installations' Hazardous Waste Operations	Cn January 17, 1985, DOD established a new policy requiring the ser- vices to conduct periodic audits (generally called environmental audits by EPA) at all installations subject to environmental laws, including RCRA. The stated purpose of the policy is to use audits as a means of insuring service compliance with all state, local, and federal environmental laws and regulations. It also is intended to assure DOD management that its installations do not contribute to environmental problems which could expose the government to large future financial liabilities or signifi- cantly degrade the environment.
	The policy guidance states that DOD believes stronger emphasis is needed on improving compliance with RCRA. DOD also believes that with the implementation of this audit policy the conditions of noncompliance will be prevented, and if not, they will be identified and corrected. In dis- cussing the rationale for the audit policy, the policy guidance stated DOD believes the use of audits at installations offers a means of achieving, maintaining, and monitoring compliance. Further, it gives DOD a means to identify or prevent instances of RCRA noncompliance instead of only reacting to problems as they are brought to DOD's attention.
	Although it will be a while before the Army and Air Force fully imple- ment the audit policy, both are developing audit guidelines and making plans to train personnel. The Navy has been performing such audits since 1982 and plans to continue to do so.
The Environmental Management Information System Will Be Revised	In 1980 DOD expanded its environmental management information system to include data on hazardous waste management. This data included information on the amount of hazardous waste generated, number of installations generating and recycling wastes, as well as notices of violations of RCRA resulting from EPA and state inspections.

Page 26

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Each of the services was to receive summary data from its major commands and present an annual report to DOD. The major commands, in turn, were to receive the basic data from the individual installation commanders under their respective jurisdictions. The Defense Environmental Status Report was the basic source document used in this process.

According to officials of DOD's Environmental Policy Directorate, the information contained in the status reports can not be compared from year to year because the kinds of information DOD requested from the services changed somewhat every year. Further, they stated, the information submitted by the services is not being reported on the same basis; certain data are not being provided by all services; data are not reconcilable; and the services are not using the same definitions for specific data terms.

DOD'S Director of Environmental Policy stated a reliable status report is important to DOD because it is the only efficient means available for DOD to know what the services and installations are doing in hazardous waste management. Further, he believes accurate report data is needed to measure the success of a particular policy or program.

Added importance is placed on a reliable environmental management information system by the RCRA amendments of 1984. Specifically, these amendments require each federal agency to undertake a continuing program to compile, publish, and submit to EPA inventory data for each hazardous waste facility. The inventory is to include data such as the amount, nature, and toxicity of waste; nature of environmental contamination; and current status of each facility.

According to the Director, the environmental management information system will be significantly revised so that it meets the specific needs of DOD to monitor service compliance with environmental policies and programs and identify any need for changes in policy. The planned revisions encompass changes in report format, content, and data sources used. The major revisions include the following.

- Standard definitions prepared by DOD and used by all the services in order to assure comparability of data from the services.
- Data requirements in certain areas, such as for programs designed to reduce wastes requiring disposal, will be expanded to enable DOD to measure the success of environmental policies and programs.

GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

	Chapter 2 Many DOD Installations Are Out of Compliance With RCRA Requirements	
	• Much data will be del it from EPA's compute EPA and state inspecti required under RCRA a	eted from the status report because DOD will obtain rized data base. Specifically, it will obtain data on ons of installations and data related to permits and other environmental laws.
	The use of the EPA dat compliance with RCRA when EPA centralized Under this system, EP information monthly. gory of any RCRA viola violation, and (3) typ administrative order, the data to the servic compliance as well as In addition, the curre studying how a comp patterns of compliance gram implementation uary 1987.	ta base will enable DOD to oversee the services' Obtaining and using this data began in late 1985 its compliance and enforcement reporting system. A and the states are to report facility-specific This report will specifically identify the (1) cate- ations, (2) class or severity of each category of e of enforcement action taken, e.g., warning letter, or civil action in the courts. DOD plans to provide es for their use in monitoring the installations' using the data for its own purposes. Int manual system may be computerized. DOD is uterized system could be used to identify trends or ce and noncompliance, and to monitor overall pro- . The results of the study are expected about Jan-
	The Director of Envir system could significa installations to submi produce reliable and cies and programs.	conmental Policy believes a revised, computerized antly reduce the effort required by the services and it the status report, speed up the reporting process, comparable data, and enable DOD to assess its poli-
Conclusions	Many DOD installation pliance with RCRA req said causes of noncor effective hazardous w tion tenants; and lack ardous waste manage Directorate was unaw tions in the United St that determination. W and address the caus	as which handle hazardous waste were out of com- juirements. Installation and state agency officials inpliance included lack of command emphasis on vaste management; lack of cooperation by installa- t of installation commanders involvement with haz- ement. Further, the DOD Environmental Policy vare of the overall compliance status of installa- ates because it lacked the data necessary to make Without this data, DOD would not be able to identify es of noncompliance.
	The new DOD policy e address the lack of re vices to conduct perio	stablished in January 1985, appears to partially cliable information problem by requiring the ser- odic audits to determine installations compliance
	Page 28	GAO/NSIAD-86-60 Hazardous Waste at DDD Installations

	Chapter 2 Many DOD Installations Are Out of Compliance With RCRA Requirements
	with RCRA requirements. This coupled with a revised DOD environmental management information system should enable DOD to measure the suc- cess of a particular program or policy, and should provide DOD with ade- quate data to monitor the services' programs to achieve compliance with RCRA at their installations.
Agencies Comments and Our Evaluation	Copies of a draft of this report were provided for review and comment to DOD and EPA. Their comments are included as appendixes IV and V of this report.
	The draft report contained no recommendations to DOD on compliance with RCRA requirements. Generally, DOD agreed with the facts presented in this chapter with the exception of the comments made by installation and state regulatory agencies' officials who partially attributed noncom- pliance to the lack of command level emphasis on management of haz- ardous waste. DOD's comments relating to our findings on installation compliance with RCRA requirements and our evaluation of such com- ments have been incorporated as appropriate in the chapter.
	EPA had no direct comments related to the substance of the draft report. However, EPA stated that it would like to urge DOD to consider the poten- tial implications of the new small generator requirements on their waste management activities. While the draft of this report only addresses existing practices and problems, these new regulations may require DOD to manage a significantly larger quantity of waste as hazardous.
	See page 63 for our recommendation concerning the new policy implementation.

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The Defense Reutilization and Marketing Service Has Not Provided Timely and Reliable Service for Disposal of Hazardous Waste

In order to comply with RCRA and to limit the need for storage facilities. installations require timely and reliable service for the disposal of hazardous waste. In 1980 the responsibility for disposal for hazardous waste was transferred from DOD installations to DRMS. However, responsibility for compliance with RCRA requirements remained with the installations. We found that DRMS has encountered difficulties in providing timely and reliable service to the installations for disposal of hazardous waste. Wastes were stored at installations for long periods of time rather than being disposed of because (1) DRMS contractors either were not picking up the waste when required or defaulting on their contracts and (2) DRMS was slow in issuing orders requiring contractors to make pickups. DRMS officials attributed these problems to its lack of adequate staff. Because many installations do not have storage facilities that meet RCRA design requirements, storage for long periods of time increases the risk associated with handling hazardous waste. To prevent operational shutdowns and RCRA violations, several installations contracted on their own to dispose of the hazardous waste rather than rely on DRMS.

DRMS plans several actions to improve the quality of their services, but implementation of these actions will require that additional staff be hired and trained. Meanwhile, DOD is implementing a new policy that emphasizes that the services and their commands and installations have maximum authority and flexibility to achieve compliance with RCRA, which includes determining who will contract for the disposal of hazardous waste. DOD's Director of Environmental Policy believes that the emphasis of this policy will improve the quality of service for disposing of waste and result in better compliance with RCRA.

DRMS Needed to Establish an Organization to Contract for Disposal of Waste In 1980 DOD delegated to DLA the responsibility to dispose of hazardous waste. This delegation of responsibility was made because DOD believed that the "single manager concept" was the most effective approach to disposal. The specific advantages expected from this concept were effective coordination with environmental authorities, avoidance of duplication of staff and other resources, and prevention of confusion over individual responsibilities.

In 1980 DLA delegated operational responsibility for hazardous waste disposal to DRMS which operates property disposal offices on many military installations. DLA planned for DRMS to award contracts to remove

	Chapter 3 The Defense Reutilization and Marketing Service Has Not Provided Timely and Reliable Service for Disposal of Hazardous Waste		
	and dispose of hazardous waste from all DOD installations as soon as pos- sible. In the interim, the installation commanders were to continue con- tracting for waste disposal.		
	To award and administer disposal contracts, DRMS had to establish an organization to contract with commercial firms for the disposal of haz- ardous wastes. This required, among other things, hiring and training personnel and developing internal procedures to properly implement federal procurement policies. In addition, it had to contact the many installations to obtain information on volumes of hazardous waste requiring disposal and coordinate contractor pickup points.		
	DRMS awarded one contract by the end of fiscal year 1982. It awarded an additional 39 contracts in 1983 and 44 in 1984, at which time it had contract coverage for all installations. According to DRMS officials, the agency was unable to award contracts sooner because of recruiting problems. They said potential employees were unwilling to move to DRMS Headquarters in Battle Creek, Michigan, and/or believed the positions offered little opportunity for advancement. DRMS partially solved the recruiting problem by locating some contracting personnel at its Ogden, Utah, regional office in 1981 and the Columbus, Ohio, and Memphis, Tennessee, regional offices in 1984.		
MS Disposal Service equently Is Not mely and Reliable	After DRMS entered into contracts with commercial firms to dispose of hazardous waste, it faced problems of nonperformance by the contrac- tors. At those installations covered by DRMS contracts, we found many instances where DRMS disposal services had been inadequate. For example, DRMS records showed hazardous waste was being stored for long periods of time before disposal and contractors were not meeting the contractual pickup dates. To avoid violating RCRA or shutting down operations, some installations contracted on their own for the disposal of hazardous waste. In other cases, interruptions in DRMS disposal ser- vices endangered the health and safety of installation personnel and hampered the mission of the installations. As a result, the major service commands became critical of DRMS service.		

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	Chapter 3 The Defense Reutilization and Marketing Service Has Not Provided Timely and Reliable Service for Disposal of Hazardous Waste
Waste Was Backlogged and Contractors Were Frequently Late in Performing	A measurement of how effectively DRMS disposal service was meeting the needs of DOD installations is the length of time hazardous waste was stored awaiting pickup by DRMS contractors and whether they picked up the waste within the contractual time frames. We found DRMS had accu- mulated a large backlog of waste awaiting disposal and the performance of its contractors was a contributing factor.
	DOD requires the disposal of hazardous waste within 60 calendar days of its receipt by a property disposal office. This requirement was intended to minimize (1) the backlogs of waste, (2) associated environmental risks, and (3) potential violations of environmental regulations. As of December 28, 1984, a DRMS report showed most of the hazardous waste awaiting disposal had been in storage in excess of 60 days.
	The December 1984 report was based on line items rather than the volume of hazardous waste in storage. A line item could be a one-pound container of waste, 100 55-gallon drums of waste, or a 25,000 gallon tank of waste. The report showed 66 percent of the line items had been stored over 60 days, 28 percent over 6 months, and about 9 percent had been stored over one year. The reported inventory aging data are shown in table 3.1.
Table 3.1: Hazardous Waste Inventory Aging Data	Number of Percent of

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Days	in sta	xage	Number of line items	Percent of total
0	٠	30	1,949	18
31	•	60	1,731	16
61	•	90	1,215	11
91	•	120	1,536	14
121	•	150	793	7
151	•	180	449	4
181	•	365	2,047	19
366	and	over	988	9
Total			10,708	100%

*Figures do not add because of rounding.

The DRMS report also showed the backlog condition existed at almost all of its property disposal offices in the United States. Specifically, 98 of the 103 property disposal offices handling hazardous waste had some waste stored over 60 days. Figure 3.1 depicts hazardous waste stored over 250 days at the Alameda Naval Air Rework Facility. Chapter 3 The Defense Reutilization and Marketing Service Has Not Provided Timely and Reliable Service for Disposal of Hazardous Waste



In commenting on a draft of this report, DOD stated that the number of DRMS activities with hazardous waste backlogs was reduced in fiscal year 1985, and that continued emphasis on backlog reduction is being accomplished with further decreases anticipated in fiscal year 1986. Our review of a December 1985 report by DRMS shows that the number of line items awaiting disposal had increased from the previously reported 10,708 to 10,927. However, the percentage of items in storage for over 60 days had decreased from 66 percent to 58 percent for the period.

Page 33

GAO/NSIAD-86-60 Hazardous Waste at DOD Installations
Chapter 5 The Defense Reutilization and Marketing Service Has Not Provided Timely and Reliable Service for Disposal of Hazardous Waste
 DRMS had recorded delinquency data on contractor pickups applicable to 216 orders issued under 44 hazardous waste contracts awarded in fiscal year 1984. Generally, the contracts required contractors to remove the waste within 15 or 20 days of the order issuance date. Our analysis of this data showed contractors were frequently delinquent in performing and, therefore, contributed to the hazardous waste backlog. Specifically, our analysis showed: 40 of the 44 contractors, or 91 percent, failed to meet at least one pickup date,
 contractors had not completed pickup of the waste within the contractual time frame on 130, or 60 percent, of the 216 orders, and, final pickup for the 130 orders were on the average 39 days late, ranging from 1 to 216 days. DOD stated that industry capacity has adversely affected the DRMs disposal capability. DRMs, in response to this aspect of its contracting problem, recently hosted a hazardous waste industry seminar which, according to DOD, resulted in a better dialogue with the disposal industry and identification of several options to resolve contracting issues related to timeliness and reliability of disposal service.
Six of the 14 installations we visited contracted for the removal of haz- ardous waste even though DRMS had contracts in place to service these installations. Generally, they used their own contractor when it was believed prompt removal of hazardous waste was necessary to comply with RCRA and/or prevent operational shutdowns. The details for some of these instances follow.
 Tinker Air Force Base in Oklahoma occasionally had used its own contractor to remove hazardous waste that could not be removed quickly enough under the DRMs contract. A major generator would have had to shut down if the storage tanks for the hazardous waste were not emptied in a timely fashion. To maintain operations the installation at times required the tanks to be emptied with less advance notice than provided under the DRMs contract. In these cases, the installation used the base contractor. Philadelphia Naval Shipyard and the Naval Air Development Center at Warminster. Pennsylvania, occasionally used their contractors to remove and dispose of waste because the DRMs disposal service could not always remove waste in time to comply with the RCRA regulation
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Taval Air Station, Corpus Christi in Texas did not use DRMS to dispose of vastes because, in 1982, DRMS did not quickly remove about 600 drums of hazardous waste which were not stored in accordance with RCRA reg- lations. A large generator on the installation had to shut down part of s operations due to a lack of storage space until these wastes were emoved. This experience convinced the installation commander and the enerator that DRMS could not provide the immediate on-call support eeded to prevent the operational shutdowns that would occur if all vailable storage was filled.
aval Air Station, Corpus Christi in Texas did not use DRMS to dispose of vastes because, in 1982, DRMS did not quickly remove about 600 drums f hazardous waste which were not stored in accordance with RCRA reg- lations. A large generator on the installation had to shut down part of s operations due to a lack of storage space until these wastes were emoved. This experience convinced the installation commander and the enerator that DRMS could not provide the immediate on-call support eeded to prevent the operational shutdowns that would occur if all vailable storage was filled.
Ithough the other eight installations we visited relied solely on DRMS to emove wastes, they also experienced untimely and unreliable service. or example, hazardous waste backlogs at three installations endan- ered health and safety, hampered installation missions, and/or caused otontial PCRA violations
olential RORA VIOIations.
he Navy Ships Parts Control Center in Mechanicsburg, Pennsylvania, rent 1 year, from March 1984 through February 1985, without any ickup of hazardous waste. The DRMS contractor refused to make ickups during March and April 1984 because of a dispute with DRMS ver contract terms. On April 23, 1984, the installation notified DRMS hat each day's delay in the removing the waste backlog could adversely ffect safety and operational missions. This contractor continued to efuse to pick up wastes until the contract was terminated in October 984 and DRMS awarded a new contract to another firm for the backlog nat accumulated in March and April. In February 1985, DRMS awarded a econd contract for wastes generated after April 1984. Both contractors egan removing hazardous waste in March 1985. ecause of financial difficulties, the DRMS contractor servicing Kelly Air orce Base in Texas stopped making pickups in October 1984 and DRMS erminated the contract shortly thereafter. DRMS awarded another con- ract in January 1985, 3 months later. By that time the waste was deteri- rating rapidly due to weather and storage conditions, and there was oncern over the potential for explosions of containers holding toxic raste. The wastes were picked up in February 1985. t the Marine Corps Air Station, Cherry Point. North Carolina, the DRMS ontractor did not make pickups for a 6-week period between October and December 1984 because DRMS was withholding payment for services

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	Chapter 3 The Defense Reutilization and Ma Service Has Not Provided Timely Service for Disposal of Hazardou	urketing and Reliable : Waste
Some Service Commands Have Been Critical of DRMS	Some of the major comma vices. In December 1983 to Command, reported to th was accomplishing its haz cifically, the Commander aged from DRMS were non Further, he stated the sys took too long, thus install measures by EPA.	nds have been critical of DRMS disposal ser- he Commander, Naval Facilities Engineering e Chief of Naval Operations that the way DRMS cardous waste mission was unsatisfactory. Spe- stated the centralized disposal contracts man- responsive and inflexible to local conditions. tem used by DRMS to order contractor pickups ation commanders risked possible enforcement
	In January 1984 the Com DRMS that its failure to tir installation to violate RCR storage restriction was ex the open because the stor In late 1984, according to Army Training and Doctr manding General of DLA to hazardous waste backlog actions to dispose of the Command informed us the capacity to handle potent viding timely removal of	mander, Air Force Logistics Command, notified hely dispose of hazardous waste caused an A requirements. Specifically, the 90 day sceeded and hazardous waste was stored out in age facility was full. a DRMS official, the Commanding General, ine Command, verbally complained to the Com- hat many installations under his command had is and requested that DRMS take the necessary backlog. In March 1985 the Army Materiel at its storage facilities must have sufficient ial backlogs that may result from DRMS not pro- hazardous waste.
Procurement Management Review Surfaces Many Problems	In August 1984 a DLA rev contracting operations. T associated with hazardou tracts used to service the tions that contributed to DOD installations. The rev DRMS's lack of adequate s space as well as compute as contributing factors. T	iew team conducted an on-site review of DRMS he review concentrated primarily on functions s waste disposal contracting, particularly con- installations. The team surfaced several condi- the waste disposal problems encountered by iew team attributed most of these problems to taff. In addition, the lack of adequate working r and telecommunication capabilities were cited he DLA report cited the following problems.
•	 Contract awards were de perienced personnel. A te had 7 vacancies. Of the n experience. Waste inventories were f large number of contract 	layed because of inadequate staffing and inex- chnical support group authorized 16 positions ine people employed, many had limited requently misidentified which necessitated a modifications.
	Page 36	GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

	Chapter 3 The Defense Reutilization and Marketing Service Has Not Provided Timely and Reliable Service for Disposal of Hazardous Waste
	 Contracts were terminated due to contractors' financial problems, failure to perform, and violation of EPA/state regulations. DRMS had not been able to closely monitor contractor pickups of waste and maintain performance statistics by contractor due to lack of personnel. In the spring of 1984, DRMS experienced an acute backlog in requests for orders to remove waste. This was due primarily to a serious staffing shortage and a rapidly increasing workload. Crisis management prevailed in the contracting operation. Specifically,
	personnel were moved from area to area to work on the "hottest" projects with the result that their normal assigned workload was put on "hold." The DLA review team concluded "many of the problems identified prob- ably would have been remedied if DRMS were fully staffed and provided
	adequate working space with access to proper communication and com- puter capability." The team's report listed two choices it believed would solve the recruitment problem—removing DRMS contracting mission responsibility completely or allowing DRMS sufficient time, probably 3 years, to develop its own internal pool of trained contracting personnel. The team recommended the latter option with the qualification that DRMS' contracting mission be reassessed at a later date if it was unsuc- cessful in solving the recruitment problem.
	According to DOD, another DLA on-site review of DRMS' contracting opera- tions was conducted in November 1985. That report recommended more decentralization of some aspects of the contracting process. There was still a significant shortfall of personnel, but DRMS believed that a reas- signment of workload would alleviate this problem. A hiring plan for vacancies at the Columbus and Memphis regional offices had been implemented. DOD stated that the remainder of the 3 year time frame for internal development of the contracting function at DRMS, as indicated by the DLA review of August 1984, was still needed.
DRMS Comments	DRMS officials told us that backlogs accumulated because of poor con- tractor performance and DRMS' inability to issue orders to contractors in a timely fashion. They said when poor contractor performance came to their attention their lone option was to terminate the contracts and award new ones. They stated the process to award a new contract fre- quently took several months, which left the installations without pickups for prolonged periods. Consequently, the officials said they tol- erated late pickups and terminated contracts only as a last resort. DRMS
	Page 37 GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

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officials stated that their inability to cope with these problems was due to the lack of adequate staff.

DRMS officials told us that they planned to reduce the current backlogs and prevent future accumulations by systematically monitoring contractor pickups. They also plan to include in future contracts provisions to fine contractors for making late pickups. Contractors would also be required to have performance bonds, which will protect DRMS aganist damages up to 100 percent of the contract price. Also, DRMS officials told us that DRMS now has basic ordering agreements with contractors who can quickly respond to critical situations.

In addition, DRMS plans to improve its preaward evaluations to avoid contractors with the potential for marginal or poor performance. They said that some of the 15 contracts terminated through April 16, 1985, may not have been awarded had the preaward evaluations more closely scrutinized the contractors competency to perform.

In commenting on a draft of this report, DOD stated that DRMS has implemented initiatives to stimulate better contractor performance and to more intensively manage hazardous property inventories. Examples of these initiatives, according to DOD, include pre-solicitation meetings to enhance contract development and the restructuring of contract clauses to eliminate perceived ambiguities. Other initiatives, such as multi-year contracting and provision for liquidated damages, are being assessed during fiscal year 1986.

In addition, DRMS officials told us that backlogs also accumulated because orders to contractors to pick up hazardous wastes were not issued in a timely fashion. Part of this problem, according to DRMS officials, was that DRMS employees at installations retained hazardous waste rather than request its removal and disposal. As a result, DRMS had no place to put new waste. The officials told us that DRMS staff at both the regions and property disposal offices have been instructed to (1) monitor the DRMS receipt of hazardous waste from installations and (2) establish a schedule for requesting contractor removal of waste from installations in a timely manner.

DRMS officials told us they would need additional staff to implement the actions needed to improve contractor performance. They said it would take considerable time to hire and train the staff and implement the improvement actions. Further, they stated the lack of staff is the reason

	Chapter 3 The Defense Reutilization and Marketing Service Has Not Provided Timely and Reliable Service for Disposal of Hazardous Waste	
	DRMS has yet to put in place the procurement and administrative organi- zation they believe is necessary to properly handle the disposal of haz- ardous waste.	
DOD Has Established a New Policy on Management of Hazardous Waste	In discussing our review of DRMS disposal service with the DOD Director of Environmental Policy, we stressed the potential adverse effects due to the undependable disposal service and the split of responsibilities under the DOD hazardous waste program. Specifically, installation com- manders have responsibility for assuring that installations meet RCRA requirements, but they are largely dependent on DRMS which has pri- mary responsibility for disposal of hazardous waste. Under these cir- cumstances, the installations can incur RCRA violations when the DRMS disposal service falters. This situation makes it necessary for the instal- lations to sometimes contract for disposal of hazardous waste. The more often installation commanders must assume the disposal responsibility of DRMS, the greater the duplication of effort and resources between DRMS and the installations to dispose of waste. Use of the single manager concept was supposed to avoid such duplication.	
	programs. On March 11, 1985, subsequent to our meeting with the Director of Environmental Policy, DOD proposed a revised policy for achieving the goals of hazardous waste management. These goals are cost-effective compliance with environmental laws such as RCRA, including the implementing regulations, and elimination of the disposal of untreated hazardous waste. The revised policy specifically proposed that the services and their commands and installations have maximum authority and flexibility to achieve compliance, including the determination of who will dispose of hazardous waste. The proposal stated that resources for disposal of hazardous waste shall be incorporated into the management of processes generating waste and shall be considered a cost of doing business, i.e., the generator must pay for disposal. The proposed policy provided that DLA and DRMs support the services' hazardous waste management program when requested, and such support would be delineated in inter-service support agreements. Under this proposal, the services and their commands and installations would pay the disposal costs and contract for disposal of waste on their own or through DRMs. On	

The Defense Reutilization and Marketing Service Has Not Provided Timely and Reliable Service for Disposal of Hazardous Waste

Chapter 3

July 5, 1985, DOD issued a policy memorandum adopting the proposed policy change.

The Director of Environmental Policy, in a presentation to the services on August 15, 1985, stated that the policy change resulted from a review of the 1980 hazardous waste policy in relation to the goals of compliance and minimization (elimination of disposal of untreated waste). This review disclosed that the 1980 policy (1) established disincentives to attainment of goals, (2) established the pretense of responsibility inconsistent with environmental laws and withdrew authority for compliance from those really charged with compliance, and (3) eliminated cost control motivation for minimization of hazardous waste by generators through centrally funding DLA. According to the Director, the proposed new policy appropriately stresses goals, clarifies responsibility, gives the services the necessary authority, and funds the services for the job.

Although DOD comments on a draft of this report contain several references indicating that the above new policy is still in the proposal stage, in subsequent discussions, an official of the DOD Environmental Policy Directorate told us that the July 5, 1985, policy statement is the new policy but will not be fully implemented until July 1986 when guidance on its implementation, is to be included in a DOD directive. Further, in the memorandum distributing the policy to the responsible assistant secretaries of the services and the Director of DLA, the Deputy Assistant Secretary of Defense (Installations) stated the following:

"Effective management of hazardous wastes and excess hazardous materials is our greatest environmental challenge. This memorandum revises earlier policy and responds to the dynamic changes that have taken place in the law pertaining to this program.

"The attached policy statement includes goals and expresses principles which I believe will best support the needs of our installations. Our overall goals are to achieve cost-effective compliance and to eliminate the disposal of untreated hazardous waste. Therefore, our policy is that installation commanders are responsible for compliance with environmental requirements; generators are to minimize the amounts of hazardous wastes they generate and pay for disposal, and installation commanders have maximum authority and flexibility to achieve compliance. This policy will be incorporated into a DOD directive for solid waste and hazardous waste management." (Underscoring added.)

In a September 12, 1985, memorandum to the Deputy Assistant Secretary of Defense for Logistics and Materiel Management and four other DOD officials from the Director of Environmental Policy, the following

Page 40

GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

	Chapter 3 The Defense Reutilization and Marketing Service Has Not Provided Timely and Reliable Service for Disposal of Hazardous Waste
	statements were made to clarify the hazardous waste management policy.
	"Pursuant to discussions with the components, our subject memorandum of July 5, 1985, is clarified as follows:
	"a. It is not intended that individual installations, or any unit below component level, be authorized by the policy revision to take unilateral action independent of the command structure. <u>The policy</u> should probably read 'service or component' in each instance where it in fact said 'installation.' This will be incorporated into the DOD instruction to follow.
	"b. <u>Although the policy stated in the memorandum is effective now</u> , implementation must be carried out in an orderly, thoughtful process. The Hazardous Waste Policy Implementation Steering Group met on September 10 to begin this process" (Underscoring added.)
Conclusions	DRMS has not always provided the installations with timely and reliable service in disposing of hazardous waste. As a result, installations vio- lated or risked violating RCRA requirements. To overcome this situation, some installations assumed DRMS' disposal responsibility.
	DRMS plans certain procedural changes that cannot be implemented until additional staff are hired and trained. Also, in July 1985, DOD estab- lished a new policy for hazardous waste emphasizing that the services and their commands and installations have maximum authority and flexibility to achieve compliance with RCRA, including the determination of who will dispose of hazardous waste. Under this policy, installation commanders will be able to contract on their own or use DRMS to dispose of hazardous waste to assure compliance with RCRA. We believe that the policy change will provide installation commanders the means to control the timeliness and reliability of the disposal service on their installations which should translate into better compliance with RCRA.
	By emphasizing the authority of the services and their commands and installations for deciding how to dispose of waste, the directive imple- menting the new policy should also provide them with an additional incentive to reduce the volume of hazardous waste requiring disposal. Funds normally needed for disposal should be available for the purchase and maintenance of equipment to treat and recycle waste. The reduction in the volume of hazardous waste being disposed of could improve the installations' compliance with RCRA regulations.

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GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

	Chapter 3 The Defense Reutilization and Marketing Service Has Not Provided Timely and Reliable Service for Disposal of Hazardous Waste
	Better compliance through improving disposal practices and reducing the volume of waste, in our opinion, will come about only if the new policy is properly implemented.
DOD Comments and Our Evaluation	DOD generally agreed with our proposal, contained in a draft of this report, to finalize and implement the policy. In commenting on the draft, DOD stated that a review of the new policy by service secretariats deter- mined that DLA should continue to provide a centrally managed haz- ardous waste disposal service because the services indicated they would make much use of the service. The review also, according to DOD, identi- fied several issues that needed to be resolved including: (1) whether funds for hazardous waste disposal should be allocated directly to DLA or to the individual services, (2) whether waste management and regula- tory response would be more efficient and accountability clearer if DLA's interface with regulatory requirements were conducted without a host installation as intermediary (e.g. should DLA officials sign permits as both owner and operator of a DLA storage facility versus an installation official signing as owner), (3) how to continue to expedite storage facility planning, programming, and construction, (4) which entity is primarily responsible for specific special wastes, such as munitions, and high volume wastes, such as sludges, (5) what data are needed to sup- port annual budget requests for funds for waste disposal and how should such data be collected, (6) how to continue to improve disposal contracting and to improve service and reduce risk of off-site liability, and (7) how to implement the broad concept of minimization, which includes various efforts to reduce the amount of waste requiring dis- posal. The review further concluded that resolution of these issues should be included in a formal DOD directive, approved by appropriate offices to assure concurrence and facilitate execution of hazardous waste management responsibility for the foreseeable future. According to DOD, working groups of service and DLA representatives are addressing each of these issues for inclusion in the directive. The goal for issuing the directive is July 1986.
	We agree that the resolution of these issues prior to implementation of the policy change will help facilitate the implementation process. How- ever, care must be taken in preparing the implementing directive to assure that it effectively supports the stated goals. We are concerned with the implication that the funding issue could be resolved in favor of DOD directly funding the DLA/DRMS disposal function rather than having the services reimburse or fund DLA for its services. Specifically, direct

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Chapter 3 The Defense Reutilization and Marketing Service Has Not Provided Timely and Reliable Service for Disposal of Hazardous Waste

funding of DLA was cited earlier in this report by the Director of Environmental Policy as a shortcoming of the 1980 policy as it eliminated the cost control motivation for generators. Further, as mentioned earlier, direct funding of DLA led to installation commanders having the responsibility to comply with RCRA but depending on DLA to dispose of waste in accordance with RCRA. It seems to us that responsibility for funding must be held by the party ultimately responsible for compliance with environmental requirements. Within DOD, this responsibility has been given to the services.

DOD comments related to our findings on DRMS' disposal service and our evaluation of such comments have been incorporated where appropriate in this chapter.

See page 63 for our recommendation concerning the new policy implementation.

	Hazardous waste storage facilities at DOD installations must be designed in accordance with RCRA requirements when hazardous waste will be retained over 90 days. In 1980 responsibility for constructing facilities to store hazardous wastes was assigned to DRMS. Subsequently, DRMS found that installations generally lacked any storage facilities meeting RCRA requirements.
	DRMS determined there was a need to construct 143 hazardous waste storage facilities at an estimated cost of about \$63 million. Its construc- tion plan, based on the number of staff members available and the esti- mated length of time required to develop, design, and construct the various facilities, called for these facilities to be built by the end of fiscal year 1989. As a result of recent changes in design criteria and features, this timetable may be extended beyond 1989. The services have been critical of the time being taken by DRMS to construct the needed facilities because the DRMS timetable has not met the current needs of many DOD installations to come into compliance. Some DOD installations have built their own hazardous waste storage facilities in order to come into com- pliance with RCRA requirements as quickly as possible.
	DOD is in the process of implementing a new policy that emphasizes that the services and their commands and installations have maximum authority and flexibility to achieve compliance with RCRA, including the construction of any needed storage facilities for hazardous waste. The Director of Environmental Policy believes that the emphasis of this policy should expedite construction of hazardous waste storage facilities.
DRMS Plans to Construct 143 Storage Facilities	DRMS plans call for the construction of 143 storage facilities at its prop- erty disposal offices located on DOD installations throughout the United States. According to DRMS officials, the need for these facilities was determined through an agency assessment of certain preliminary data such as location of the DRMS' property disposal offices, location of instal- lations generating hazardous waste, quantities of waste being generated, and availability of existing storage facilities at the installations. Gener- ally, they stated that available facilities at the installations did not meet RCRA design requirements. These requirements apply when hazardous wastes are accumulated and stored beyond 90 days.
	As of February 1985, DRMS had completed 12 of the 143 facilities it plans to build. Another 13 were under construction and 40 were in the design

GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

phase. Of the remaining 78 facilities, some were in preliminary development and others were not being worked on. While the DRMS plan shows construction of the last facility to be completed in fiscal year 1989, most facilities remaining to be built, as shown in table 4.1, were scheduled for completion in fiscal years 1987 and 1988.

Table 4.1: DRMS Construction Schedule

Before 1985 1985 1986 1987 1988 1989 Unknown	Completion in liscal year	Number of facilities
1985 1986 1987 1988 1989 Unknown	Before 1985	12
1986 1987 1988 1989 Unknown	1985	11
1987 1988 1989 Unknown	1986	14
1988 1989 Unknown	1987	43
1989 Unknown	1988	43
Unknown	1989	5
	Unknown	15
	fotal	143

DRMS officials stated the program was spread over several years because it did not have the staff to simultaneously work on all the proposed facilities. Further, according to DRMS, it normally takes 3 years to complete the preliminary development, design, and construction of storage facilities costing up to \$200,000. However, facilities costing over \$200,000 may take over 6 years. The difference is attributable to the size and scope of the facility coupled with the efforts needed to obtain congressional authorization since facilities costing over \$200,000 require specific authorization by the Congress.

Possible Delay in Storage Facility Construction

Although the DRMS plan was to generally complete construction of the 143 facilities by 1989, they may not be completed as scheduled. Because of design changes for certain types of storage facilities, DRMS will have to reevaluate 31 facilities in the preliminary development phase and incorporate some recent DLA directed design features in 48 others where design had not yet begun. Further, the addition of specific design features will raise the estimated construction costs of many facilities to over \$200,000, thereby requiring congressional authorization. According to DRMS officials, the combination of these events could delay the scheduled construction of many storage facilities.

	Chapter 4 The Defense Reutilization and Marketing Service Is Not Meeting Installations' Hazardous Waste Storage Needs
DRMS Will Reevaluate the Size of 31 Storage Facilities	In June 1984 DOD established a 60 calendar day requirement for the dis- posal of hazardous waste after its receipt by a property disposal office. This requirement was made to assure better disposal service and to save construction dollars. To reduce construction cost, DRMS changed its design criteria to recognize a shorter length of time that waste would be stored before disposal. As a result, DRMS is reevaluating the size of each of the facilities in preliminary development. DRMS engineers stated the reevaluation would delay those facilities in preliminary development for several months. As of February 1985, 31 facilities were in preliminary development.
DLA-Directed Design Changes May Delay Construction of 48 Facilities	On February 22, 1985, DLA directed DRMS to incorporate additional design features into all facilities where design had not yet begun. This was done to reduce the likelihood that hazardous waste would be released into the environment and to increase the safety of workers. These additional features included
	the use of expensive explosion proof electrical systems throughout the facility instead of in specific areas of the storage facility, more individual storage areas with their own walls and doors, and walls and ceilings of all storage areas (including exterior perimeter walls) will have fire-rated walls, doors, louvers, and vents, and a separate ventilation system for each of the several additional storage areas and every closet and aisle.
	DRMS' impact analysis of these design changes showed they would cause a 25-percent increase in the size of a storage facility and increase the construction cost per square foot by an estimated 90 percent. Also, DRMS estimated that the total cost for the 48 facilities ¹ would double. As a result, DRMs estimated these additional design features plus inflation since original estimates were prepared would cause the cost of 48 facili- ties to increase sufficiently to require congressional authorization, i.e., estimated cost went from less than \$200,000 to over that amount.
	Since the 48 facilities would require congressional authorization, DRMS estimated final construction of each facility would be delayed 2 to 3 years with most being built in fiscal years 1989 and 1990. The DRMS
	¹ This includes facilities where preliminary development had been completed but design not yet begun.

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GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

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	Chapter 4 The Defense Reutilization and Marketing Service Is Not Meeting Installations' Hazardous Waste Storage Needs	
	impact analysis commented that vulnerability to regulatory RCRA viola- tions, fines, delays in getting facilities in operation, and complaints from the services were inevitable.	
The Services Are Building Storage Facilities Rather Than Waiting for DRMS	The services assumed that, with DRMS responsible for storing and dis- posing of certain categories of waste, installations would eventually need storage facilities only for those wastes for which they retained responsibility. However, they were to temporarily store DRMS assigned waste until DRMS constructed its own facilities. Since DRMS has con- structed few storage facilities, many installations have constructed or plan to construct their own storage facilities and upgrade existing facili- ties to comply with RCRA requirements.	
Installations Store Most Waste Assigned to DRMS	In 1984, according to data reported to DOD, installations transferred over 32,000 tons of waste to DRMS for disposal. Physical custody was retained by the installations for over 21,000 of the 32,000 tons, or 67 percent, because the DRMS property disposal offices had insufficient storage facilities. Figure 4.1 shows hazardous waste at the Alameda Naval Air Rework Facility awaiting shipment to the Defense Reutilization and Marketing Office (DRMO) for disposition. The extent to which installations of the respective services retained custody and stored the waste varies. As shown in table 4.2, the range was from a high of 97 percent for Navy installations to a low of 6 percent for the Marine Corps.	

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Figure 4.1: Hazardous Waste Improperly Stored at Alameda Naval Air Rework Facility Awaiting Shipment



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 Table 4.2: Waste Transferred to DRMS

 for Disposal in 1984

Service	Total transferred (tons)	Stored by installations (tons)	Percentage stored by installations
Army	9,500	8,000	84
Navy	10,000	9,700	97
Air Force	7,100	3,100	44
Marine Corps	4,900	300	6
DLA	500	300	60
Total	32,000	21,400	67

GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

Installations Are The services have generally been critical of the time taken by DRMS to construct storage facilities to house its assigned hazardous waste. To **Constructing New Storage** insure waste, including that assigned to DRMS, is stored in facilities that **Facilities to Assure** meet RCRA design requirements, installations have constructed new facil-**Compliance With RCRA** ities and plan more in the near future. In a December 1983 memorandum to the Chief of Naval Operations, the Commander of the Naval Facilities Engineering Command stated the way DLA was accomplishing its hazardous waste mission was unsatisfactory, in part, because few hazardous waste storage facilities had been completed. The Commander said the Navy had been required to construct its own facilities to comply with RCRA requirements. In March 1985, a Navy official informed us the Navy, in the past few years, had constructed new storage facilities at several installations to store DRMS assigned waste as well as its own. For example, he said the Naval Station, Mayport, Florida, built a facility so that DRMS waste could be stored in accordance with RCRA, and the Naval Air Station, Cecil Field, Jacksonville, Florida, built a facility because it preferred not to wait any longer for the DRMS facility. DRMS cancelled its proposed facilities at both locations when informed the Navy had built its own. We found neither DRMS proposed facility had advanced to the design state at the time the Navy decided to build its own facilities. The Navy official also informed us of 19 more storage facilities, costing about \$6 million, which are planned for construction in the near future because DRMS was too slow in constructing its own. He stressed that the Navy is responsible for its installations complying with RCRA requirements. He also stated that the Navy is not undergoing a massive program to provide facilities to store hazardous waste, but that the Navy prefers faster disposal of waste so fewer storage facilities would be needed. The Army is also constructing its own storage facilities. An official of the U.S. Army Materiel Command informed us the command spent about \$940,000 to construct or upgrade 19 storage facilities in 1982, 1983, and 1984 to conform to RCRA storage facility requirements. He said seven new storage facilities were constructed during this period at a cost of about \$680,000. The remaining \$260,000 was spent on upgrading facilities, that is, installing curbing, sealing concrete floors, installing wall dividers to separate incompatible wastes, etc. According to this official. the new storage facilities are used to store hazardous wastes for which DRMs has responsibility. Figure 4.2 depicts a hazardous waste storage facility built by the Sacramento Army Depot.

Page 49

GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

Figure 4.2: Hazardous Waste Storage Facility Built by the Sacramento Army Depot



The Deputy Assistant Secretary of the Air Force for Installations, Environment and Safety suggested to the DOD Director for Environmental Policy in November 1984, that, if construction of DRMS storage facilities is not imminent, consideration should be given to transferring the funds to the services so they can design and construct the needed facilities. Specifically, he stated DRMS had continually deferred building scheduled storage facilities and was unable to provide facility descriptions for installation review. This, he said, indicated little or no progress in the DRMS construction program.

The Deputy noted that, had responsibility for construction of storage facilities not been transferred to DRMS, the Air Force would have constructed the necessary facilities by November 1984. He further stated, that while the Air Force facilities may have been more austere than the facilities proposed by DRMS, they would have met RCRA requirements and facilitated Air Force compliance. He summed up his comments by saying the critical problem encountered from the DRMS storage facility program was the continued failure to provide adequate storage facilities to protect DOD personnel, the public and the environment.

According to an official of the Air Force Logistics Command, the Air Force had spent at least \$575,000 from 1982 through 1984 to construct or upgrade storage facilities to comply with RCRA requirements. Of that amount, over \$500,000 went to construct eight new storage facilities. In addition, about \$670,000 will be spent in the next few years to build five

· · · · · · · · · · · · · · · · · · ·	Chapter 4 The Defense Reutilization a Service Is Not Meeting Inst Hazardous Waste Storage N	and Marketing allations' leeds
	more storage facilitie being taken because at Air Force bases.	es. All these actions, he stated, have been or are DRMS has not constructed the facilities it proposed
OLA/DRMS Proposed Actions	DLA and DRMS have in enable DRMS to reduce speed up construction develop and construct oping a standardized stated all future desi will reduce the time to and design phase.	itiated several actions which they believe will e the time needed to construct storage facilities. To g facilities, the Army Corps of Engineers will et 28 facilities. The Corps of Engineers is also devel- storage facility design for DRMS. DRMS officials gns will conform to the standardized version which hormally required for the preliminary development
	Once the Corps of En DLA officials stated, t agreement that the s hope to work out an quickly obtain EPA/st consistent with the s agreement could sign ning of construction.	gineers develops the standardized facility design, hey plan to meet with EPA officials to obtain their tandardized design meets RCRA requirements. They interim agreement with EPA whereby DRMS could ate agency approval to construct facilities that are tandardized design. DRMS officials stated such an ificantly reduce the time between design and begin
	In April 1985 DLA red funds for hazardous cific facilities. This r features caused the e \$200,000, therefore, that obtaining legisla costing over \$200,000 facilities to ensure th programmed funds.	quested the assistance of DOD to obtain a block of waste storage facilities without designation of spe- equest was made because the DLA-directed design estimated cost of many proposed facilities to exceed requiring congressional authorization. DLA stated tive approval for a block of funds for facilities 0 would allow greater flexibility in shifting among lose ready to build are not delayed for lack of
	In commenting on a c taking other importa include the developm of storage facilities p tive proposals, accor schedule for constru- frame and, if approv planned. DOD stated t action by the Congre	Iraft of this report, DOD stated that DLA is under- nt initiatives to expedite construction. These eent of a legislative proposal to allow construction prior to issuance of the RCRA permit. The two legisla- ding to DOD, are particularly critical to DLA's cting facilities in the fiscal year 1987-1989 time ed, will enable DLA to accomplish the program as hat DLA schedules are dependent on favorable ss.

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DOD Actions

The Director of Environmental Policy stated storage facilities meeting RCRA requirements are crucial to bringing many installations into compliance with RCRA and time is of the essence. He stated the March 1985 proposed revised policy for the management of hazardous waste should expedite construction of hazardous waste storage facilities. The proposed policy was adopted by DOD on July 5, 1985.

As stated in chapter 3, DOD is reviewing several issues that it believes must be resolved prior to issuing guidance that implements the new policy. Among the issues, according to DOD, are (1) whether waste management and regulatory responses would be more efficient and accountability clearer if DLA's interface with the regulatory requirement were conducted without an installation as intermediary and (2) how to continue to expedite storage facility planning, programming, and construction. Pending resolution of these issues, there are indications that the services will exercise their authority and flexibility to expedite construction of hazardous waste storage facilities. For example, the Director of Environmental Policy in his August 15, 1985, presentation to the services and DLA stated that a legitimate storage need exists for hazardous waste but the location, size, and number of facilities may change based on the services' implementation of the new policy. In meetings related to developing the guidance to implement the new policy, the Air Force stressed the need for expediting construction and offered to assist with construction. Although the Navy expressed an interest in using DLA services to dispose of waste, it may make the installations responsible for storage. Further, the Navy pointed out that expedient operations could eliminate the need for storage facilities at certain installations.

Conclusions

DRMS efforts to design and build hazardous waste storage facilities has had limited success in meeting the needs of the DOD installations. This has resulted in some installations either being in violation of RCRA requirements or having to build their own storage facilities to avoid violations. We believe the new DOD policy, when implemented, will expedite construction of hazardous waste storage facilities by giving the services and their commands and installations greater authority and flexibility to construct such facilities.

This change, coupled with the services and their commands and installations being given maximum authority and flexibility to dispose of waste (as discussed in chapter 3), may also result in smaller and fewer storage facilities being constructed. For example, if an installation can dispose of its hazardous waste in 90 days or less, RCRA regulations for the design

	Chapter 4 The Defense Reutilization and Mar Service Is Not Meeting Installation Hazardous Waste Storage Needs	keting s'
	of storage facilities are not could opt not to build such	a pplicable. As a result, the installations a facility. If the installation prefers to build a
	its waste within 90 days, it with a facility smaller than	RA regulations even though it can dispose of t may be able to meet its storage requirements n DRMS planned.
	While the policy stresses m vices, commands, and insta RCRA requirements, the sele issuing implementation gui could be given to DLA which waste management. This co policy to provide the servic authority and flexibility for waste.	haximum authority and flexibility for the ser- allations in managing hazardous waste to meet ection of certain issues for resolution prior to idance implies that the storage responsibility h would split the responsibility for hazardous ould be inconsistent with the thrust of the ces, commands, and installations maximum or managing and disposing of hazardous
DOD Comments and Our Evaluation	DOD generally agreed with report, to finalize and impl oping implementing guidan comments related to our fin and our evaluation of the c appropriate in the chapter	our proposal, contained in a draft of this ement the proposed policy. It is now devel- ace on hazardous waste storage facilities. DOD ndings on hazardous waste storage facilities comments have been incorporated where
	See page 63 for our recomr implementation.	nendation concerning the new policy
	Page 53	GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

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DOD Needs to Place Greater Emphasis on Treatment of Hazardous Waste to Reduce the Quantity Requiring Disposal

In 1980 DOD established a policy to reduce the volume of hazardous waste requiring disposal. By reducing the volume of hazardous waste requiring disposal, DOD reduces (1) the potential for contamination that could adversely affect the public health and the environment and (2) the requirements for more storage space. Another benefit is the reduction in DOD's potential long-term liability for sharing in the future costs of cleaning up the environment.

One of the ways to reduce the volume is to treat hazardous waste so that a smaller amount of residue remains hazardous and requires disposal. The treatment methods used by DOD include processing wastes through industrial waste treatment plants and recycling. The services have built these treatment plants to process the millions of gallons of water contaminated with hazardous wastes primarily from its industrial-type manufacturing operations. Recycling, in essence, refers to recovering and reusing used solvents. Recycling can be accomplished by cleansing impurities from the solvents so it can be reused for its original purpose, selling or receiving credit from solvent reprocessors, and by using solvents as a fuel supplement.

At 4 of the 14 installations visited, we found that, although the industrial waste treatment plants had unused capacity, wastes similar to those being treated in these plants were being contracted for disposal off base. With minor equipment modifications, wastes at these four installations could be treated with a total cost reduction of up to \$127,000 in the first year and about \$276,000 annually thereafter.

In January 1984 DOD established the Used Solvent Elimination (USE) program to assure that its 1980 policy to reduce the volume of hazardous waste was carried out. The services have implemented the USE program and expect it to be fully operational at the larger generators before October 1986. This program requires recycling of solvents with the goal of eliminating the disposal of all solvents by October 1986. We found a potential for increased recycling of solvents at the 14 installations we visited—about 401,000 gallons annually. We did find some limited recycling efforts at four installations but they were on-going prior to the USE program.

DOD's goal is to eliminate disposal of untreated hazardous waste by 1992. Although DOD has not initiated specific programs to achieve this goal, its Director of Environmental Policy advised us that this goal is the driving force behind many DOD initiatives to reduce the volume of hazardous waste. As part of the policy change discussed in chapter 4, the service

Page 54

commanders and their installations we implement a plan for reducing generat The use of industrial waste treatment nated with hazardous wastes can redu waste by over 90 percent. Nine of the	ould be required to ted hazardous was plants to treat wa uce the volume of t) prepare ai te. ter contami	nd
The use of industrial waste treatment nated with hazardous wastes can redu waste by over 90 percent. Nine of the	plants to treat wa	ter contami	
such plants, and 7 plants were being u at four installations, hazardous waste being disposed of off-base. These wast treatment plants with limited addition potential savings in the first year, afte ment needs for other processing proce \$127,000, and up to \$276,000 in each	14 installations we used at less than ca similar to that bei tes could be process hal investment in e er considering addie dures, could be as subsequent year.	his type of e visited ha pacity. Fur ng treated sed throug quipment. ' itional equi much as	d ther, was h the Fhe p-
The seven plants with excess capacity of about 798 million gallons, but the a million gallons, 57 percent of capacity rate ranged from 33 to 88 percent at t	y had a combined a nnual usage in 198 y. As shown in table he individual insta	nnual capa 4 was abou e 5.1, the us llations.	city it 454 sage
Thousands of Gallons			
Installation	Capacity	Usage	Rate
malanalion			
Tinker Air Force Base	375,000	187,500	5
Tinker Air Force Base Marine Corps Air Station, Cherry Point	375,000	187,500 62,500	5
Tinker Air Force Base Marine Corps Air Station, Cherry Point Naval Air Station, Corpus Christi	375,000 150,000 125,000	187,500 62,500 100,000	5/ 4/ 8/
Tinker Air Force Base Marine Corps Air Station, Cherry Point Naval Air Station, Corpus Christi Anniston Army Depot	375,000 150,000 125,000 62,500	187,500 62,500 100,000 55,000	5 4 8 8
Tinker Air Force Base Marine Corps Air Station, Cherry Point Naval Air Station, Corpus Christi Anniston Army Depot Mare Island Naval Shipyard	375,000 150,000 125,000 62,500 37,500	187,500 62,500 100,000 55,000 30,500	50 42 80 81 81 81 81 81 81 81 81 81 81 81 81
Tinker Air Force Base Marine Corps Air Station, Cherry Point Naval Air Station, Corpus Christi Anniston Army Depot Mare Island Naval Shipyard Naval Air Development Center	375,000 150,000 125,000 62,500 37,500 30,000	187,500 62,500 100,000 55,000 30,500 12,500	5 4 8 8 8 8 8 8 8 8 8 8 4
Tinker Air Force Base Marine Corps Air Station, Cherry Point Naval Air Station, Corpus Christi Anniston Army Depot Mare Island Naval Shipyard Naval Air Development Center Sacramento Army Depot	375,000 150,000 125,000 62,500 37,500 30,000 18,125	187,500 62,500 100,000 55,000 30,500 12,500 6,050	51 42 80 84 84 84 33
	treatment plants with limited addition potential savings in the first year, aft ment needs for other processing processing \$127,000, and up to \$276,000 in each The seven plants with excess capacity of about 798 million gallons, but the a million gallons, 57 percent of capacity rate ranged from 33 to 88 percent at t	treatment plants with limited additional investment in er potential savings in the first year, after considering addit ment needs for other processing procedures, could be as \$127,000, and up to \$276,000 in each subsequent year. The seven plants with excess capacity had a combined a of about 798 million gallons, but the annual usage in 198 million gallons, 57 percent of capacity. As shown in table rate ranged from 33 to 88 percent at the individual insta	treatment plants with limited additional investment in equipment. The potential savings in the first year, after considering additional equipment needs for other processing procedures, could be as much as \$127,000, and up to \$276,000 in each subsequent year. The seven plants with excess capacity had a combined annual capa of about 798 million gallons, but the annual usage in 1984 was about million gallons, 57 percent of capacity. As shown in table 5.1, the us rate ranged from 33 to 88 percent at the individual installations.

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Table 5.2: Hazardous Waste Contracted for Disposal

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Thousands of Gallons			
Installation	Annual unused capacity	Similar waste contracted annually	Estimated annual disposal costa
Tinker Air Force Base	187,500	487	\$192,000
Anniston Army Depot	7,500	47	29,000
Mare Island Naval Shipyard	7,000	17	29,000
Sacramento Army Depot	12,075	65	26,000
Total	214,075	616	\$276,000

There is also potential for wastes from nearby bases to be treated at certain facilities. The feasibility of this was demonstrated by two recent studies at DOD installations showing that certain types of hazardous waste being contracted for disposal could be treated at nearby industrial waste treatment plants at a savings to DOD.

A Naval Facilities Engineering Command funded study of the treatment plant at the Pearl Harbor Naval Base, Hawaii, showed that, in 1983, the Defense Reutilization and Marketing Office disposed of about 21,000 gallons and 89,000 pounds of wastes including acids, alkalies, and chromates at a cost of about \$176,200. These wastes had been collected from several generators located near the naval installation. According to the study, the 89,000 pounds of solid waste could be converted to about 64,000 gallons of liquid and, along with the other 21,000 gallons of liquid, processed through the industrial waste treatment plant, which was only 50 percent utilized. The study concluded that processing these wastes at the treatment plant would have reduced the volume of waste requiring disposal at an estimated savings of \$48,000.

Similar findings were reported in a 1985 DOD funded study that showed the Tooele Army Depot in Utah annually generated about 130,000 gallons of hazardous wastes, mainly acids or alkalies with metal contaminants, and traditionally disposed of such waste through a contractor. Based on recent contract prices, it was estimated that the annual disposal costs would be about \$141,700. The study showed these wastes could be treated at the nearby Hill Air Force Base industrial waste treatment plant at an estimated cost of \$97,400, a savings of \$44,200 or 31 percent of the estimated disposal cost. The estimated cost to treat the waste included the cost of transportation (58 cents/gallon), treatment (one cent/gallon), and disposal of the residual waste (6 cents/gallon). Chapter 5 DOD Needs to Place Greater Emphasis on Treatment of Hazardous Waste to Reduce the Quantity Requiring Disposal

Some Capital Expenditures May Be Required to Increase the Use of Treatment Plants

Although greater use can be made of industrial waste treatment plants, some capital expenditures may be required before additional quantities of wastes can be treated. As shown in the following examples, however, the future savings appears to justify the additional costs.

While the Anniston Army Depot would need to purchase some equipment to treat the additional wastes, the savings in disposal costs for one year will at least equal capital expenditures. In 1984, Anniston disposed of 46,700 gallons of waste which prior to disposal was stored in large tanks connected directly to the various treatment processes within the industrial waste treatment plant. The waste in the tanks was not pumped into the treatment processes because the high flow rate of the tank pumps would have increased the concentration of waste beyond the design capabilities of the treatment processes. This installation now plans to purchase pumps with lower flow rates to properly control the flow of waste into the processes. We estimated that treatment of this waste would eliminate current annual disposal costs of \$29,000. A depot official said the savings of \$29,000 in one year would more than offset the cost of purchasing and installing the pumps.

At the Sacramento Army Depot, installation officials estimate that it would cost about \$120,000 for the necessary equipment, including storage tanks, to process the additional 65,000 gallons of waste that are now being disposed of. Installation officials expect the annual generation of the 65,000 gallons to continue and the disposal costs to increase to about \$120,000 in 1987. Therefore, the reduction in disposal costs in one year would equal the cost of the additional equipment.

The operational and maintenance costs to treat the additional quantities of hazardous waste at any of the treatment plants, if any, should be minimal because the additional waste to be treated on a daily basis is small. At the Anniston Army Depot, for example, the 46,700 gallons equate to about 187 gallons daily or less than one-tenth of one percent of the 220,000 gallons of wastes being treated daily. At Tinker Air Force Base, the daily increase would be about 1,948 gallons or three-tenths of one percent of the wastes being treated daily at the plant.

DOD Plans to Encourage Greater Use of Industrial Waste Treatment Plants

The DOD Director of Environmental Policy agreed that industrial waste treatment plants can be used to a greater extent to treat waste and thereby reduce the volume of wastes requiring disposal. However, the Director said generators have no incentive to seek the least costly method of disposing of hazardous waste because DRMS pays for the costs

Page 57

GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

Chapter 5 DOD Needs to Place Great Treatment of Hazardous V Quantity Requiring Dispos	er Emphasis on Vaste to Reduce the sal
of disposal while the	e generator pays the cost of treatment. He stated
that the new DOD po-	licy on hazardous waste provides the necessary
incentive to generat	ors to seek less costly methods of disposal by
requiring generators	s to fund disposal of hazardous waste. At the same
time, he stated, DOD	is considering wide dissemination of the results of
the Pearl Harbor Na	aval Base and Hill Air Force Base studies as a means
to educate the gener	cators on less costly ways to dispose of hazardous
waste which he hop	es will encourage them to seek out and use nearby
treatment plants wh	here feasible.
DOD established a Us	sed Solvent Elimination (USE) program in January
1984 to eliminate the	te disposal of solvents by recovering and recycling
them. The USE progra	ram goal to eliminate the land disposal of solvents is
important because F	RCRA, as amended in 1984, generally bans the land
disposal of hazardor	us waste, including solvents, beginning in late 1986.
Also, these amendm	The section is to have a waste reduction
program. Effective S	September 1, 1985, documents authorizing the trans-
port of waste to a do	tesignated treatment, storage, or disposal facility
must contain a certi	fication that the generator has a program to reduce
the volume and toxi	active of such waste.
Our review showed	that 4 of the 14 installations we visited recycled
about 490,000 gallo	ns of solvents in 1984. We also found that an addi-
tional 401,000 gallo	ns of similar or the same type of solvents could have
been recycled at 13	installations. All of the recycling efforts identified
were initiated befor	e the USE program was established.
DOD established the	USE program to assure that its policy to reduce the
volume of hazardou	is waste is carried out. As defined under the USE pro-
gram, recycling of s	olvents refers to recovering and reusing them.
Recycling can be acc	complished by cleansing impurities from the solvents
so they can be reuse	ed for their original purpose, used as a fuel supple-
ment, or sold for cas	sh or credit from solvent reprocessors.
DOD initiated the USI General report and needed in solvent di the DRMS study show solvents which repr waste.	E program following the issuance of a DOD Inspector a DRMS study which showed that improvements were isposal practices. The Inspector General report and wed that generators could economically recycle waste resented a major portion of DOD's annual hazardous
Page 58	GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

Used Solvent Elimination Program

Studies Showed the

Potential for Recycling Used Solvents

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Chapter 5 DOD Needs to Place Greater Emphasis on Treatment of Hazardous Waste to Reduce the Quantity Requiring Disposal

	25,000 gallons of boilers. This prac \$25,000. We also	tice reduced its annual fuel cost in 1984 by about estimate that it avoided \$56,000 in disposal costs. In
Some Generators Are Recycling Solvents but More Can Be Done	Generators at 4 or 490,000 gallons o to the beginning of lations recycling of The Anniston Arr	f the 14 installations we visited had recycled about f solvents in 1984. These efforts were undertaken prior of the USE program. Details applicable to the four instal- used solvents follow.
	Although this stu DOD, a subsequent used at least 2.3 r States during the local procurement Also, a literature five large Navy g gallons of solvent vents could be rec	dy did not show the volume of solvents used within Army report in December 1983, noted that the Army nillion gallons of solvents in the continental United year ended November 30, 1982. This amount excluded t or bulk purchases by some of the heavy solvent users. search by the Army identified a previous survey of enerators that showed they used more than 1.1 million annually, and that at least 87 percent of those sol- cycled at an annual savings of more than \$1 million.
	A separate study recycle solvents in that said (1) state was readily avails equipment in mos an estimated \$10. costs annually by	funded by DRMS showed there was a strong potential to n DOD. This study resulted in a February 1983 report -of-the-art distillation equipment for recycling solvents able, (2) payback of the initial capital investment for t cases could be achieved in less than one year, and (3) 3 million could be saved in procurement and disposal DOD through recycling used solvents.
	The Inspector Ger recycling activitie to the report, 12 of solvents. Nine of 496,000 gallons of in fiscal year 198 to the cost of new \$80,000 in fuel co The Inspector Ger substantial saving and cost avoidance ments specifically program.	heral's report, issued in early 1984, covered the es of 34 installations during 1982 and 1983. According of the installations, or 35 percent, were recycling used these 12 installations reclaimed, through recycling, f solvents—about 25 percent of the solvents they used 2—for a savings of about \$1.9 million when compared solvents. The other 3 installations saved about otsts by using 67,000 gallons of used solvent as fuel oil. heral concluded that solvent recycling could result in gs through cost avoidance for new solvent and fuel oil be for disposal of used solvents. DOD program docu- v cited this study as a reason for establishing the USE

Page 59

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addition, this depot also has a distillation unit at solvent vats which continuously recycles solvents. Therefore, the only hazardous waste requiring disposal from the use of solvents at the depot is sludge, the residue from recycling.

- Mare Island Naval Shipyard recycled about 3,000 gallons of solvent for a savings of \$31,000 in procurement costs and \$6,000 in disposal costs.
- Kelly Air Force Base contracted for the recycling of about 59,000 gallons of solvents for a savings of \$54,000 in procurement costs and \$81,000 in disposal costs. In addition, the base shipped about 400,000 gallons of solvents to the Department of Energy for use in an alternate fuel program.
- Naval Air Station, Alameda recycled over 2,000 gallons of solvents for an estimated savings in procurement and disposal cost of \$13,000.

Our review of records available at the 14 installations indicated that 13 installations dispose of an estimated 401,000 gallons of waste solvents annually that could be recycled. Three of these installations were already recycling solvents, namely, Kelly Air Force Base; Naval Air Station, Alameda; and Mare Island Naval Shipyard. The annual volume of solvents that could be recycled at each of the 13 installations is shown in table 5.3. In each instance, the annual volume exceeds the minimum amount that DOD considers economically feasible to recycle.

Table 5.3: Estimated Volume of Recyclable Solvents

Installation	Galions
Marine Corps Air Station, Cherry Point	111,000
Tinker Air Force Base	53,000
Naval Air Station, Alameda	48,000
Kelly Air Force Base	47,000
Naval Air Station, Corpus Christi	47,000
Philadelphia Naval Shipyard	42,000
Mare Island Naval Shipyard	28,000
Naval Air Engineering Center	8,000
Randolph Air Force Base	6,000
Bergstrom Air Force Base	4,000
Navy Ships Parts Control Center	3,000
Sacramento Army Depot	3,000
Naval Air Development Center	1,000
Total	401,000

Page 60

Chapter 5 DOD Needs to Place Greater Emphasis on Treatment of Hazardous Waste to Reduce the Quantity Requiring Disposal

The Services Have Implemented the USE Program	The services began implementing the USE program in July 1984. Consis- tent with the program guidance provided by DOD, the services are ini- tially concentrating their efforts on those installations which use large quantities of solvents. Actions being taken at various levels within the services include (1) identifying the quantities of solvents that can be recycled, (2) identifying equipment requirements, (3) determining equip- ment costs, (4) preparing and publishing technical guidance, and (5) establishing program plans with goals and milestone dates. Each of the services plan to have their program fully operational at the larger gener- ators before October 1, 1986.
DOD Proposes Eliminating the Disposal of Untreated Hazardous Waste by 1992	DOD's new policy states, among other things, the DOD goal is to eliminate the disposal of untreated hazardous waste by 1992 through waste mini- mization, treatment, and recycling. DOD's Director of Environmental Policy informed us that the basic objectives of the policy are to improve compliance with RCRA and to avoid any possible long term liability asso- ciated with disposal of hazardous waste in landfills. This long term lia- bility relates to the possibility that DOD could be fully or partially responsible for any future costs to clean up the landfills where its wastes were deposited.
	The Director stated that although DOD has not developed a detailed plan with specific programs to achieve the 1992 goal, these objectives are a driving force behind many DOD initiatives. He believes the aggregate results of the initiatives in the future should go far toward meeting the expressed goal. The Director cited the greater use of industrial waste treatment plants and the USE program as two of the initiatives.
	DOD also has a project on industrial process modification which, according to the Director, has waste minimization as its objective. He specifically cited two examples under this project that should reduce hazardous waste when more installations are made aware of the processes and implement them. In one instance, the paint stripping pro- cess normally used by the Air Force for aircraft was producing 20,000 gallons of hazardous waste per aircraft. Removal of paint using a plastic bead blasting process produces only 100 pounds of dry waste. When this process is implemented throughout DOD, it is expected to avoid the gen- eration of millions of gallons of hazardous waste and save over \$100 million annually in operating and waste disposal costs. The other example cited was the Anniston Army Depot's filtering system which is

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GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

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Chapter 5 DOD Needs to Place Greater Emphasis on Treatment of Hazardous Waste to Reduce the Quantity Requiring Disposal

attached directly to chemical baths used in plating operations. The filtering system cleanses impurities from the plating baths so they can be reused, thereby precluding disposal.

Other initiatives in the near future, according to the Director, will include exploring the use of incinerators and requiring disposal contractors to treat all DOD generated hazardous waste as opposed to using landfills. The Director stated that treatment is the preferred method for disposing of hazardous waste, but there will always be some residue from treatment processes.

Conclusions

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The objectives of reducing the volume of waste requiring disposal are to improve compliance with RCRA, reduce the potential for contaminating the environment, and to avoid any potential long-term liability for sharing the costs of cleaning up the environment. Some installations have reduced their volume of waste, but more can be done to avoid land disposal of hazardous waste such as using excess treatment plant capacity to handle additional quantities of waste being disposed of from the same or nearby installations. Another way to reduce the volume of waste requiring disposal is for the installations to participate more fully in DOD's USE program. Although the services have implemented the USE program, which was established in January 1984, and some installations were recycling solvents, none of the installations we visited had increased the amount of solvent recycling as a result of the USE program.

We believe the USE program goal to eliminate the disposal of solvents is important because RCRA, as amended in 1984, generally bans the land disposal of hazardous waste, including solvents, after late 1986. A strictly enforced ban on land disposal of solvents coupled with less than complete recycling of solvents may cause some DOD installations to temporarily store large quantities of solvents pending recycling. This situation could pose a serious threat to the environment since, as noted earlier in this report, the installations frequently lacked adequately designed storage facilities for hazardous waste.

The DOD goal to eliminate the disposal of untreated hazardous waste by 1992 is to be accomplished through a rigorous program of waste minimization and emphasizing treatment and recycling over disposal. Although DOD has not developed a detailed plan for accomplishing the 1992 goal, the new policy does require installation commanders to prepare and implement plans to reduce the volume of hazardous waste. We believe this requirement will increase the visibility of programs aimed at

	Chapter 5 DOD Needs to Place Greater Emphasis on Treatment of Hazardous Waste to Reduce the Quantity Requiring Disposal
	reducing the volume of waste and create more emphasis on such pro- grams. Such additional attention, in our opinion, should speed up the operational status of the USE program and process changes.
	To minimize future program costs, existing and planned treatment facili- ties should be used to the greatest extent possible regardless of owner- ship. In our opinion, inter-service agreements which call for inter-service coordination and cooperation at all levels of management, especially among the installations in the same geographical area, would facilitate greater use of treatment facilities.
DOD Comments and Our Evaluation	DOD concurred with our proposals, contained in a draft of this report, to require specific plans for waste reduction from the services and their commands and installations and maximum possible utilization of indus- trial waste treatment plants. DOD stated it will incorporate requirements on both matters into the DOD directive to be issued in July 1986.
	DOD officials agreed with the facts presented in this chapter except that they did not share our concern over potential solvent storage problems, at least not as much as for other hazardous waste, as solvent recyclers are rapidly developing capability to handle such wastes. DOD's comments relating to our findings and our evaluation of such comments are incor- porated, where appropriate, in the chapter.
Recommendation	We recommend that the Secretary of Defense monitor the implementa- tion of the new policy to assure that in practice it succeeds in providing the services, commands, and installations with the authority and flexi- bility needed to accomplish DOD's goals and the requirements of RCRA with regard to the generation, storage, and disposal of hazardous waste.

Overview of RCRA Requirements and Their Enforcement

Under RCRA, EPA has established regulations for reporting, recordkeeping, performance, and facility operations for persons¹ who generate, transport, or own or operate a treatment, storage, or disposal facility. Generators of threshold quantities of hazardous waste must comply with requirements for analyzing wastes to identify those that are hazardous; proper recordkeeping and reporting; and the use of proper containers and container labels. Also, they must use a manifest system (signed and documented shipping papers) to transport waste from point of generation to the designated treatment, storage, or disposal facility. EPA regulations permit generators to accumulate waste on site for up to 90 days (with certain extensions) without a storage permit prior to shipment.

RCRA requires that any person owning or operating a facility where hazardous waste is treated, stored, or disposed of must obtain a permit from EPA or an authorized state agency. The act prescribes a procedure whereby facilities in operation or under construction on or before November 19, 1980, may continue operating under an interim status permit until a final hazardous waste permit is issued or denied. Facilities with this permit status must comply with interim status regulations established by EPA or authorized states. These regulations include requirements for identification numbers; manifests, recordkeeping, and reporting; preparing for and preventing hazards; groundwater monitoring; facility closure and postclosure care; financial responsibility requirements;² the use and management of containers; and the design and operation of waste storage tanks, surface impoundments, incinerators, and underground injection wells. In addition, the regulations include general requirements for security at facilities, inspection of facilities, and personnel training. Under the 1984 amendments to RCRA, facilities were required to certify compliance with interim status groundwater monitoring and financial assurance requirements and submit final permit applications by November 8, 1985, or cease operations.

After the owner or operator of a facility receives the final hazardous waste permit, the facility must comply with final permit regulations. These regulations incorporate the interim status requirements and

¹EPA regulations define person as an individual, firm, corporation, federal agency, partnership, state, municipality, etc.

²EPA's regulations exclude federal and state hazardous waste facilities from compliance with the financial assurance requirements.

	Appendix I Overview of RCRA Requirements and Their Enforcement
	impose additional technical design, construction, and operating requirements.
RCRA Is Administered Primarily by the States	RCRA provides that after authorization by EPA, the states may administer their own hazardous waste programs provided the state's program is at least as stringent and comprehensive as the federal program. The act allows the states to obtain interim authorization from EPA to administer their own hazardous waste programs while working toward final pro- gram authorization.
	As of January 1986, 51 of 56 states and territories have either been authorized or are working towards final authorization to administer their hazardous waste programs.
	Authorized states are responsible for conducting site inspections to enforce RCRA regulations. EPA inspection guidelines through fiscal year 1984 called for inspection of major facilities annually and nonmajor facilities every 2 years. RCRA, as amended in 1984, requires EPA to inspect annually each federally owned or operated treatment, storage, and disposal facility.
Enforcement Procedures Used to Achieve Compliance With RCRA Regulations	EPA and the states have several enforcement options to foster corrective actions when facilities are not in compliance with RCRA regulations. Warning letters or notices of violation are used to notify facility owners, operators of violations and may specify the date by which a violator must achieve compliance. They are generally used for minor violations where voluntary compliance is expected. Administrative compliance orders, issued by EPA or the state agency, require compliance by a cer- tain date, may assess penalties, and are enforceable through administra- tive or judicial action. Civil actions, and in certain cases criminal litigation, may be pursued directly through the federal courts. Fines or penalties may or may not be sought through these actions.
	Federal facilities are not subject to state or local fines and penalties. In addition, the Department of Justice has adopted a policy of not taking judicial action on EPA's behalf against another federal agency over envi- ronmental compliance problems. Instead, Presidential directives call for compliance problems to be resolved through administrative procedures

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Appendix I Overview of RCRA Requirements and Their Enforcement

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The enforcement option used to foster corrective actions varies according to the severity of the violation(s) and the compliance history of the permit holder/generator. More severe violations are those that pose direct and immediate threat to public health or the environment. Less severe violations are those procedural or reporting violations which, in themselves, do not pose direct short-term threats to the public health or environment.

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Appendix II Status of Facility Permits at DOD Installations

	According to EPA, one of the most important aspects of the hazardous waste regulatory program is the final permit for hazardous waste treat- ment, storage, and disposal facilities. The final permit requires facilities to comply with more detailed operating and technical design standards than is required for interim status. It is intended to provide greater assurance that the environment is adequately protected. As of 1984, 25 of the 320 DOD installations that may require final permits had received them. Also, some installations have submitted final permit applications for processing. EPA acknowledges that progress has been slow in issuing permits for all facilities nation-wide, and attributes the slow progress to incomplete permit applications, competing priorities, and other factors. Generally, the slow progress is attributable to both applicants and regu- latory agencies.
Overview of EPA Permit Process	The final permit 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 permit process through cooperative arrangements with EPA. Eventually EPA hopes to assume an oversight role in this area similar to its role in inspection and enforcement activities.
	Initially, EPA expected that about 8 months would be required for the final permit process. The general procedures for the permit process follow. After notice from EPA or the state, the facility is given at least 6 months to submit the final permit application. EPA or the state is allowed 2 months to review the application and notify the facility of any deficiencies. After the application is determined to be 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.
	However, the actual permit process takes longer than 8 months. EPA esti- mated that, based on its experience, the permit process will require 18 months for storage and treatment facilities, 24 to 30 months for inciner- ators, and 36 to 48 months for land disposal facilities. According to EPA almost all applications submitted through 1983 have been deficient and must be returned to the applicants one or more times. The time it takes to obtain the additional information necessary to complete an applica- tion can significantly delay the permit process.
	Further, EPA estimated that about 44 percent of the facilities withdrew from regulation or submitted a closure plan after the application was

	Appendix II Status of Facility Permi DOD Installations	its at	
	requested. As a repermit process to a estimates that pub all permits and even	esult, EPA and/or the states used their resour review withdrawal ¹ requests or closure plan blic participation adds 2 to 3 months to the p ren more time for controversiał facilities.	ces for the as. EPA also process for
	Because of the len those facilities pos the environment. I applications from given to these faci ment and public he and air pollution. S The initial types o	igthy permit process, EPA guidance gives pri- sing the greatest potential hazards to public EPA places the highest priority on calling in p land disposal and incinerator facilities. Prior ilities because of their potential to affect the lealth through surface and groundwater con Storage facilities are generally given least p of facilities requested to submit permit appli	prity to health and permit prity is e environ- tamination riority. cations
	were storage and t tions were the firs disposal regulation facilities have bee	treatment facilities because the applicable f st to become effective on July 13, 1981. Sinc ns became effective January 26, 1983, land en given permitting priority.	e the land disposal
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Appendix II Status of Facility Permits at **DOD** Installations installations that may require final permits. DOD data shows 637 facilities at the 320 installations, an average of about 2 facilities per installation. We found that the number of facilities at each installation is generally dependent on the quantity and nature of hazardous waste generated and the method(s) selected to handle and dispose of such waste. One installation may have only one facility used to temporarily store hazardous waste. Another installation may have (1) several treatment facilities for industrial type wastes and obsolete and deteriorated ammunition and (2) a storage facility. The number of facilities that may require permits varies significantly among the services and DLA. The majority of the facilities are for storage of hazardous waste awaiting disposal. Table II.2 summarizes the number and type of facilities that may require permits as of 1984, as reported to DOD by the services and DLA. **Table II.2: Number and Type of Facility That May Require a Permit Bases that** may require permits Service/agency Army 93 107 Navv Air Force 102 Marine Corps 12 DLA 6 Total 320

Type of facilities Treatment Disposal Storage Total 78 226 12 316 28 98 7 133 36 125 4 165 1 12 13 0 0 10 10 0 143 471 23 637

States and Defense Installations Included in GAO Review

State	DOD installations in state subject to RCRA	14 installations GAO visited
Alabama	6	Anniston Army Depot
California	34ª	Mare Island Naval Shipyard Naval Air Station, Alameda Sacramento Army Depot
New Jersey	9	Naval Air Engineering Center
North Carolina	5	Marine Corps Air Station, Cherry Poin
Oklahoma	5	Tinker Air Force Base
Pennsylvania	13	Philadelphia Naval Shipyard Naval Air Development Center Navy Ships Parts Control Center
Texas	23	Bergstrom Air Force Base Kelly Air Force Base Naval Air Station, Corpus Christi Randolph Air Force Base

^aThe 34 installations are in the northern part of the state. The entire state of California contains 62 DOD installations subject to RCRA.

Note: GAO comment supplementing those in the report text appear at the end of this appendix.



ACQUISITION AND LOGISTICS ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301-8000

10 JAN 1985

Mr. Frank C. Conahan Director National Security and International Affairs Division U.S. General Accounting Office Washington, D.C. 20548

Dear Mr. Conahan:

Thank you for the opportunity to review the draft report, "Hazardous Waste - New Initiatives Needed At Military Bases In The United States," dated November 7, 1985 (GAO Code 392063/OSD Case 6879). The draft report has contributed to the Department of Defense (DoD) awareness of needs.

The July 1985 hazardous waste policy proposal, referred to in the report, raised a number of issues. Working groups of DoD component representatives are in the process of resolving these issues. The results will be combined into a DoD directive that will set the standard for achieving goals of compliance and minimization. This implementation process will yield a better management framework than issuing the proposed policy as recommended in the draft report, since the proposed policy has been superseded by events.

The new directive will require major generators of hazardous waste to concentrate on minimization through use of less hazardous or non-hazardous materials, process modification, and waste treatment. The Defense Logistics Agency (DLA) will aggressively pursue recycling in the private sector and will continue as primary manager for waste disposal. In addition, the existing DoD regulations requiring DoD components to take action as necessary to comply with the Resource Conservation and Recovery Act will continue in effect. Dual DLA and individual component contracting and storage capability provides the DoD with flexibility to manage hazardous waste in a way that best protects human health and the environment.

This combination of new initiatives and existing requirements will respond to the intent of the GAO recommendations and put the DoD closer to the ultimate goal of eliminating the disposal of untreated hazardous waste.

Sincerely, tein Pladet James P. Wade.

Page 71

GAO DRAFT REPORT - DATED NOVEMBER 7, 1985 (GAO CODE 392063) - OSD CASE 6879 "HAZARDOUS WASTE - NEW INITIATIVES NEEDED AT MILITARY BASES IN THE UNITED STATES" DOD RESPONSES TO GAO FINDINGS AND RECOMMENDATIONS FINDINGS FINDING A: The Department Of Defense Is A Large Generator Of Hazardous Waste Required To Comply With The Resource Conservation And Recovery Act. The GAO found that 333 of 888 DoD installations in the United States generated over 530,000 tons of hazardous waste during 1984. GAO reported that there are many types of hazardous waste (i.e., solvents, paints, munitions, metals, fuel and oil) that result from various operations performed at defense installations (i.e., repairs of tanks, planes and vessels, paint shops, fire departments, hospitals, and laundries). GAO also reported that the Congress enacted the Resource Conservation and Recovery Act (RCRA) which provides for regulatory controls over the generation, transportation, treatment, storage, and disposal of harzardous wastes (HW). GAO observed that, because DoD is a generator of hazardous waste and operator of treatment, storage, and disposal facilities, the DoD must comply with RCRA requirements, and each DoD installation is considered a separate entity for regulatory purposes. (pp. 1-4, GAO Draft Report) DOD RESPONSE: Partially Concur. The DoD does not agree with the implication that the RCRA considers each DoD installation as a seperate entity for regulatory purposes. RCRA holds federal agencies which manage hazardous waste responsible for compliance. RCRA implementation sets various standards for those who generate, transport, store, treat, or dispose of hazardous waste. RCRA does not require that each installation be a separate entity. Several contiguous installation can be regulated as one, and more than one RCRA generator or permitee can exist within an installation. The designated RCRA owner or operator of a permitted facility may not be associated with the installation. However, as a management convenience, each installation is usually considered the regulated entity. ENCLOSURE

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•	FINDING B: Department Of Defense Plans For Complying Wi
	The Resource Conservation And Recovery Act. The GAO
	observed that the Office of the Secretary of Defense
	develops environmental policy and monitors the Army, Nav
	Air Force, Marine Corps, and the Defense Logistics Agenc
	(DLA) programs to carry out policy. GAO reported that,
	October 21, 1980, DoD established an overall policy to
	implement the RCRA regulations published by the
	Environmental Protection Agency (EPA) in May 1980. Unde
	this policy, DoD installation commanders are responsible
	ensuring that all installation operations, including the
	of defense components located at an installation, comply
	with all RCRA requirements, according to GAO. In additi
	GAO reported that, in January 1984, DoD established a Us
	Solvent Elimination (USE) Program to eliminate the dispo
	of recyclable solvents as hazardous waste by October 1,
	1986. GAO observed that this program subsequently took
	added significance because RCRA, as amended in 1984,
	generally bans the land disposal of solvents after 1986,
	unless EPA determines that such a prohibition is not
	required to protect human health and the environment. G
	also observed that DoD has an environmental management
	information system to help it monitor installation
	compliance with RCRA: (1) installation commanders annual
	report, for example, the status of the installation's
	solvent recycling program, and the number and nature of
	violations cited by EPA or state agencies; and, (2) the
	Services aggregate hazardous waste data submitted by the
	various organizations under their jurisdiction and trans
	it to the Office of the Secretary of Defense (OSD).
	(pp. 4-7, GAO Draft Report)
	DOD RESPONSE: Concur.
•	FINDING C: Most DoD Installations GAO Visited Were Not
	Compliance with KUKA Kequirements. GAU found that 12 of
	installations it visited were out of compliance with RCR
	requirements, as each had been cited by state regulatory
	agencies for one or more deficiencies under a specific
	section of regulatory requirements. GAO also found that
	most (4/ OI /2) violations at the 12 installations were
	most serious type. According to GAO, causes for non-
	compliance cited by officials of the installations inclu
	lack of command level emphasis and inattention to
	administrative matters by base personnel with regard to
	effective hazardous waste management. GAO concluded that
	effective hazardous waste management. GAO concluded tha recently established DoD policy requiring independent
	effective hazardous waste management. GAO concluded tha recently established DoD policy requiring independent installation audits will disclose the underlying causes

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Page 75

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Page 76



Page 77



Page 78





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Page 80

10 out in the response to Finding O. Dual capability by the Services and DLA in contracting and storage provides DoD with the necessary flexibility to manage hazardous waste. This capability does not duplicate efforts, resources and contracts, but rather allows timely hazardous waste storage and disposal, as also discussed in the DoD response to Finding M. The transition from disposal to recycling and the use of any subsequent savings will be accomplished in a program, described in the response to Recommendation 4, that is independent of Service and DLA interaction on disposal. FINDING L: Possible Delay In DPDS Storage Facility Construction. GAO observed that DPDS plans called for the construction of 143 storage facilities at its property disposal offices located on DoD installations throughout the United States. GAO found that, as of February 28, 1985, 12 facilities were completed, 13 were under construction, 40 were in the design phase, and the remaining 78 were either in preliminary development or not being worked on. GAO also found that, although the DPDS plan was to complete construction of the 143 facilities by 1989, 79 of them may not be completed as scheduled. For 31 facilities in preliminary development, GAO found that DPDS is reevaluating their size to reduce construction costs based on DoD establishing a shorter length of time for waste storage; however, DPDS engineers stated the reevaluation would cause several months delay. For 48 facilities where design had not yet begun, GAO found that DLA directed DPDS to incorporate additional design features to increase the safety of workers and to reduce the likelihood that waste would be released into the environment. GAO also found that DPDS' impact analysis of the design changes showed the resulting increased costs would require congressional authorization and final construction would be delayed 2 to 3 years. (pp. 39-42, GAO Draft Report) DOD RESPONSE: Concur. As additional information and clarification, the original identification, planning and programming for conforming storage facilities to be built was based on data collected and conditions in existence in the 1981-1983 time frame. There have been continual modifications to the program based on the receipt of new data on quantity of waste generated, improvements and changes in the design criteria to ensure the safety and health of both DLA employees and the surrounding community, problems with siting, new regulatory requirements, and other factors. As a result of these fluctuations, DLA has undertaken the initiatives described in GAO Finding N and amplified in the DoD response. If these initiatives are

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Page 81



Page 82



Page 83

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Page 84



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Page 86



Page 87



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Page 89

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	Appendix IV Comments From the Assistant Secretary of Defense (Acquisition and Logistics)
	The following is GAO's comment on the Assistant Secretary of Defense's letter dated January 10, 1986.
GAO Comment	1. Subsequent to the issuance of a draft of this report, DOD issued the new policy on hazardous waste management that we had proposed in the draft.

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Appendix V

Comments From the Assistant Administrator for Policy, Planning and Evaluation, **Environmental Protection Agency**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY WASHINGTON D.C. 20460 OFFICE OF DEC 18 Inor POLICY, PLANNING AND EVALUATION Mr. J. Dexter Peach Director Resources, Community, and Economic Development Division U.S. General Accounting Office Washington, D.C. 20548 Dear Mr. Peach: On November 14, 1985, the General Accounting Office (GAO) sent the Environmental Protection Agency (EPA) a draft report for review and comment. The report is entitled "Hazardous Waste -- New Initiatives Needed At Military Bases In The United States". EPA, in accordance with Public Law 96-223, has reviewed the report and has prepared the following statement in response to the report. We have no direct comment to make on the substance of the report, however, we would like to urge the Department of Defense (DOD) to consider the potential implications of the new small quantity generator requirements on their waste management activities. While the report only addresses existing practices and problems, these new regulations may require DOD to manage a significantly larger quantity of waste as hazardous. We appreciate the opportunity to comment on the draft report. Sincerely yours, milli Rusself Milton Russell Assistant Administrator for Policy, Planning and Evaluation Page 91 GAO/NSIAD-86-60 Hazardous Waste at DOD Installations

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