

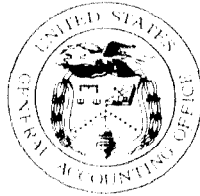
GAO

Report to the Chairman, Subcommittee
on Environment, Energy and Natural
Resources, Committee on Government
Operations, House of Representatives

August 1991

HAZARDOUS WASTE

Management Problems Continue at Overseas Military Bases



144892

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United States
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Washington, D.C. 20548

National Security and
International Affairs Division

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August 28, 1991

The Honorable Mike Synar
Chairman, Subcommittee on Environment,
Energy and Natural Resources
Committee on Government Operations
House of Representatives

Dear Mr. Chairman:

You requested that we review hazardous waste management at the Department of Defense's (DOD) overseas installations. On January 23, 1991, we issued a classified report on the results of our review. The report stated that DOD was continuing to have problems in its management of the hazardous waste program. This is an unclassified version of our classified report. We have deleted all references to specific organizations that generate hazardous waste during their operations, names of installations and countries where they are located, and all photographs.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after its issue date. At that time we will send copies to appropriate congressional committees; the Secretaries of Defense, the Air Force, the Army, and the Navy; and the Director of the Office of Management and Budget. Copies will also be made available to others upon request.

Please contact me at (202) 275-4268 if you or your staff have any questions concerning this report. Major contributors to this report are listed in appendix II.

Sincerely yours,

ja Nancy R. Kingsbury
Director
Air Force Issues

Executive Summary

Purpose

In 1986 GAO reported to the Secretary of Defense that the Department of Defense was not adequately managing hazardous waste at U.S. military bases overseas. GAO concluded that this shortcoming could harm humans and the environment.

The Chairman, Subcommittee on Environment, Energy and Natural Resources, Committee on Government Operations, requested that GAO evaluate the Department's efforts to improve its hazardous waste management at overseas bases and to determine the corrective actions taken in response to the 1986 report. More specifically, GAO assessed whether the services, which implement the Department's guidance on hazardous waste management, had (1) established clearer standards for handling, storing, and disposing of hazardous waste, giving appropriate consideration to host country requirements; (2) required overseas bases to develop plans for managing hazardous waste; (3) required oversight of base activities through external inspections; (4) included overseas bases in its hazardous waste reduction (minimization) programs; and (5) provided hazardous waste management training to all appropriate staff. GAO also reviewed the Department's implementation of those provisions of the Resource Conservation and Recovery Act and the implementing regulations that would be practicable for overseas bases to use to ensure protection of U.S. personnel and the environment.

Background

Hazardous waste, if improperly controlled or disposed of, can endanger humans and the environment. The Department's bases generate hazardous wastes such as solvents, contaminated fuel and oil, and heavy metals in activities such as motor pools; ship, aircraft, and tank maintenance; and base upkeep.

The Resource Conservation and Recovery Act established a system for controlling hazardous waste from creation to disposal. The act requires federal facilities to meet the same standards as private U.S. facilities. However, the act does not explicitly apply to overseas military bases.

Results in Brief

The Department has made limited progress in implementing GAO's 1986 recommendations and in improving its management of hazardous waste overseas. Guidance has not been issued to clarify applicability of U.S. laws when host country hazardous waste laws either do not exist or are not as stringent as U.S. laws. Most overseas bases GAO visited did not have adequate hazardous waste management plans. Hazardous waste management training did not meet the Department's requirements, and

the Department's oversight of activities that generated hazardous waste was still minimal. As a result, GAO found little improvement in the handling, storage, and disposal of hazardous waste at the overseas bases.

The Department's failure to manage hazardous waste properly at overseas bases could become costly. As of October 1990, the Army Claims Center, which handles all claims against U.S. bases, had received 18 host country claims directly resulting from the mishandling, storage, or disposal of hazardous waste. The Department has accepted responsibility for portions of some of these claims, and as of October 1990, it had partially reimbursed some of the claimants about \$50,000. In addition, the Department has identified nearly 300 sites with potential environmental pollution claims.

Principal Findings

Department Policy Still Unclear

GAO reported in 1986 that the Department's policy, issued in 1973, was unclear and did not provide specific guidance concerning whether overseas bases were to follow U.S. or host country environmental laws. As a result, base officials experienced problems in determining to what extent overseas bases should comply with U.S. laws when host country hazardous waste laws either did not exist or were not as stringent as U.S. laws. The Department's revision of this policy, started in 1986, is expected to be completed in 1991.

Progress in Improving Management Is Poor

All but one of the bases GAO visited had hazardous waste management plans, as required by the military services' regulations. Even though the bases are not required to incorporate U.S. requirements into their plans, the plans state that U.S. environmental laws and implementing regulations will be used as the primary guidance in carrying out the hazardous waste management program at each base. However, GAO found that none of the plans met the requirements of the Resource Conservation and Recovery Act.

In 1986 GAO attributed much of the overseas bases' hazardous waste problems to the lack of adequate training of those that handled, stored, or disposed of the hazardous waste. GAO found that training was still inadequate. The Resource Conservation and Recovery Act's implementing regulations require training to be provided annually. However,

some bases were not providing any training, and others were providing it at intervals longer than 1 year.

In response to recommendations in GAO's prior report, the Department agreed to increase oversight of hazardous waste management at overseas bases by using technical audit agency surveys and inspections by local commands and Inspector General offices. However, GAO found that some overseas bases were still not providing adequate oversight of their activities that generated hazardous waste. In addition, GAO found that Inspector General offices, audit agencies, and commands were also not providing sufficient oversight to the bases.

These shortcomings in hazardous waste management policy, training, and oversight have resulted in inadequate efforts to minimize the amount or toxicity of the hazardous waste being generated.

Failure to Properly Manage Hazardous Waste Will Prove Costly

U.S. bases overseas are encountering increasing numbers of cases in which host countries are bringing claims for damages caused by poor environmental practices. As of October 1990, the Claims Center, which handles claims for U.S. forces, had received 1,259 claims totaling about \$25.8 million. Of the 1,259 claims, 18 claims that totaled \$21.8 million were identified by GAO as being the direct result of improper handling, storage, or disposal of hazardous waste. The Department has accepted responsibility for portions of some of these claims, and as of October 1990, it had partially reimbursed some of the claimants about \$50,000.

In addition, the Center has identified nearly 300 additional sites at bases with potential environmental pollution claims. The preliminary cost estimate to settle about one-third of the 300 claims is about \$111 million, but total actual cleanup costs could be much higher.

Recommendations

GAO recommends that the Secretary of Defense improve the management of hazardous waste at overseas bases by (1) clarifying the policy on whether U.S. bases overseas are to comply with U.S. environmental laws to protect human health and the environment when host country environmental laws either do not exist or are not as stringent as U.S. laws and (2) requiring the services to reevaluate their hazardous waste management programs at overseas bases to ensure that the services provide adequate oversight and guidance. Further recommendations are discussed in chapter 2.

Agency Comments

As requested, GAO did not obtain official comments on this report. However, GAO discussed a draft of this report with Department officials who generally agreed with the findings and incorporated their comments as appropriate.

Contents

Executive Summary		2
Chapter 1		8
Introduction	Organization and Responsibilities	8
	Prior Report	9
	Objective, Scope, and Methodology	9
Chapter 2		12
Limited	Applicability of U.S. or Host Country Laws and	12
Implementation of	Regulations Remains Unclear	
Prior	DOD Has Not Adequately Monitored Hazardous Waste	16
Recommendations	Management	
	Training of Hazardous Waste Management Personnel Still	22
	Sporadic	
	Conclusions	25
	Recommendations	26
Chapter 3		27
Effects of	Hazardous Waste Management Plans	27
Management's	Management and Regulatory Deficiencies	28
Inattention	Conclusions	44
Widespread at		
Overseas Bases		
Chapter 4		45
Relations With Host	Growing Political Sensitivity to Environmental Incidents	45
Nations Are at Risk	Past Practices Have Resulted in Claims Against DOD	46
	Conclusions	48
Appendixes	Appendix I: Comparison of Hazardous Waste	50
	Management Plans With RCRA Requirements	
	Appendix II: Major Contributors to This Report	52
Table	Table 3.1: Nonconformance With Selected RCRA	28
	Requirements	

Contents

Abbreviations

DOD	Department of Defense
EPA	Environmental Protection Agency
GAO	General Accounting Office
PCB	polychlorinated biphenyls
RCRA	Resource Conservation and Recovery Act

Introduction

Department of Defense (DOD) bases in their normal operations generate hazardous waste such as solvents, paints, contaminated sludges, contaminated fuel and oil, and phenols (poisonous acidic compounds). These wastes are generated by motorpools, paint shops, fire departments, hospitals, medical clinics, and laundries. Hazardous waste is usually generated as a by-product of activities such as cleaning, degreasing, stripping, painting, or metal plating. Hazardous waste, if improperly controlled or disposed of, can endanger humans and the environment by polluting ground and surface waters, contaminating soil, and jeopardizing air quality. Hazardous waste can be solids, liquids, sludges, or contained gases and may be ignitable, corrosive, reactive, and/or toxic.

The Resource Conservation and Recovery Act (RCRA) of 1976, as amended, established a system for controlling hazardous waste from creation to disposal. The act requires federal facilities to meet the same standards as private facilities. However, the act does not explicitly apply to overseas military bases.

Organization and Responsibilities

Within the Office of the Secretary of Defense, the Deputy Assistant Secretary of Defense for Environment sets policy on how DOD bases will comply with environmental protection laws and regulations. DOD officials told us that DOD does not have any oversight responsibilities to ensure that the bases comply with environmental laws. The Secretaries of the Army, the Navy, and the Air Force have established offices responsible for implementing DOD's policy on environmental compliance. These offices provide guidance and limited monitoring of and assistance on how the overseas bases comply with environmental laws.

In 1980 the Secretary of Defense, through the military services, assigned the primary responsibility for ensuring that DOD bases comply with environmental laws and regulations to the base commanders. The base commanders could designate someone or an office to carry out this responsibility. The Environmental Protection Committees, or a similar organization usually within the bases' civil engineering offices, were usually designated this responsibility. At one overseas base, this organization consisted of only one individual—the Environmental Coordinator.

The Defense Reutilization and Marketing Service, through its overseas Defense Reutilization and Marketing Offices, usually located on or near the bases, is responsible for hazardous waste disposal at overseas bases. The Marketing Offices usually provide the required storage space for

the hazardous waste until it can be reused, transferred, sold, or disposed of.

According to DOD officials, other than a limited amount of oversight by the host countries, there is no independent oversight by governmental agencies, such as the Environmental Protection Agency (EPA), for overseas bases. It is the responsibility of the major commands and other offices such as the Inspector Generals and the audit agencies and the environmental offices on the bases to ensure that the bases are providing adequate protection of human health and the environment.

Prior Report

In our 1986 classified report, we recommended that DOD establish clearer standards for bases to follow in handling, storing, and disposing of hazardous waste, giving appropriate consideration to host country laws; require overseas bases to develop plans for managing hazardous wastes; require oversight of base activities through external inspections; include overseas bases in its waste reduction plans; and provide hazardous waste management training to all appropriate staff.

In response to our report, DOD stated that it would clarify guidance and develop additional guidance on how overseas bases should prepare hazardous waste management plans, participate in hazardous waste minimization, and provide additional oversight and additional training.

Objective, Scope, and Methodology

In October 1988, the Chairman, Subcommittee on Environment, Energy and Natural Resources, House Committee on Government Operations, requested that we review the corrective actions taken in response to our 1986 report. Our objective was to determine if DOD bases overseas were protecting humans and the environment. We reviewed provisions of RCRA and the implementing regulations issued by EPA. We also discussed with DOD headquarters and base officials which provisions applied to DOD bases overseas.

We visited seven overseas bases that were selected so that each service would be covered and hazardous waste management in countries with strong and weak environmental programs could be compared. At each location, we interviewed officials responsible for hazardous waste management to determine how the hazardous waste management programs were structured. We evaluated the guidance under which each base operated its hazardous waste management program and assessed the extent to which base-level guidance incorporated the requirements of

U.S. laws and host country environmental laws.¹ We also discussed local laws with officials in each base's legal office.

We selected shops based on the types and volume of hazardous waste generated. We targeted our review toward large generators of the more common hazardous waste, such as solvents and contaminated oils, as well as toward smaller generators of more unusual hazardous waste, such as waste mercury. At each shop, we discussed hazardous waste management and training with the shop supervisor and then traced the handling procedures from where the hazardous waste was generated in the shop to where it was temporarily stored before being moved off site. At each base, we reviewed base hazardous waste minimization programs.

We visited applicable major commands in Europe and the Pacific to discuss their hazardous waste policies and guidance.

Since most hazardous waste passes through the control of the local Defense Reutilization and Marketing Office (Marketing Office), we interviewed officials and reviewed files at the Marketing Offices that served the bases we visited.

We reviewed the hazardous material and hazardous waste handling and disposal policies at Defense Reutilization and Marketing Region-Europe and Defense Reutilization and Marketing Region-Pacific, which manages the Marketing Offices at Pacific bases.

We found that DOD and the services used many different definitions for hazardous waste. For our work, we used a general definition that hazardous waste is any expended material that is ignitable, corrosive, reactive, and/or toxic. We included used petroleum, oil, and lubricant products in our definition, although RCRA does not include them in its definition, because the countries we visited considered these items to be a special or regulated waste. In addition, we included polychlorinated biphenyls (PCBs) as a hazardous waste, although EPA did not identify it as a hazardous waste under RCRA. This definition of hazardous waste is consistent with the definition in our previous report.

¹In addition to RCRA, Executive Order 12088, Federal Compliance with Pollution Control Standards, delegates certain responsibilities for controlling environmental pollution to heads of executive agencies. It requires U.S. bases overseas to comply with environmental pollution control standards of general applicability in the host country or jurisdiction.

Our review did not include an assessment of the implications for hazardous waste site cleanup associated with expected base closures in Europe and the Pacific. Moreover, because of the potential political sensitivity of this audit, we did not contact either host country authorities or foreign firms involved in regulating, disposing, or purchasing hazardous waste.

We conducted our work between March 1989 and November 1990 in accordance with generally accepted government auditing standards. Because the U.S. Army Audit Agency was involved in an audit similar to ours, we limited our fieldwork at one location. We used the results of the Army Audit Agency review at this base as the basis of our analysis. We reviewed the (1) qualifications of the auditors who did the work, (2) Army Audit Agency's organizational independence, and (3) quality of the work products.

Limited Implementation of Prior Recommendations

DOD guidance on whether to follow U.S. or host country environmental laws at overseas bases has not been updated since 1973, even though DOD stated, in response to our prior report, that it would revise its guidance. The 1973 guidance is unclear and vague, resulting in varying interpretations by each of the services. In addition, DOD's oversight is so limited that there is no assurance that the bases are properly managing hazardous waste. Unclear guidance and limited oversight have resulted in inadequately trained people working with hazardous waste.

Applicability of U.S. or Host Country Laws and Regulations Remains Unclear

Since 1973, DOD policy has stated that overseas bases should comply with the environmental laws of host countries and, to the extent practicable, U.S. laws.¹ Implementing instructions issued by the services, however, are not clear on whether or when overseas bases should follow U.S. or host country standards. In our 1986 classified report, we concluded that because DOD policy and service regulations were unclear, base officials had experienced problems in determining to what extent overseas bases should comply with U.S. laws when host country hazardous waste laws either did not exist or were not as stringent as U.S. laws. The guidance was not clear enough for base officials to translate and merge host country and U.S. laws into specific operational procedures. Further, base hazardous waste management officials had varying levels of knowledge of host country laws. We recommended that the Secretary of Defense direct the services to clarify or establish standards for handling, storing, and disposing of hazardous waste at overseas bases giving consideration to host country requirements.

In response to our recommendation, the Secretary stated that DOD was revising its policy to provide clearer guidance on whether to follow host country or U.S. hazardous waste management laws and regulations. However, DOD stated that it believed we had misinterpreted the guidance. DOD added that the overseas bases could not always abide by the more stringent law—whether U.S. or host country—because of the political problems that might result. For example, some countries do not have, or do not enforce, environmental laws as stringent as those in the United States. Therefore, DOD officials believe that enforcing the more restrictive U.S. laws at overseas bases could result in political or diplomatic problems. DOD's revision of its hazardous waste policy is expected to be completed in 1991.

¹The Status of Forces Agreements with the host countries provide little guidance concerning hazardous waste management and disposal. They generally require that the military respect host country laws and/or conduct operations with due regard for public health and safety.

Service-Level Guidance Not Consistent With DOD's Policy

DOD's 1973 policy generally requires its components to comply with the spirit as well as the letter of federal environmental laws, executive orders, and regulations. It contains further, more detailed guidance on maintaining an environmental program for DOD components at U.S. locations. For components at locations outside the United States, it requires compliance with environmental quality standards of the host country, international agreements, and Status of Forces Agreements. In addition, DOD's policy requires overseas bases to "conform to the extent practicable" to the more detailed guidance given for U.S. bases.

Service-level guidance generally states that bases should comply with host country laws but does not require bases to conform to the requirements of U.S. laws and implementing regulations, even when host country laws do not exist or are not as stringent as U.S. laws. Base legal officials at each location told us they knew of no official interpretation of the "extent practicable" phrase in the DOD policy.

Although DOD and the services have not provided clear guidance on what base commanders should do to comply with RCRA, the hazardous waste management plans for six of the seven bases we visited, which had plans, stated that U.S. environmental laws and implementing regulations would be used as the primary guidance in carrying out the hazardous waste management program at each base. The extent to which these plans were consistent with RCRA's requirements is discussed in chapter 3.

Two hazardous waste management plans contain language that interprets "extent practicable." The plans each contain a statement that the administrative requirements of RCRA, such as licensing, permitting, and reporting to EPA, would not apply to overseas bases, but the requirements that involve physical handling, labeling, and storing should be applied overseas. The other bases reviewed had no interpretation of "extent practicable."

The Air Force's regulation entitled Pollution Abatement and Environmental Quality (AFR 19-1) makes no reference to following U.S. laws. It states that facilities outside of the United States are to be designed, constructed, and operated so as to comply with the substantive environmental pollution standards of general applicability in the host country concerned.

The Army regulation, Environmental Quality: Environmental Protection and Enhancement (AR 200-1), dated June 15, 1982, which was in effect

when we made our review, and the current revision, dated April 23, 1990, state that Army activities outside the United States will construct, maintain, and operate facilities to comply with the substantive pollution control standards of general applicability in the host country or under applicable Status of Forces Agreements.

The Navy's regulation entitled Hazardous Materials Environmental Management Ashore (OPNAVIST 5090.1), dated May 26, 1983, states that Navy activities will comply with applicable environmental laws in accordance with its Environmental and Natural Resources Program Manual. The regulation states that Navy activities in foreign countries are not, in general, subject to the specific requirements of U.S. laws and EPA implementing regulations. However, the manual states that overseas bases should follow host country requirements and applicable Status of Forces Agreements. It also states that activities on overseas bases dealing with hazardous materials handling and waste disposal should go beyond host country environmental standards to ensure reasonable protection to the environment and human health. The regulation does not define "reasonable" and references EPA regulations only in terms of defining hazardous waste.

An official in the Environmental Office of the Assistant Secretary of Defense told us that when the services issue a new regulation on the environment, a copy is sent to the office for review. However, this procedure has not worked as well as the officials would like because of the shortage of staff and time. The officials have not been determining if the new regulations conflict with DOD directives or if they contradict the other services' regulations.

Base Environmental Officials Have Limited Information About Host Country Environmental Laws

DOD personnel had varying levels of knowledge about the content of host country laws in each country visited. DOD and service policies recognize the need to be sensitive to host country laws, yet DOD waste managers have obtained little practical guidance on how specific host country environmental regulations affect their responsibilities.

Host Country Laws

Officials at the bases we visited in the Pacific told us they believed that the host country's environmental laws were no more specific or stringent than U.S. environmental laws. Officials at Base G told us that the host country had two environmental laws. Officials at all of the bases told us that no law paralleled RCRA. Officials at Base F told us that the base must follow the waste disposal standards of local governments

also, which are more strict than those in other parts of the country, because of the large number of heavy industrial facilities located in the area. These standards cover more elements and are more stringent than RCRA for certain wastes such as mercury, cadmium, lead, chromium, and arsenic.

According to DOD officials, all of the European countries we visited had environmental laws regarding the transportation and disposal of hazardous waste that are similar to U.S. laws. For example, they require transportation manifests to track the disposal of hazardous waste. These manifests show type, quantity, source, transporter, and disposal destination of the waste.

**Base Environmental Officials
Unfamiliar With Host Country
Laws**

Although the services' guidance requires overseas bases to comply with host country laws, hazardous waste management officials at the bases we visited were unfamiliar with them. Of the seven bases we visited, three had a copy of the host countries' laws. The Judge Advocate General's office at Base C had the laws, but the Environmental Coordinator's office did not know it had them. We also found that the people working with hazardous waste had some knowledge of the host countries' laws at only two of the seven bases.

Hazardous waste management officials in one country knew very little about host country laws. Officials at Base F had more knowledge of host country laws than did officials in other countries. For example, an official in the legal office at Base D told us that his office had no special expertise in host country law and that to acquire such expertise would probably require a contract with a local law firm. However, the responsible official at Base F appeared to be familiar with the host country's environmental laws and had translated copies on hand.

At the overseas bases, we found that the major commands gave little direct guidance on how to incorporate host country environmental laws into base operations. At the European bases we visited, none of the service personnel had a working knowledge of host country laws. At the bases we visited, the hazardous waste coordinators did not know what, if any, host country laws were relevant to hazardous waste management at U.S. bases.

Defense Reutilization and Marketing Service guidance on hazardous waste disposal at overseas bases is also inconsistent. At times it is contradictory and not in accordance with DOD policy. One section of the Marketing Service's guidance states that U.S. laws should be followed.

Another section states that “if the ultimate disposal laws of the affected country are as strict or stricter than the comparable U.S. laws, then disposal may be accomplished in the host country.” A third section directs that hazardous property may be disposed of in the host country only if it can be disposed of using the standards and the criteria that would be used in the United States. Other sections, however, indicate that only host country laws need to be followed.

We found that the Defense Reutilization and Marketing Regional Offices in Europe and Hawaii had copies of some of the host country laws, which were included in their training programs. Even so, we found that the hazardous waste handlers at three of six Marketing Offices we visited had some knowledge of host country laws.

DOD Has Not Adequately Monitored Hazardous Waste Management

We found that hazardous waste management oversight by outside organizations such as Inspector General offices, commands, audit agencies, and other special activities was limited and that on-base oversight was inadequate. Although the bases had organizations responsible for managing hazardous waste and overseeing base operations that generated hazardous waste, the organizations were not always adequately staffed, and the work was often a collateral duty. The managers and coordinators of the environmental programs, the Marketing Office operators, and the base-level hazardous waste handlers had not received sufficient training.

Limited Oversight Provided

In our previous report, we stated that oversight of hazardous waste management programs at overseas bases was not adequate. We recommended that the Secretary of Defense require oversight through external and internal inspections of hazardous waste activities at the bases. In its response to our report, DOD stated that it would use surveys by technical agencies and inspections by local commands and Inspector General offices to test and reinforce compliance at overseas bases. However, during this review, we found that oversight of hazardous waste management at overseas bases by off-base activities was limited.

Since our prior report, two DOD Inspector General inspections covering hazardous waste management at overseas bases have been made. In 1986, in a follow-up to our reports on hazardous waste management—one on overseas bases and the other on bases in the United States—the Inspector General concluded that (1) DOD was not in compliance with

environmental laws; (2) DOD's overall management of hazardous materials and waste was unsatisfactory; (3) minimization programs were fragmented and ineffective; (4) management of the program to construct hazardous waste storage facilities was unsatisfactory; (5) hazardous waste disposal contracting was inefficient, ineffective, and costly; (6) the Hazardous Material Information System was antiquated, ineffective, and duplicative of other systems; and (7) training and education of hazardous material handlers, supervisors, and commanders were inadequate.

The Inspector General report recommended that a task force be set up at the Assistant Secretary of Defense level to make decisions directing the military services and the Defense Logistics Agency to comply with environmental laws. The areas the task force was to address were

- issue hazardous waste policy and guidance on its implementation through the chain of command to the bases;
- establish a formal structure to ensure that qualified environmental specialist support is available through all levels in DOD and the services and across service lines when appropriate;
- evaluate the overall need for hazardous waste storage facilities by geographical area, including an allowance for possible waste stream reductions;
- determine if funding for hazardous waste disposal should be fenced or whether it should be included as part of the general base operation and maintenance allocations; and
- establish a mechanism in which problems can be addressed at the required level to take appropriate action.

The Assistant Secretary of Defense concurred with most of the conclusions and recommendations, and he has actions underway to implement the recommendations. Revising DOD's 1973 environmental policy directive may have major implications on many of these recommendations. However, we found that the corrective actions DOD has taken to correct previously noted deficiencies have not been fully implemented at overseas bases.

The Assistant Secretary did not fully agree with the need to establish a separate task force to manage the hazardous waste program. He stated that within his office there is a Deputy Assistant Secretary with support staff that could fulfill this function. He also did not concur with the

Inspector General's position on the hazardous waste storage construction program. However, DOD has undertaken a comprehensive reevaluation of the hazardous waste storage construction program, and as each facility receives authorization for construction, it is evaluated for specific needs.

In March 1988, the DOD Inspector General reported on the Defense Logistics Agency's hazardous waste conforming storage facilities construction program. The report stated that many bases did not have adequate storage facilities, but, on the other hand, the need for some construction projects should be reevaluated. The Inspector General recommended that the Defense Logistics Agency

- eliminate system safety criteria from storage facilities,
- reevaluate the plan to apply stringent storage standards and techniques for hazardous materials,
- revalidate the planned size of storage facilities,
- revalidate the need for storage facilities for those who generate a small amount of hazardous materials, and
- prohibit construction of storage facilities before permits are received.

The Defense Logistics Agency did not agree with all of the findings but was reevaluating the criteria and the need for hazardous waste storage facilities prior to starting construction.

The Air Force Inspector General had not made any inspections at overseas bases since 1986. During the last half of 1989, the Army Inspector General reviewed hazardous material and waste management at Army bases in the United States and Europe. The report on this review, released in February 1990, concluded that the Army needed to improve its hazardous materials and waste management program. As of May 1990, the Army, in response to some of the report's recommendations, had

- appointed the Chief of Engineers as the Executive Agent for the Army's hazardous materials/hazardous waste program,
- developed a conceptual plan to satisfy various suggestions for improvements, and
- revised its regulation—Environmental Protection and Enhancement (AR 200-1).

The Navy Inspector General inspected several bases in the first half of 1990, but the report had not been released as of June 1990. The Air

Force and the Navy audit agencies have not made any reviews at overseas bases. The Army Audit Agency audited the auto salvage yards at bases in one country and found that the yards were not complying with the country's environmental laws. The report recommended that the bases identify all salvage yards, assess the need for them, determine those that need to be cleaned up and the cost, and initiate actions to prevent further pollution at the yards that are still needed. The Army Command agreed with the findings, and it plans to issue a message instructing base commanders to comply with the recommendations.

Need for More Monitoring by Service Commands

According to DOD and service regulations, major commands are to ensure proper oversight, including inspections of their base activities. We identified four command inspections since our 1986 report. Except for these inspections, base officials told us that no other command inspections had been made as of October 1989. A Naval Command inspection in 1987 recommended that Base B develop a native language training program for host country workers exposed to hazards on the base.

The Facilities Engineering Command in 1987 inspected two generators at Base D to assess their compliance with requirements for hazardous waste and PCBs. One report said that the deficiencies were minor and that the generator had a sound hazardous waste program. At the other generator, the inspection team also found only minor deficiencies and concluded that the facility had a sound program.

In June 1990, Headquarters Army officials told us that the Army had made follow-up reviews at the bases we visited and concurred with our findings.

In April 1988, the Naval Facilities Engineering Command made a management inspection of a generator at Base F, including hazardous waste management. The report stated that the generator did not have written procedures for accepting hazardous waste from ships and other base activities. The inspection report recommended that the generator develop and issue an instruction specifying responsibilities and procedures for hazardous waste accepted by the generator. The generator agreed with the recommendation.

DOD officials told us that the inspections are not as beneficial as they could be because they cover major commands' activities at a base rather than all activities, including those of other major commands. For example, the Air Systems Command would inspect its on-base activities

but not the hazardous waste activities of any other on-base organizations, such as the Public Works Center.

Other Oversight

The Air Force Environmental Compliance Assessment Management Program, applicable to bases in the United States, establishes a self evaluation procedure for enhancing, maintaining, and monitoring Air Force compliance with environmental regulations. All of the services have decided to use this program for their bases in foreign countries.

In July 1987, the Deputy Assistant Secretary of the Air Force (Environment, Safety and Occupational Health) made a follow-up survey of Air Force bases, including the bases that we had reviewed in 1986. The survey concluded that the problems we found still existed and that more needed to be done to improve hazardous waste management at overseas bases. As a result, the Deputy Assistant Secretary recommended that all Air Force bases initiate work to prepare hazardous waste management plans and submit these plans to his office for approval. We found that most of the Air Force bases had prepared hazardous waste management plans.

The Navy's major commands are required to conduct environmental audits at all bases at least once every 3 years. However, we were only able to find two environmental audits made by the Navy Facilities Engineering Command. These audits found that even though the audit steps required the commands to examine activities to determine if the bases were complying with environmental regulations, the compliance problems we found in our 1986 report or in this review were not identified.

An inspection by the Navy Occupational Safety and Health Inspection Program noted deficiencies in Base B's hazardous waste storage because base officials could not find a means for transporting the hazardous waste from the base to the Marketing Office. The base and the transportation activity have worked out an agreement for transporting the waste since the inspection was made.

An overseas environmental audit program is being developed by all three services for use at overseas bases. In one country, the program will include host country requirements, and in another, the host country government will be involved in the audits.

Hazardous Waste Management and Oversight by Base Activities

Each of the bases we visited had an organizational activity² responsible for overseeing or managing hazardous waste. One individual at each activity was usually designated the Environmental Coordinator.

In our 1986 report, we stated that base-level oversight was not adequate, and we recommended that the Secretary of Defense require internal or base-level oversight of hazardous waste activities at overseas bases. We also stated that hazardous waste management, including oversight, suffered because duties related to hazardous waste management were performed as collateral duties or as time permitted. In its response to our report, DOD did not address the lack of base-level oversight. It only addressed the issue of environmental duties being a part-time job by saying that it would be covered in the new guidance concerning hazardous waste management plans.

However, during this review, we found that base-level oversight continued to be limited, primarily because of the limited staffing at the organizations responsible for hazardous waste management and oversight and the lack of other resources. The following examples illustrate some of the problems we observed.

- At Base C, the Environmental Protection Committee is responsible for oversight. However, according to some members we talked with, it has never performed any inspections because its members lack the time and the administrative support.
- The Environmental Coordinator at Base D is located in the Utilities Division of the Public Works Center and has no authority to inspect hazardous waste management at tenant activities outside of the Public Works Center.
- The hazardous waste management plans for some bases charge Area Environmental Coordinators with oversight, but these positions had not been created at the bases at the time of our visit. Subsequent to our visit, officials told us that these positions had been authorized and that they had begun recruiting.
- At Base A, the current Environmental Coordinator also acts as the Housing and Energy Coordinator within the base's Civil Engineering Squadron. Because she could not devote her full attention to the environmental program, she was not able to ensure that the base had corrected previously identified problems.

²These were either separate offices or individuals usually in the base engineering offices responsible for environmental activities.

In contrast, the current Commander and the Deputy Commander at Base B have placed increased emphasis, including oversight, on the hazardous waste program since April 1988. Responsibility for the hazardous waste program was assigned to Safety Office personnel who report directly to the commanding officer. Though the program has improved, base officials stated that staff turnover makes it difficult to retain qualified personnel to provide adequate oversight.

Training of Hazardous Waste Management Personnel Still Sporadic

We found that hazardous waste management training at the bases and the cognizant Marketing Offices was deficient. The high cost and the limited availability of hazardous waste management training courses, plus the staff not being able to be away from their jobs for an extended time, contributed to the training deficiencies.

Response to Our Prior Report

In our 1986 report, we stated that training was needed on how to handle and store hazardous waste and on the dangers associated with the waste. We also stated that local nationals working with hazardous waste needed training in their native language. We recommended that proper training be provided to all staff involved in hazardous waste management.

In its response to our report, DOD stated that hazardous waste training does require greater emphasis. It also stated that the Defense Reutilization and Marketing Service had issued a new training standard, which identified mandatory training for Marketing Office personnel, and had begun to hold training classes in accordance with the new standard.

Need to Clarify Training Requirements

RCRA's implementing regulations and DOD and service regulations call for hazardous waste handlers to be trained in proper hazardous waste management procedures and contingency plan implementation. However, at the bases we reviewed, hazardous waste training had not been provided in several cases or training that was provided was sporadic and varied in quality. Command emphasis on ensuring that training is provided has not been adequate, as evidenced by insufficient funding and a lack of other resources.

RCRA's implementing regulations require that training must be successfully completed within 6 months after personnel are assigned and must be updated by annual reviews. Facilities must keep records documenting

such training. The regulations also require individual hazardous waste generators, such as maintenance shops, that store more than 55 gallons of hazardous waste on site at any one time, to have written training programs.

None of the bases we visited had provided adequate training to its hazardous waste handlers. The extent to which the bases conformed with RCRA training requirements varied significantly. Many of the individual shops on the bases we visited that generated more than 55 gallons of hazardous waste did not have adequate training programs for their personnel. As a result, a significant number of personnel, particularly at Base E, had not received any training on hazardous waste handling. A substantial portion, ranging from 26 percent (34 of 131) at Base A to 98 percent (56 of 57) at Base E, had not received their initial training within the required time frames. Compliance with the annual review requirement was also low. Thus, many staff may be dealing with hazardous waste not knowing about the dangers of hazardous waste or the procedures to minimize damage if a spill occurs. For example, officials at the Marketing Office for both Base A and Base E stated that they had received shipments from the bases in which wastes were misidentified and incompatible wastes were combined. The officials attributed these problems to a lack of training for the bases' field unit personnel.

In addition, hazardous waste handlers have not been receiving the proper training on how to pack and label containers of hazardous waste. For example, during our work at the Defense Reutilization and Marketing Regional Office-Europe, we found documentation of an instance where a base turned in a drum of hazardous waste labeled automotive grease to the local Marketing Office. However, when Marketing Office personnel opened the drum, they found a 5-gallon can of hydrochloric acid (which is corrosive), a 1-gallon can of photo chemicals (which is toxic), and 2.5 pounds of calcium hypochlorite (which is an oxidizer), in addition to the automotive grease (which is ignitable). According to a Marketing Office official, combining items that are corrosive, toxic, oxidizable, and ignitable is extremely dangerous. Fortunately, when the container was opened and the pressure was released, only the workers' eyes and skin were irritated. However, according to a Marketing Office official, everyone that packed, handled, transported, stored, and opened the drum had been put at extreme risk because the drum could have ignited or exploded.

Many Key Personnel Lack Essential Training

At the bases we visited, we found that a significant number of those responsible for overseeing hazardous waste management and those handling the waste did not have adequate training to ensure proper hazardous waste management.

Only three of the seven hazardous waste coordinators had adequate training. For example, the Base G Environmental Coordinator stated that although he holds a doctorate degree in environmental engineering, he does not believe his training is adequate because it does not provide him specifics on what to do during day-to-day operations involving hazardous waste handling. He told us that he has had no formal training since assuming his position in September 1988.

The amount of training provided for the 57 staff members who were working with hazardous waste at the time of our visit at Base E was particularly low. Only 7, or 12 percent, had received some training related to hazardous waste handling. Five of the seven trained staff members had been briefed again, but none of them within the required year.

The bases have not always provided hazardous waste management training to local nationals in their native language. Base E had no native language training, even though most employees who handled hazardous waste were host country nationals. Some Base E supervisors were unaware of the requirement; as a result of our work, they requested training in the host country language for their staff. In contrast, as a result of our prior report and a command inspection in 1987, Base B began providing classes to local nationals in their native language in July 1989.

The Environmental Coordinator for Base G told us that the base had requested training but was turned down by higher command officials because of the costs or because the base could not afford to have someone away from his/her duties for an extended time. The quality of training can vary at the base because the training that is provided is either classroom or often on-the-job. This can lead to a variance in the instruction, which would not be encountered if training had been provided at a central location.

Training at the Defense Reutilization and Marketing Offices

The Defense Reutilization and Marketing Service has developed a written training plan that specifies the training to be given to Marketing Office employees who handle hazardous waste. The plan does not require employees to be trained within the first 6 months of assuming a

hazardous waste handling position, but it requires that employees have an annual refresher course. The plan includes 32 hours of "safety" training, but we were unable to determine the extent to which this training covers emergency equipment and response procedures. Each Marketing Office had a copy of the training plan, which it used as its written training plan.

The Marketing Offices are responsible for maintaining training records. In addition, training for foreign nationals must be provided in their native language, where applicable. Training courses for specific positions are prescribed. For example, an environmental specialist should have courses in RCRA facility compliance, manifest procedures, hazardous material disposal procedures, Department of Transportation compliance, and regulation updates.

At the Marketing Offices for Bases D, F, and G, training appeared to be adequate. However, the training at the Marketing Offices for Bases A, C, and E had some deficiencies. For example, at Base C, the training plan shows the training that has been provided to current staff and the courses that are scheduled. Not all personnel at this Marketing Office were trained within 6 months of beginning work, as required by RCRA. The alternate environmental monitor, the primary handler of all hazardous property, did not receive formal training in hazardous waste handling until 1 year after beginning his job.

Officials at the Defense Reutilization and Marketing Region-Europe and the Marketing Offices at Bases E and G stated that they had encountered difficulties in arranging training for their foreign national staff or training had been limited in their native language.

Conclusions

Because DOD and the services have not provided clear guidance on how U.S. and host country environmental laws apply and how they are to be incorporated into day-to-day operations, the bases have not fully implemented either set of laws. DOD stated, in its response to our 1986 report, that possible political problems would be encountered if it tried to enforce U.S. laws on the bases. However, we do not agree that enforcing U.S. laws and regulations on the parts of the base where U.S. operations, such as the maintenance of U.S. aircraft, are taking place would cause political or diplomatic problems. We agree that problems would result if DOD tried to enforce U.S. laws on host country operations on other parts of the base. We believe it is essential that U.S. regulations be used in

places where U.S. operations take place in order to protect U.S. personnel. Not protecting U.S. personnel and the environment just because a host country does not enforce its environmental laws does not appear to be prudent.

DOD and the services have not provided adequate attention to the hazardous waste programs at overseas bases. Oversight by outside organizations is limited, base oversight and management organizations are inadequately staffed or supported, and training is inadequate.

Recommendations

We recommend that the Secretary of Defense improve the management of hazardous waste at overseas bases by (1) clarifying the policy on whether U.S. bases overseas are to comply with U.S. environmental laws to protect human health and the environment when host country environmental laws either do not exist or are not as stringent as U.S. laws and (2) ensuring that implementing service regulations conform with DOD policy. We also recommend that the Secretary of Defense require the services to reevaluate their hazardous waste management programs at overseas bases to ensure that the services provide

- needed oversight by the applicable organizations not located at bases to ensure compliance with host country or U.S. laws,
- improved base-level management and oversight of the hazardous waste programs and operations, and
- required training in a timely and consistent manner.

Effects of Management's Inattention Widespread at Overseas Bases

Given the confusion over DOD's policy on the extent to which U.S. overseas bases are expected to comply with U.S. environmental laws and implementing regulations, it is not altogether appropriate to judge the bases' performance against these standards. However, because it was DOD's intent that the bases comply with the substance of U.S. laws and regulations to protect human health and the environment, we have identified conditions at the seven bases we visited that, had they occurred at bases in the United States, would have been violations of RCRA and its implementing regulations.

Hazardous waste management plans for the seven bases we visited did not provide complete guidance on how the bases were to comply with host country environmental laws, and many of the plans' provisions had not been implemented. Only one base had a hazardous waste minimization program as required by RCRA, but its efforts were not extensive. Even less was being done at the bases with no minimization programs. There were deficiencies in the bases' efforts to protect human health and the environment because of inadequate oversight, limited hazardous waste management, and inadequate guidance on whether to follow U.S. laws when host country laws either did not exist or were not as stringent.

Hazardous Waste Management Plans

Air Force, Army, and Navy regulations require a base commander to develop and implement a hazardous waste management plan that incorporates the requirements of host country laws and includes all tenants on a base. According to DOD officials, a hazardous waste management plan is the basis of a strong, well-controlled hazardous waste management program that will reduce costs; provide protection to the environment by ensuring the safe handling, processing, and disposal of hazardous waste; and maintain good host country relations. It provides instructions and states the responsibilities for the various organizations on bases.

Unlike our previous review, in which only a limited number of bases had hazardous waste management plans, six of seven bases we visited during this review had prepared hazardous waste management plans. Even though the bases are not required to incorporate U.S. requirements into their plans, the plans state that U.S. environmental laws and implementing regulations will be used as the primary guidance in carrying out the hazardous waste management program at each base. However, we noted that portions of the plans were not being implemented at the bases. Our comparison, contained in appendix II, of these plans with

RCRA hazardous waste management requirements shows that no one plan included all of the RCRA requirements.

Management and Regulatory Deficiencies

As a result of the bases' hazardous waste management plans not being fully developed or implemented, limited oversight, and limited or no training, we found numerous instances (as shown in table 3.1) where the bases' hazardous waste activities were conducted in such a manner that there was not adequate protection to human health and the environment. To determine if the bases were providing adequate protection to the environment and human health, we used selected RCRA requirements as the criteria.

Table 3.1: Nonconformance With Selected RCRA Requirements

Facility	Limited minimization	Inadequate storage	Ground or water contamination	Inadequate containers	Transport problems	Inadequate spill contingency plan	Disposal problems
Bases							
Base A	a	X	X	X	X		X
Base B	X	X					X
Base C	X	X	X	X			X
Base D	X	X	X	X		X	X
Base E	X	X		X	X		
Base F	X	X ^b	X	X	X		X
Base G	X	X	X	X		X	X
Marketing Offices for							
Base A		X	X	X	X	c	
Base C		X	X	X		X	X ^c
Base D		X	X	X			X ^c
Base E		X	X	X			c
Base F		X					c
Base G		X					c

^aBase A had an active used solvent elimination program.

^bDOD officials told us that storage facilities were built to host country requirements.

^cDisposals were done by contractors or host country governmental agency.

Limited Hazardous Waste Minimization Efforts

In our prior report, we stated that the bases' efforts to reduce hazardous waste generations were limited. In response to our recommendations, DOD stated that it would require that minimization efforts be included in the hazardous waste management plans.

RCRA requires generators of hazardous waste to have a program that will reduce the volume and toxicity of waste generated to the degree it is economically practicable. DOD hazardous waste minimization guidance directs the services to develop minimization programs. Hazardous waste minimization is any action that reduces the volume or toxicity of hazardous waste. DOD and service regulations state that DOD bases are to minimize quantities of hazardous waste through improvements in source reduction, resource recovery, recycling, source separation, acquisition, and hazardous material management. The expense and the complexities involved with storing, transporting, and disposing of hazardous waste may provide additional impetus for increased minimization efforts.

However, during this review, we found that only one base had such a program. The other six bases had efforts planned to increase hazardous waste minimization, but these efforts were sporadic and inconsistent. The following example illustrates a base activity's effort to minimize hazardous waste generation.

Base A started a used solvent elimination program to reduce generations. Under this program, one generator on base contracted for equipment to clean mechanical parts, which retains the used solvents in a drum beneath the cleaning area. The used solvent is periodically removed and replaced with clean solvent by a contractor. The contractor then recycles the used solvent.

Some base officials told us that a lack of funding and manpower were the reasons they did not have hazardous waste minimization programs. The Environmental Coordinator at Base C also told us that recycling was hampered by "tech orders," which are specific on what materials may be used on a job. These often do not permit recycled products to be used, and the mechanics cannot override the orders.

Although most bases had some waste reduction projects in process or planned, we found one instance where a project was terminated. Until 1988, Base G burned used oil that it had collected from bases throughout the host country at its heating plant. On the basis of a 1988 cost benefit study, the command officials closed the plant, which was built in 1981 and had a maximum capacity to consume 230,400 gallons of used oil per year.

We did not attempt to determine whether closing the plant was cost-effective. However, our review indicated the cost benefit study oversimplified some aspects of the plant's operations and inaccurately assessed

the true costs of operating the plant. The study (1) did not address the potential for improved waste oil collection; (2) assigned a cost of \$9,551 as a depreciation expense for operating the plant, even though this expense was not avoided by closing the plant; (3) did not explore why certain costs had risen, making the plant less economical; and (4) used the lowest new fuel price in the past few years. The bases in the host country now sell most of their used oil to a private contractor.

Inadequate Storage and Accumulation Points

In our 1986 report, we stated that hazardous waste storage facilities were inadequate because they did not conform with RCRA requirements or DOD regulations. For example, at most bases hazardous waste was stored outside with no protection from the weather. However, at that time, the Defense Reutilization and Marketing Service had plans to construct improved storage facilities at a number of bases. DOD agreed with our findings and stated that the Military Construction Program included funds for construction of a number of these facilities.

EPA regulations require storage facilities to be designed, constructed, maintained, and operated in a manner to minimize the possibility of fire, explosion, or any unplanned release of hazardous waste constituents to air, soil, or surface water that could threaten human health or the environment. In addition, the facilities must have (1) internal communications for emergencies, (2) portable fire extinguishers, (3) adequate water supplies, (4) proper aisle space to provide access in case of emergencies, and (5) separated storage areas for incompatible wastes.

At six of the seven bases, we observed problems of varying degrees associated with the hazardous waste storage facilities or the areas where hazardous waste was accumulated. We also found that only one of the six Marketing Offices had adequate storage facilities and that four of six had problems in how they managed and stored the hazardous waste. In addition, Marketing Office hazardous waste storage facilities varied from almost nonexistent at Base C to modern and efficient at Base G.

At generator sites on Base G, we noted numerous instances of hazardous waste being stored near drainage ditches. Spills and leaks of waste could enter these ditches and travel to watersheds off base. For example, underground tanks hold waste oil just a few yards from a nearby river. Although a leaking tank could contaminate the river, which, according

to officials, supplies the base its drinking water, they knew of no program to inspect the tanks for leaks. They also knew of no problems with oil contamination in the drinking water wells.

Base A officials have not initiated action to correct several problems, including (1) poor identification and safety labeling and (2) lack of spill containment at the base fuels area, a major temporary storage area for petroleum based products. We noted similar problems at two of the other hazardous waste generator sites. At Base A, an unmarked hazardous waste storage area was located next to an open field with no spill containment.

Base E's hazardous waste storage area contained unidentified hazardous waste that had been taken from units all over the area before 1986. At the time of our visit in September 1989, base officials were sampling and analyzing these wastes to determine what to do with them.

The Marketing Office facility at Base C consisted of an open area with a fence and a locked gate. The facility only provided minimal protection from the weather for the hazardous property stored there, whether it was waste or material being held for sales.

Many items at the facility were stored in cardboard boxes, unprotected from rain, which could further damage the contents or cause the contents to spill onto the ground. Inspection records revealed that the storage bins had toppled over in a storm in 1987, spilling their contents. However, the Marketing Office has not taken any action to ensure that it does not happen again. The only emergency equipment on site was a small fire extinguisher and an eye wash fountain. The area had no alarm systems or telephones, and workers did not always have two-way radios with them. When we informed the Marketing Office Chief of our observations, he stated that the need for improved storage was recognized over 8 years ago, but lack of funds and uncertainty over the future of U.S. bases overseas had delayed construction of a new storage facility.

In March 1990, the Defense Reutilization and Marketing Regional Office in Hawaii decided that the Marketing Office at Base C would not accept any more hazardous materials or hazardous waste until the new storage facility was built. All turn-ins of hazardous materials or hazardous waste would be shipped to the Marketing Office at Base D for processing.

The Marketing Office storage facilities at Base A did not conform to host country or U.S. requirements for hazardous waste storage, as evidenced by two inspections. In April 1988, a host country agency inspected these facilities and found that hazardous waste was being stored without adequate protection. The agency noted that a fire or spillage could cause a "major catastrophe." A December 1988 inspection made by a neighboring base's Bioenvironmental Engineering section found that (1) the hazardous waste drum storage area was not covered, (2) there was no spill containment, (3) the pavement surface would not prevent hazardous waste from leaking into the ground, and (4) some chemicals were stored in deteriorating containers. Without proper protection and storage, a major spill or leakage could contaminate a bordering farmer's field and the groundwater. Both inspections recommended that the area be covered, a spill containment system be constructed, and the pavement be treated to make it impermeable. We found that these same conditions still existed in May 1989.

To alleviate some of the storage problems that the Marketing Offices have encountered, the Defense Reutilization and Marketing Region-Europe is using more direct service contracts and has bought portable hazardous waste containers. Under these contracts, contractors remove hazardous waste directly from the generating activities, eliminating the need for transporting waste to the Marketing Office for storage. This procedure not only removes the potential problems accompanying a shipment but also reduces the Marketing Office's temporary storage requirements.

Contamination of Ground and Water

In our prior report, we identified actual or potential pollution at 11 of the 13 bases visited. We concluded that poor hazardous waste management practices and improper disposal could result in water, land, and air pollution. We recommended that the Secretary of Defense ensure that the services clarify or establish standards for handling, storage, and disposal of hazardous waste so that ground and surface water are not contaminated.

DOD concurred with our recommendation and stated that it would use command and local inspections and oversight to check and reinforce compliance with applicable regulations. DOD also stated that guidance would be developed to ensure that the hazardous waste management plans contain adequate direction on how to manage hazardous waste to keep from contaminating the environment.

During this review, we found ground or water contamination at five of seven bases and four of six Marketing Offices. The extent and severity of the contamination varied from minor spills to possible contamination of drinking water supplies. At over half of the shops we visited at Base C, we found evidence of ground or water contamination. In several cases, hazardous waste had apparently entered or was entering the drainage canal system that leads to rivers off base. Waste from the accumulation point for the engine shop drains into a drainage ditch that connects to a nearby river.

At Base G, we observed eight cases of ground and/or water contamination, some of which appeared to be severe. A hazardous waste accumulation point at one of the generators is positioned directly over a drainage ditch that connects to a stream. Oil leaked off the platform and into a ditch that emptied into farmland located off base.

At four generators on Base A, we noted ground or water contamination. The photography laboratory was pouring chemical wastes from film processing into storm drains, without testing or neutralizing the effluent. Another shop cleans its equipment outside, and contaminated solvents were washed off the equipment and then flowed to the open ground.

Inadequate Container and Other Procedural Problems

RCRA regulations require that containers be properly labeled and in good condition. Labeling requirements differ, depending on how much a hazardous waste generator accumulates of a single type of waste at the point of generation. RCRA regulations also outline the procedures to be used in managing these containers, such as proper location, storage, inspection, and state that only compatible waste is to be stored in each container.

Our review determined that six of seven bases and four of six Marketing Offices had significant procedural problems in storing hazardous waste, including improper labeling and marking of containers; containers that were open, in poor condition and leaking; and improperly locating the hazardous waste.

An example of container labeling problems was found at Base D where hazardous waste containers (drums) at the Marketing Office had no labels. The Marketing Office environmental specialist could not immediately tell us what was in them. However, since the drums were on a

pallet in a sales lot and the pallet had a sales lot number, the environmental specialist was able to track the lot number through the office files. The next day he told us that the drums contained resin and had come from another base.¹

The environmental specialist admitted that labeling is a problem, citing the fact that Marketing Service guidance does not require containers to have specific labels. Therefore, the Marketing Office's local customer assistance guidance is also silent on the subject. He said the lack of headquarters guidance on labeling makes enforcing locally developed labeling requirements difficult. The Marketing Office Chief agreed that, although the Marketing Service guidance does not require containers to have specific labels, the Marketing Office's guidance to the generating activities on how to turn in hazardous waste should include labeling requirements and stated that such requirements would be added the next time the guidance is revised.

We also found instances of not following labeling and marking requirements at Base A and Base F. Three of the seven generators at Base A had some containers that had not been labeled properly or had no labels indicating either the name or the potential hazards of the contents. At Base F, several shops had accumulated more than 55 gallons of waste, but none of the containers had markings. In addition, containers at some Base F shops had inaccurate labels.

At other shops, they used containers for accumulating hazardous waste that displayed no markings other than those describing the containers' original contents. While this practice is not consistent with RCRA regulations, it can also lead to other problems. In some cases, hazardous waste containers were placed next to new material. Sitting side by side, the two drums appeared identical. This could lead to new material mistakenly being picked up and disposed of as waste.

In addition to the labeling and marking problems, we found numerous instances of containers being open and in poor condition. At Base A, three of the seven generators had containers that were left open, and some containers showed signs of corrosion or leaking. For example, waste oil in drums was overflowing and leaking onto the ground at the base fuel storage area.

¹The Reutilization and Marketing Office at Base D handles hazardous waste turned in by other bases.

At the fuel terminal for Base F, officials told us they accept containers in any condition—with or without labels. We found many drums in poor condition, with bulging tops and considerable rust. Others were overflowing and dripping contaminated oil on the ground.

Transportation Problems

Transportation requirements of host countries have also been overlooked by some U.S. bases. We noted problems in hazardous waste transportation at three of the seven bases. According to Defense Reutilization and Marketing Region-Europe officials, one country's transportation requirements for hazardous waste are similar to those in the United States, including placarding vehicles and providing emergency instructions to drivers. However, Marketing Office officials stated that U.S. military vehicles carrying hazardous waste rarely follow such guidance.

During our visit to the Marketing Office for Base A, we observed a shipment of hazardous waste arrive without placards or labels to identify the hazard, which did not comply with host country regulations and would be inconsistent with RCRA regulations. In addition, the driver did not have emergency instructions on what to do if an accident or a spill occurred.

Local ordinances also can present problems in transporting wastes. For example, local contractors in one country are responsible for getting permits to transport or dispose of hazardous waste. However, they cannot get a permit to transport Supertropical Bleach (a hazardous waste) through one of the states to a disposal site in another state. In another example, one state does not approve of transporting and disposing of mercury. In both cases, the local ordinances are bypassed by shipping wastes via U.S. military transportation. Marketing Office officials at Base E stated that military vehicles rarely met such host country transportation requirements.

Spill Contingency Plans Generally in Place

RCRA requires that a hazardous waste facility have a spill contingency plan designed to minimize hazards to humans or the environment. Under the RCRA regulations, the plan must describe the actions to be taken in case of an emergency and the arrangements with local police and fire officials; list names, addresses, and phone numbers for emergency coordinators; identify all emergency equipment on site; and contain an evacuation plan. In addition, the regulations require a contingency plan to

minimize hazards to human health or the environment from fires, explosions, or any unplanned release of hazardous waste. The individual services have incorporated EPA's requirement into their own guidance to installations; however, some of these plans were either incomplete or new and untested.

Five of the seven bases and four of six Marketing Offices had adequate spill contingency plans. Bases D and G and the Marketing Offices for Bases A and C did not have adequate spill contingency plans.

Defense Reutilization and Marketing Service regulations require Marketing Offices to operate under the spill contingency plan developed by the base that provides the Marketing Office administrative support. Spill plans detail the response actions for containment and cleanup when a spill occurs or is discovered and should provide coverage for all tenant activities. The Marketing Offices should have a working knowledge of those procedures.

Contingency spill plans were inadequate at the Marketing Offices for Base A and at Base D and adequate at Base E and Base F. At the Marketing Offices for Bases D and G, we found varying degrees of problems with the plans. For example, the plan for the Base G Marketing Office conformed with RCRA requirements, but its list of phone numbers for the emergency coordinators was not current. The Chief subsequently updated the list. According to the Marketing Office Chief at Base C, there have not been any occasions when the base's plan had to be implemented.

The Marketing Office at Base A was not covered by a spill plan because the host installation had no plan. Base A is a satellite base supposedly covered under the spill plan for a larger base. However, the larger base's spill plan does not contain references to either Base A or the Marketing Office.

In December 1988, officials from the Marketing Office for Base A began discussions with the larger base's officials concerning who would provide spill response at the Marketing Office. The Marketing Office expressed concern because of the dangerous substances (acids, oxidizers, corrosives) it received from hazardous waste generators. For example, in March 1989 when a shipment of leaking containers arrived at the Marketing Office, civilian fire authorities had to be called in because neither Base A's nor the larger base's fire departments knew how to respond. After this incident, a Marketing Office official wrote

again to the larger base pointing out deficiencies in the spill plan. In November 1989, Defense Reutilization and Marketing Office officials told us that the larger base was amending its spill plan to include the Marketing Office for Base A and the hazardous waste it stores.

Disposal Problems

RCRA requires that hazardous waste generators in the United States designate the disposal site that has a permit to handle the waste described on the manifest. In our prior report, we stated that most hazardous waste generated by overseas base activities was disposed of by the Defense Reutilization and Marketing Offices. The Marketing Offices at European bases used disposal contractors, but they were having difficulties arranging for disposal contracts and had problems with contractor performance. In the Pacific, most of the hazardous waste was sold in two of the countries we visited. When it could not be sold, the Marketing Offices were not having any problems obtaining contractor disposal services. Some bases did have some problems disposing of some types of hazardous waste, such as foreign made PCBs, because the host country would not allow disposal and EPA would not allow DOD to ship it to the United States. The Defense Reutilization and Marketing Regional Office in Europe was working to establish a means for proper disposal in the European countries.

In contrast, we found in this review that most hazardous waste generated by base activities was disposed of by the servicing Marketing Office² through disposal contracts, sales, and shipment to third countries or back to the United States. Disposals may involve transporting the hazardous waste to the Marketing Office or arranging with the Marketing Office to have a disposal contractor pick it up at a generator's site. However, the Marketing Office's disposal practices did not always conform to RCRA requirements when they were more stringent than host country requirements. As a result, we found instances of disposal that could endanger the environment or humans.

In-Country Hazardous Waste Disposal Contracts

Because Marketing Service guidance on hazardous waste disposal at overseas bases is inconsistent and at times contradictory, Marketing Offices are not consistent in using the stricter of U.S. or host country laws. For example, personnel at the Marketing Office for Base G told us they use the stricter of U.S. or host country environmental laws in writing hazardous waste disposal contracts. However, our review of the

²Hazardous waste constitutes only a portion of the Marketing Office's mission. Marketing Offices also handle a large volume of non-hazardous material.

contracts disclosed that the stricter U.S. laws were not always followed. On the other hand, the contracts used by the Marketing Offices for Bases B and E stated that liquid hazardous waste must not be landfilled. This requirement conforms with U.S. laws prohibiting landfilling of liquid hazardous waste.

Officials from the Marketing Office for Base F said they dispose of hazardous waste using disposal contracts, which require disposal in accordance with the environmental laws of the host country. They said they do not have the time or the expertise to determine if U.S. disposal requirements are stricter.

Improper Disposals

We found numerous incidents of improper hazardous waste disposal at the bases visited. These incidents included unauthorized dumping, inoperable oil-water separator, electroplating rinseate discharged directly into a bay without testing or treatment, and excavated and reburied contaminated soil.

Although Defense Reutilization and Marketing Office personnel told us they use the stricter of U.S. or host country environmental laws in writing hazardous waste disposal contracts, the contracts themselves refer only to host country laws. The Marketing Office did not have a copy of the Toxic Substances Control Act³ nor was it familiar with the PCB disposal regulations when the Marketing Office for Base G disposed of 448 drums of PCB oil and 456 transformers containing PCBs through an in-country disposal contract. The disposal contract did not specify how PCBs were to be disposed of or what monitoring would be performed by the Marketing Office.

A Defense Reutilization and Marketing Service official told us he had questioned the military service's plans for PCB disposal in the host country. He stated that although the contractor was licensed by the host country government, the contractor lacked the appropriate emissions monitoring equipment.

Service officials said they received approval from the host country government but could not produce clear evidence that the PCB disposal methods used by the contractor had been approved by the government. The host country government had earlier denied the service permission

³The Toxic Substances Control Act governs the management and disposal of PCBs in the United States. Although it does not explicitly apply to overseas bases, we used the act's regulatory requirements that protect those that come into contact with PCBs as our basis for determining if the bases provided adequate protection to their people.

to burn pentachlorophenol (PCP) waste because there was no suitable emissions monitoring equipment in the country. Given the controversial nature of PCB disposal and Marketing Service guidance indicating that in-country disposal may be discouraged by social or political considerations, formal, documented approval from the host country government would appear to be needed. Neither the service nor the Marketing Office had documentation showing this approval.

At one generator at Base D, an oil/water separator appeared to be inoperable and base officials did not know what was in the separator, how to best clean it out, or where the effluent drained. As a result, the base could be contaminating the groundwater. According to base officials, the separator receives drainage from the nearby wash rack that the Stations Operations Department operated.

When we visited the wash rack area, one airplane was being washed and personnel were stripping paint from small parts. The separator was receiving large amounts of contaminated water due to the ongoing operations at the wash rack.

As we noted in our prior review, base officials recognized that the separator needed attention, and they have requested assistance from the base maintenance office. Base maintenance office officials attempted to analyze samples of the separator's contents but were unable to do so. However, on the basis of the materials used at the wash rack and drained into the separator, these officials believe the separator contains hazardous components such as aromatic hydrocarbons, methylene chloride, sodium chromate, phenolic bodies, 2-Butoxyethanol, butyl ether, hexylene glycol, and stoddard solvent. Maintenance office officials maintain that these chemicals are skin irritants and toxic if ingested and that one is a known carcinogen.

The Environmental Coordinator said the variety of chemicals being drained into the separator has probably caused it to malfunction, and it could be spilling its contents into a nearby ditch. The base safety representative said he prodded the separator with a pole and found that an accumulation of solid material laid only a few feet below the surface. The accumulation of solid material in the separator prevents the separation of contaminated oil from the water.

In early 1989, maintenance office officials attempted to pump out the waste in the separator. During the process, the materials ate through the

seals on the pump truck. The material was being held at the base's hazardous waste handling facility. At the time of our visit, the separator issue remained unresolved.

The following are other examples of improper hazardous waste disposal at the locations we visited.

- Runoff from maintenance areas at Bases C and G flowed directly into an off-base watershed.
- Rinseate from the electroplating shop at Base D was discharged directly into nearby waters with no treatment.
- Chromate paint and other pollutants were discharged by Base D into a drainage ditch.
- Waste freon, a halogenated solvent, was mixed with other petroleum wastes and sent to Base D's power plant to be burned as fuel. Burning halogenated solvents gives off toxic fumes.
- Hazardous waste improperly disposed of in 1978 was removed from a Base G site, but the Army did not have any documentation showing where the waste was ultimately disposed of or the date of final disposal.
- Dirt, used for absorbing oil spills, was buried at Base G.
- An unauthorized dump site at Base G was full of miscellaneous refuse with oily water, apparently from a nearby burn pit, standing in the area.
- Improperly marked drums containing waste oil were sitting on ground that had turned dark from oil contamination at Base A and Base G.
- Rinseate from cleaning Syntherin (a pesticide) containers was disposed of by dumping it on the ground at Base G.
- Hazardous waste was dumped in regular trash containers at Bases B, C, and F.
- Absorbent material used to clean up hazardous waste spills was disposed in regular trash at Bases A, F, and G.

Disposal Contracts Limit Liability

The Marketing Offices have developed standard clauses to use in their disposal contracts that they believe will limit DOD's liability for any problems caused by a contractor during the disposal of hazardous waste. This is an improvement from our 1986 review in which we noted that several disposal contracts for European bases lacked the clauses needed to limit U.S. liability. The contracts we examined in the current review usually stated that contractors were responsible for (1) obtaining necessary permits, (2) complying with host country transportation laws, (3) complying with all applicable safety requirements for hazardous waste handling, (4) controlling and reporting any spills or leaks resulting from execution of the contract, (5) incurring all liability and holding the U.S. government harmless, and (6) submitting certificates of

disposal to Defense Reutilization and Marketing Regions. However, in chapter 4, we discuss an incident where U.S. personnel have been indicted for violations committed by the bases' disposal contractor.

Third Country Disposal

Due to host country restrictions on disposals in the host country, DOD sends the hazardous waste generated at several locations to a base located in another country for disposal. The Defense Reutilization and Marketing Service does not generally consider third country disposal to be a viable option under most circumstances because of the potential complexities involved. However, officials at the Marketing Office for Base A said they receive shipments of waste from DOD components in several other countries. These shipments are made because (1) those DOD components do not have adequate disposal facilities, (2) those countries have laws against the disposal of some hazardous waste, and (3) the Marketing Office for Base A has a contract that allows for the disposal of virtually every kind of hazardous waste used by DOD.

Defense Reutilization and Marketing Service regulations require written consent from the third country and Marketing Service approval before hazardous waste can be disposed of in a third country. Yet the Defense Reutilization and Marketing Region has not requested the Marketing Service to obtain consent for disposals in the third country. A Region official stated that the country imports vast amounts of hazardous waste in general because of its excellent disposal facilities. He stated that while Marketing Service and host country officials were aware that the Marketing Office was importing hazardous waste, there was no documentation or written consent.⁴

Ban on Shipping Foreign-Made PCB Items Back to the United States for Disposal

In one country, PCB items are stored indefinitely, which does not conform with EPA regulations under the Toxic Substances Control Act, which governs the use, storage, and disposal of PCBs in the United States. The regulations require PCB articles to be disposed of within 1 year of entering storage. Because there are no fully permitted disposal facilities in the host country, DOD-owned host country manufactured PCB transformers and other PCB items have been accumulating for at least 5 years at the local Marketing Offices. The indefinite storage of PCBs in the host country presents a serious risk to DOD personnel and the environment if the containers and equipment deteriorate and begin to leak.

⁴In April 1990, the Marketing Office for Base A notified local officials that it was receiving hazardous materials and hazardous waste from U.S. bases in other countries for disposal by authorized host country companies.

The transformers cannot be sent to the United States for disposal because EPA prohibits importing foreign-made PCBs for disposal. In addition to those already in storage, foreign-made PCB transformers are still in service, which will require disposal in the future. DOD has sought a waiver from EPA's import ban, but as of June 1990 the waiver had not been granted.

**Need for Better Controls
Over Hazardous Waste
Sales in Foreign Countries**

The extent of hazardous waste sales varied among Marketing Offices. In one Pacific area country, all hazardous waste was sold, while in Europe only a limited quantity had been sold. Until recently, Marketing Service guidance on all sales, including those at overseas Marketing Offices, required only minimal controls over hazardous waste purchasers. The Marketing Service has issued some new guidance, and it reemphasized guidance to better control sales. In November 1989, a moratorium was placed on local sales of hazardous materials and hazardous waste, including those made at overseas bases. In March 1990, a revised sales procedure for hazardous materials and hazardous waste went into effect that further limited what can be sold and how it can be sold. This procedure requires a preaward survey prior to award of an item to ensure that potential buyers have the capability to handle it and are aware of the handling requirements.

As of October 1989, none of the Marketing Offices located at Pacific bases had instituted all of the new sales provisions because they had not received the implementing guidance. However, we only noted problems in the sales programs at Bases C and D. As a result of minimal controls, the Marketing Offices at Base C and Base D have sold leaking and poorly packaged hazardous material, which is in violation of the guidance. They combined hazardous waste and hazardous materials in sales lots, which provided an expedient hazardous waste disposal procedure. Although DOD avoided paying for disposal, it did not know how buyers were using the hazardous property.

To ensure that all hazardous waste is sold, the Marketing Office at Base C lots or groups undesirable hazardous waste with desirable hazardous materials. The sales officer admitted that some hazardous items would never sell if the Marketing Office tried to sell the items individually. At the time of our visit, the Marketing Office did not require purchasers to remove anything they did not want. However, the Chief of the Marketing Office said it was very unusual for the buyers to leave anything in the group of items they had just bought. The grouping of valuable hazardous materials with unusable hazardous waste promotes improper

disposal. This approach does help ensure that all hazardous waste received by the Marketing Office is sold and removed, eliminating the need for contract disposal or returning it to the United States.

We examined the hazardous waste and material sold at a March 29, 1989, spot bid sale. Some of the items were unmarked, some were leaking, some were unmarked and leaking, and others appeared to be empty. The sales officer admitted that the buyer probably had not opened this box and, thus, did not know what he was buying.

One sales lot sold for so little money that it appeared that the buyer may have bought the lot to acquire the drums. Drums containing chemicals (including hazardous waste) sold at an average price of \$12, which is well below the \$50 cost of new empty drums. The head of the Marketing Office stated that he has had buyers tell him that they were buying the drums, not the contents. Marketing Office officials could not tell us what the buyers did with the unused contents.

However, Marketing Office personnel stated that the buyers of hazardous materials and waste normally reused or recycled the items they purchase. Bidding, though, is often speculative, with buyers attempting to line up purchasers between the time they make their bid and the time they must pick up and pay for the hazardous property. Hence, buyers do not always know how the items they purchase will be used.

At the Marketing Office for Base D, we observed some hazardous material in poor condition that had been placed in sales lots with good material. For example, we found half full bottles of chemicals. Some of the containers and chemicals were in very poor condition. There was also a leaking can of paint wrapped in a brown paper bag.

The Chief of the Sales Office stated that the personnel in the office did not know what buyers did with the hazardous material and waste that they purchased. The Chief said that the people were very resourceful and could modify and recycle just about anything.

Sales of hazardous waste in Europe have been limited during the last 3 years to two sales of hazardous waste by the Marketing Offices in Europe—4,953 leaking cans of unserviceable Decontamination Solution Number Two and 3,776 drums of unserviceable Supertropical Bleach. The two hazardous waste sales we examined appeared to have been made in accordance with Marketing Service provisions. The host country customs authority approved both sales.

Conclusions

Even though overseas bases have made progress in developing hazardous waste management plans, as evidenced by the fact that six of seven bases we visited had them, we found that the bases did not provide complete guidance and that many of the plans' provisions had not been implemented. In addition, we identified conditions at the seven bases we visited that, had they occurred at bases in the United States, would have been violations of RCRA and the Toxic Substances Control Act and their implementing regulations. As a result, hazardous waste management at these bases did not provide adequate controls to prevent environmental pollution.

The decision to close the used oil processing plant at Base G was based on a questionable assessment of the plant's costs and benefits. The study, which showed that the plant was operating at a loss, made errors in assigning costs and benefits and did not analyze why certain costs were rising or how the plant's economies could be improved. Thus, the government cannot be assured that closing the plant was a cost-effective decision.

Relations With Host Nations Are at Risk

U.S. forces' conformance to sound environmental practices takes on a special significance when the forces are stationed in a foreign nation. According to DOD officials, inappropriate practices that do not adequately protect human health and the environment could have adverse political repercussions. This is especially true in countries where environmental issues are a matter of great public concern and where citations and claims against the United States for improper disposal practices have been made.

DOD and service policies recognize the need to comply with host country laws; yet, as stated in chapter 2, hazardous waste managers at overseas bases have received little practical guidance on how specific host country environmental regulations affect their responsibilities. This creates a substantial risk that U.S. bases may be jeopardizing political and defense relationships.

Growing Political Sensitivity to Environmental Incidents

Environmental issues have attracted increasing attention within the past few years in some countries. They have assumed a special importance in the last 3 years, according to the U.S. Army Europe Command's Foreign Law Branch Chief. Opposition political parties have raised concerns about these issues, increasing their visibility with the public. One host country government has also shown increasing environmental awareness. For example, during 1989, the country's legislative body considered strengthening environmental laws to improve air and soil protection from pollution and to increase the responsibility of the hazardous waste generators.

The heightened concern with environmental issues has in turn brought the environmental practices of U.S. bases under greater scrutiny. The major opposition party has specifically called for allied countries to comply with host country environmental laws. U.S. and host country newspapers have also reported on political discussions and talks at which U.S. forces' compliance with host country environmental laws was addressed.

Legal officials in the office of the European Command, the Defense Logistics Agency in Europe, and the Army and Air Force European Commands told us that because of these growing environmental sensitivities any major pollution incident caused by U.S. forces could potentially damage relations with host nations. The Commander of the Defense Reutilization and Marketing Regional Office in Europe has stated that U.S. actions are under close scrutiny by people who would not hesitate

to pass on environmental shortcomings to the public media. He stated that the United States cannot afford the type of international incident that could arise from mismanagement of hazardous wastes.

Past Practices Have Resulted in Claims Against DOD

U.S. bases are encountering increasing numbers of cases where host countries are taking legal action against the bases or the officials responsible for hazardous waste management because of past practices of improper handling, storage, or disposal of hazardous waste. Since October 1984, the United States has received 1,259 host country claims totaling about \$25.8 million.¹ Of the 1,259 claims, 18 claims for \$21.8 million were the direct result of mishandling or disposing of hazardous waste. Several of these claims alleged pollution arising from dry cleaning operations and degreasing facilities. DOD has accepted responsibility for portions of some of these claims, and as of October 1990, it had partially reimbursed some of the claimants about \$50,000.

Additional claims may be brought against U.S. forces for pollution damages at other sites. About 300 additional sites have been identified at U.S. bases where there is a potential for environmental pollution claims. Incidents of pollution have been confirmed at 113 of these sites and are suspected at the others. The preliminary cost estimate to settle claims that may arise at the 113 sites is \$111 million, but according to U.S. officials, the actual costs may be much higher.

Personal Citations

Some violations of host country laws have already resulted in citations against U.S. forces personnel. The citations were the result of an agreement between the Army and a host country water authority allowing the responsible authorities to periodically inspect Army bases. Two Army activities, a race track, and an auto stripping yard were inspected by these authorities and later closed because of petroleum, oil, and lubricant contamination of the groundwater. This was followed by citations against two Army officials from the base generator. Jurisdiction was transferred to U.S. authorities, and the case was resolved administratively.

A host country national working at the Defense Reutilization and Marketing Office is 1 of 78 people indicted as a result of improper hazardous

¹Under the host country's laws, claims can be filed with the amount to be determined later. Of the 1,259 claims, 140 of them were for an undetermined amount. Of the 18 claims for hazardous waste contamination, 11 claims did not have the amounts determined.

waste disposal by a firm working at the base. A legal advisor to the Staff Judge Advocate at Base B stated that the indictment of the Marketing Office official occurred because host country law places responsibility for proper waste disposal with the hazardous waste generator, even if its contractors or subcontractors actually commit the environmental crimes.

U.S. Air Force Command, Europe, officials stated that host nations have not cited any Air Force personnel for environmental incidents. However, host country officials are investigating a base commander at one base for using an unauthorized landfill, and another at a base that polluted portions of the base grounds with petroleum, oil, and lubricants.

Although we did not find any cases where claims for damages or cleanup of contamination against U.S. bases in the Pacific area had been made, we did note one incident where the United States may have to clean up a site. At Base F, a contractor constructing a pier for the base uncovered serious ground contamination in 1988. The base laboratory made an analysis of the soil and found it to be contaminated with toxic materials, including chemicals, heavy metals, and PCBs. Because the soil was too contaminated to be placed in a landfill and the base did not have the funds to dispose of the excavated dirt properly, officials canceled the project and buried the contaminated dirt in the original hole.

Base F officials did not notify the Commander of U.S. Forces in the host country of the incident as required by Navy regulations. Base F officials offered many reasons for not notifying the Commander, such as not being aware of the Navy requirement and believing that the requirement did not apply and another activity was responsible. At the time of our visit, the same area was being excavated for a different project. Officials told us they did not provide notice of the contamination to the host country government or to the contractor performing the work.

The Environmental Officer, U.S. Forces Command, in the host country stated that the decision to cancel the initial project at Base F was understandable since overseas bases did not have funds specifically available to clean up contaminated sites. DOD bases are not eligible for funds from

the Superfund,² and overseas bases also are not eligible for the Installation Restoration Program³ funds. Cleanup money, according to the Environmental Officer, must compete with other priority projects for operation and maintenance funds. He further stated that new Superfund type sites will continue to be found overseas and that their cleanup will continue to present serious problems.

Conclusions

DOD and all three services recognize that the presence of U.S. forces on foreign territory requires sensitivity to host country laws. Those laws of an environmental nature are of growing significance. DOD environmental officials at the bases we visited were uncertain as to how host country environmental laws affected their responsibilities, and little has been done to determine which of these laws need to be followed beyond U.S. requirements.

In an era of heightened environmental sensitivities overseas, DOD may be assuming substantial risks by not giving greater attention to host country laws. Violations of these laws could lead to problems in U.S. relations with host countries. In addition, as a result of DOD's inability to manage hazardous waste properly, environmental contamination could continue and the United States could incur additional cleanup costs.

²The Superfund is officially titled "Comprehensive Environmental Response, Compensation, and Liability Act."

³The Installation Restoration Program is DOD's program to clean up old hazardous waste disposal sites located on its bases. It is basically the same as the Superfund program.

Comparison of Hazardous Waste Management Plans With RCRA Requirements

Bases					
E	C	D	G	F	B
X	X	X	X	X	X
					Hazardous waste definition
					Discussion of satellite hazardous waste generators
					Requirements if more than 55 gallons on site
X	X	X	X	X	X
					A. Container is not leaking and in good condition
X	X		X	X	X
					B. Contents are compatible with container materials
	X		X	X	
					C. Container is closed except to add or remove waste
X	X	X		X	X
					D. Container is marked with words "HAZARDOUS WASTE" or other effective identification
					E. Move the waste to a central location storage facility within 3 days of accumulating 55 gallons
				X	Requirements if less than 55 gallons on site for 90 days, all of the above, plus
	X		X		X
					A. Weekly inspections
	X	X			X
					B. Date accumulation began is marked on the container
	X	X	X		X
					C. Generator has hazardous waste training program records
	X				X
					D. Emergency and communications equipment appropriate for the hazardous waste stored
	X		X		
					E. Sufficient aisle space to permit access for emergency personnel and equipment
	X			X	X
					F. Contingency plan is on hand
	X			X	X
					G. Someone with authority to commit resources in response to an emergency designated as emergency coordinator
					Training requirements (if over 55 gallons stored)
					A. Content
	X		X		
					1. Emergency equipment use and repair
	X	X	X	X	X
					2. Emergency response
	X	X	X		
					B. Train personnel within 6 months of assuming the position
	X	X			X
					C. Annual refresher
		X	X		X
					D. Job title and name of each hazardous waste handler
	X	X	X		X
					E. Job description of each hazardous waste handler
	X	X	X		X
					F. Training records
	X	X			
					G. Retain records for 3 years after personnel leave facility
					Contingency plan
X	X			X	X
					A. Actions to be taken in response to mishaps
X	X			X	X
					B. Coordination with local police and fire departments
X					X
					C. Names and phone numbers of emergency coordinators
					D. List of emergency equipment
					E. Evacuation plan
					Emergency coordinator duties
				X	X
					A. On call at all times
					X
					B. Authority to coordinate and commit resources

(continued)

**Appendix I
Comparison of Hazardous Waste
Management Plans With RCRA Requirements**

E	Bases				
	C	D	G	F	B
	X				C. Thorough knowledge of contingency plan, facility layout, location, and characteristics of hazardous waste in the facility
					D. Location of records at the facility
X	X			X	E. Take steps to prevent spread of emergency
	X			X	F. Arranging for treatment, storage, and disposal of recovered waste
					G. Ensuring equipment used in the emergency is cleaned and ready for reuse

NOTE:

X - requirement substantially met

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