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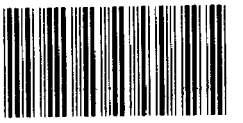
GAO

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

April 1987

# HAZARDOUS WASTE

# DOD Installations in Guam Having Difficulty Complying With Regulations

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GAO

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

**National Security and**
**International Affairs Division**

B-213706

April 22, 1987

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

Dear Mr. Chairman:

In response to your request, this report provides our evaluation of the Department of Defense's efforts to manage, store, and dispose of the hazardous waste generated at installations in Guam. The views of responsible officials were sought during the course of our work and are incorporated where appropriate.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of its issuance. At that time, we will send copies to the chairmen of other concerned committees; the Secretary of Defense; the Secretaries of the Army, Navy, and Air Force; the Director, Office of Management and Budget; and other interested parties upon request.

Sincerely yours,

Frank C. Conahan
Assistant Comptroller General

# Executive Summary

## Purpose

Hazardous waste can seep into water supplies, contaminate soil, and be released into the air, thereby posing potential threats to the environment or public health. The Department of Defense (DOD) generates large quantities of hazardous wastes.

The Chairman of the Subcommittee on Environment, Energy and Natural Resources, House Committee on Government Operations, as part of the Subcommittee's oversight responsibilities, asked GAO to review DOD's efforts to dispose of hazardous waste generated at DOD installations in Guam.

## Background

The Resource Conservation and Recovery Act of 1976 (RCRA), as amended, regulates management of hazardous waste including the generation, transportation, treatment, storage, and disposal of such waste. The Environmental Protection Agency (EPA) has issued implementing regulations and has authorized Guam's EPA to carry out inspection and enforcement activities in Guam. Under DOD policy, installation commanders are responsible for ensuring that their operations comply with RCRA. The Defense Logistics Agency, through its Defense Reutilization and Marketing Service and its local offices, has responsibility for assisting the commanders by disposing of hazardous waste and constructing required storage facilities.

## Results in Brief

DOD installations in Guam were not in compliance with RCRA because inadequate emphasis has been placed on (1) the importance of complying with the procedures for handling, storing, and disposing of hazardous waste, (2) education and training programs for personnel on the dangers of mishandling these wastes, and (3) the need for sufficient inspection and enforcement activities at base level.

DOD has begun actions to address the causes of noncompliance. In addition, the installations are trying to improve hazardous waste management.

## GAO's Analysis

### Compliance With RCRA

Andersen Air Force Base, a hazardous waste generator, and five of six generators located on the Guam Naval Complex were inspected by

Guam's EPA and found to be out of compliance with RCRA. Installation officials attributed noncompliance to factors similar to those GAO and DOD's Inspector General identified in earlier reports, including lack of (1) cooperative tenants, (2) attention to administrative matters, (3) storage facilities, and (4) sufficient staff to regularly inspect generators.

Of 79 violations identified by Guam's EPA during 1985 and 1986, 39 were considered to be serious. These constituted a threat of releasing hazardous waste to the environment or involved the failure to (1) protect groundwater, (2) store the waste in proper containers, or (3) ensure that the hazardous waste was delivered to approved facilities. The two most common types of violations involved pretransport and container use and management. Pretransport violations involve the failure to meet packaging, labeling, marking, and placarding requirements. These violations could lead to improper handling or disposal because it would be difficult to later identify the contents. Container use and management violations involved storage of waste in damaged or leaking containers.

## Improper Dumping

Although Air Force and Navy installations in Guam have established procedures and provided training programs on how to manage and dispose of hazardous waste, GAO observed instances where maintenance activities improperly dumped or spilled hazardous waste. Improper dumping or spilling of hazardous waste at the Naval Complex damages the environment on base and contaminates the ocean near the shore. Groundwater contamination is of less concern at the Naval Complex because the Complex's groundwater is not used for drinking water.

Dumping or spilling hazardous waste is a greater concern at Andersen because Andersen is located over a major portion of Guam's aquifer. The storm water drainage system at Andersen consists of more than 100 storm drains, which rapidly remove surface runoff water into the aquifer. Of the nine base maintenance shops and facilities GAO toured, it found that eight were still discharging pollutants into storm drains or directly on the ground.

## No Disposal Contract

The Defense Reutilization and Marketing Service has had difficulties providing timely disposal of hazardous waste because it has been unable to find a capable contractor willing to bid on the disposal contract. As a result, wastes have been stored improperly. To deal with the accumulated hazardous waste, the Defense Reutilization and Marketing Service arranged for shipments of the waste to a disposal site in the United

States using Military Traffic Management Command contract ships and continued its attempts to finalize a contract with a commercial disposal contractor.

## Manifest Problems

GAO's analysis of the last shipment of hazardous waste from Guam showed significant discrepancies in what was recorded on the various disposal documents, including the manifests. The Defense Reutilization and Marketing Office had not reconciled any of the discrepancies GAO found in these documents.

## Recommendations

GAO recommends that the Secretary of Defense direct

- Air Force and Navy officials in Guam to take actions to ensure that all personnel handling hazardous waste know the proper procedures for disposing of the waste so as to eliminate the dumping of wastes in ways that could contaminate the environment and
- the Defense Reutilization and Marketing Office in Guam to place more emphasis on its procedures for reconciling discrepancies on disposal documents for hazardous waste, including delivery orders, pickup orders, manifests, and the Integrated Disposal Management System.

## Agency Comments

As requested, GAO did not obtain official comments, but it did discuss its findings with agency program officials during the course of its review.

# Contents

## Abbreviations

| | |
|---|---|
| AFB | Air Force Base |
| DOD | Department of Defense |
| DRMO | Defense Reutilization and Marketing Office |
| DRMS | Defense Reutilization and Marketing Service |
| EPA | Environmental Protection Agency |
| GAO | General Accounting Office |
| MTMC | Military Traffic Management Command |
| RCRA | Resource Conservation and Recovery Act of 1976 |

# Introduction

Hazardous wastes can seep into water supplies, contaminate soil, and escape into the air, thereby posing potential threats to the environment or public health. The Resource Conservation and Recovery Act of 1976 (RCRA), as amended, provides for regulatory controls over the generation, transportation, treatment, storage, and disposal of hazardous wastes. The Department of Defense (DOD), being a generator[1] of large quantities of hazardous waste and an operator of treatment, storage, and disposal facilities, must comply with RCRA requirements.

The Environmental Protection Agency (EPA) has primary responsibility for implementing RCRA. EPA regulations, initially published in May 1980, govern hazardous waste generators, as well as transporters, and owners and operators of hazardous waste treatment, storage, and disposal facilities.

RCRA allows EPA to authorize state and territorial regulatory agencies to administer and enforce hazardous waste programs in lieu of a federal program provided they are at least as stringent and comprehensive. In January 1986, EPA authorized Guam's EPA to carry out the responsibility for issuing permits and inspecting and regulating hazardous waste generators, transporters, and storage, treatment, and disposal facilities in Guam. As a result, Guam's EPA carries out inspection and enforcement activities at DOD installations there.

On October 21, 1980, DOD issued its overall policy guidance for implementing RCRA regulations. DOD designated each installation commander as responsible for ensuring that all operations, including those of tenants, comply with RCRA requirements. The Defense Logistics Agency, through its Defense Reutilization and Marketing Service (DRMS), was assigned responsibility for providing hazardous waste storage and disposal services to installation commanders. By 1984 the local DRMS offices, including the Defense Reutilization and Marketing Office (DRMO) in Guam, were accepting and disposing of DOD's hazardous waste.

According to Guam's EPA records, Andersen Air Force Base (AFB) and the Guam Naval Complex are the major hazardous waste generators in Guam. Andersen AFB is considered one generator by EPA, while the Guam Naval Complex has six EPA-designated generators, including the DRMO as a tenant. During 1985, the seven generators produced 161 tons of hazardous waste. Records at the Defense Reutilization and Marketing Region, Honolulu, Hawaii, show that waste paint comprises the largest

[1] A generator is an individual or organization whose act or process produces hazardous waste.

quantity of waste. Other wastes generated in large quantities are (1) non-polychlorinated biphenyl oil, (2) hydraulic fluid, and (3) trichlorofluorethane.

## Objectives, Scope, and Methodology

On July 1, 1986, the Chairman of the Subcommittee on Environment, Energy and Natural Resources, House Committee on Government Operations, requested that we review DOD's efforts to dispose of the hazardous waste generated at DOD installations in Guam. Our objectives were to determine (1) the extent to which DOD installations were meeting RCRA requirements and (2) the effectiveness of DRMS's disposal and storage functions, including the tracking of hazardous waste from receipt to disposal.

To accomplish our objectives, we

- reviewed EPA, DOD, Air Force, and Navy regulations governing the handling and disposal of hazardous waste;
- interviewed officials in Guam at Andersen AFB, the Navy's Public Works Center and Ship Repair Facility, the DRMO, and Guam's EPA;
- reviewed manifest files at Andersen AFB, the Navy Public Works Center and Ship Repair Facility, and the DRMO in Guam to determine amounts and types of wastes being disposed of and disposal sites being used;
- reviewed Guam's EPA inspection files and reports on the hazardous waste manifest system for DOD generators in Guam;
- accompanied Guam's EPA inspectors on inspections of Andersen AFB, the Navy's Public Works Center and Ship Repair Facility, and the DRMO;
- interviewed EPA regional officials in San Francisco concerning their role in the overall management of hazardous waste in Guam;
- interviewed command headquarters officials from the Naval Facilities Engineering Command, Pacific Division, and from the Defense Reutilization and Marketing Region in Honolulu, Hawaii, which services the Pacific area, concerning their role in the overall management of hazardous waste in Guam; and
- interviewed DRMS operations and contracting officials in Battle Creek, Michigan, and Ogden, Utah, concerning their role in contracting for disposal contractors.

The comments of officials responsible for managing the disposal of hazardous waste were sought during the course of our review, and their comments are included where appropriate.

Our review was conducted between August 1986 and January 1987 in accordance with generally accepted government auditing standards.

# DOD Installations Are Not in Compliance With RCRA Requirements

Andersen AFB, a hazardous waste generator, and 5 of 6 generators located on the Guam Naval Complex in Guam were not in compliance with RCRA requirements, according to Guam's EPA inspectors. Most of the violations[1] causing noncompliance were of a serious nature, and many were repetitive. Our review also disclosed other problems that either violated RCRA or could lead to violations. These included (1) maintenance activities at both installations improperly dumping waste, (2) discrepancies in disposal documentation, (3) inability of DRMO to provide adequate disposal service, and (4) storage facilities that did not meet RCRA requirements.

Air Force and Navy installation officials attributed noncompliance to a number of factors, including (1) uncooperative tenants, (2) inattention to administrative matters, (3) lack of capable disposal contractors, (4) inadequate storage facilities, and (5) insufficient staff to regularly inspect generators.

## Most Generators Were Not in Compliance With RCRA Requirements

Andersen AFB is one generator, and the Guam Naval Complex has six generators, including DRMO, a tenant organization. Inspection reports by Guam's EPA for the seven DOD hazardous waste generators showed that one, the Naval Station, was in compliance with RCRA requirements during 1985 and 1986. The remaining six generators were not in compliance, as each had been cited for one or more violations.

To determine the installations' compliance status, we asked Guam's EPA to inspect the DOD activities that generate the most hazardous waste in Guam—Andersen AFB, the Ship Repair Facility, the Public Works Center, and the DRMO. The inspections showed that all four generators were not in compliance with RCRA. Table 2.1 shows the number of violations by installation identified by Guam's EPA inspections made during calendar years 1985 and 1986 including the inspections we requested.

[1] A violation is one or more deficiencies as prescribed by EPA regulations.

**Table 2.1: RCRA Violations Found in Four Inspections, by Installation**

| | Number of violations | | | | |
|---|---|---|---|---|---|
| | 1985 | | 1986 | | |
| Installation | First | Second | First | GAO requested | Total |
| Anderson Air Force Base | 4 | 11 | 1 | 7 | 23 |
| Guam Naval Complex Generators: | | | | | |
| Ship Repair Facility | 5 | 0 | 2 | 6 | 13 |
| Public Works Center | 5 | 2 | 3 | 6 | 16 |
| Naval Air Station, Agana | 8 | 5 | 1 | | 14 |
| Naval Magazine | 0 | 0 | 1 | | 1 |
| Naval Station | 0 | 0 | 0 | | 0 |
| DRMO | 6 | 0 | 0 | 6 | 12 |
| **Total** | **28** | **18** | **8** | **25** | **79** |

## Many Violations Were Serious

EPA defines a Class I violation as one that results in a release or serious threat of release of hazardous waste to the environment or involves the failure to ensure that (1) groundwater will be protected, (2) proper containerization and identification activities will be undertaken, or (3) hazardous wastes will be destined for and delivered to approved facilities. These violations include such things as leaking containers; improper storage; incorrect manifests; and improper labeling, placarding, and marking of containers. About half of the 79 violations were Class I violations.

Class II violations are those that do not meet Class I criteria and are less serious. An example of a Class II violation is a bloated or excessively rusted drum.

As shown in table 2.2, the two most common Class I violations involved inadequate pretransport measures and improper container use and management. Pretransport violations involve the failure to meet the packaging, labeling, marking, and placarding requirements. These violations could lead to improper handling or disposal because the contents would be unknown. Container use and management violations involved storage in damaged or leaking containers.

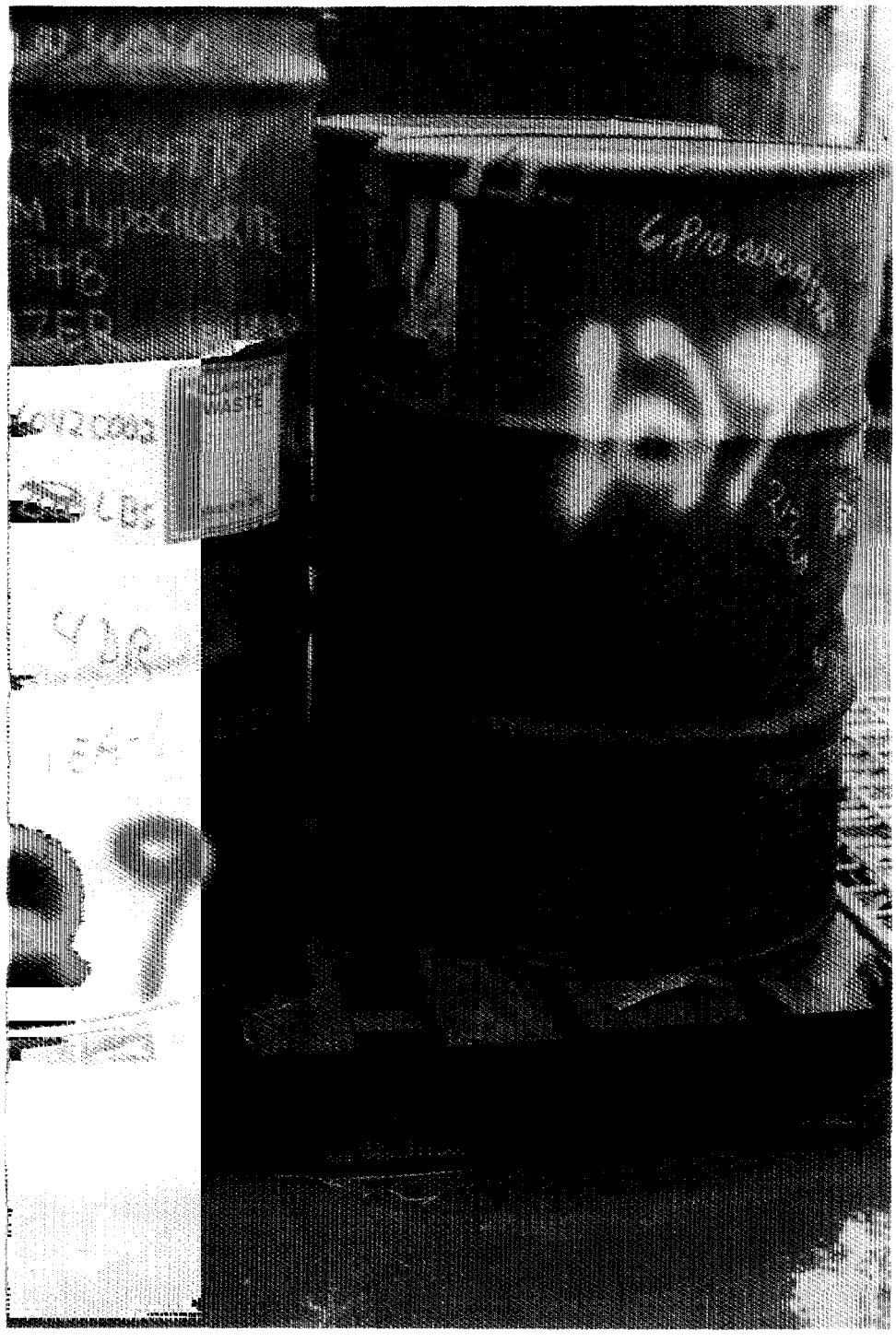
**Table 2.2: Types of Violations in 1985 and 1986**

| | Class I violations | | | | | |
|---|---|---|---|---|---|---|
| | 1985 | | 1986 | | | |
| **Requirements** | **First** | **Second** | **First** | **GAO requested** | **Total** | **All violations** |
| Use/management of containers | 4 | 2 | 0 | 8 | 14 | 23 |
| Pretransport | 5 | 3 | 0 | 3 | 11 | 31 |
| Manifest | 3 | 0 | 2 | 0 | 5 | 9 |
| Contingency plan | 2 | 0 | 0 | 2 | 4 | 9 |
| General facility standards | 0 | 0 | 2 | 0 | 2 | 4 |
| Disposal | 1 | 0 | 0 | 0 | 1 | 1 |
| Preparedness/prevention | 0 | 0 | 0 | 1 | 1 | 1 |
| Recordkeeping/reporting | 0 | 0 | 1 | 0 | 1 | 1 |
| **Total** | **15** | **5** | **5** | **14** | **39** | **79** |

Figure 2.1 illustrates a Class I violation of both the use and management of containers and general facilities requirements—an improperly stored drum containing a hazardous waste solvent. Adequate steps had not been taken to keep the waste from entering the ground in the event of a leak: the waste had not been stored on an impermeable floor, there were no raised edges or dikes to contain a spill, and there was no protection from the weather, as required by RCRA. Figure 2.2 shows a punctured container of hazardous waste, which is a violation of the requirements associated with the use and management of containers.

**Figure 2.1: Hazardous Waste** (in Foreground) **Improperly Stored at Navy Ship Repair Facility in Guam**

**Figure 2.2: Drum of Calcium Hypochlorite Bleach in a Punctured Container Awaiting Shipment From the DRMO in Guam**



## Pollutants Discharged Into Storm Drains or Directly on the Ground

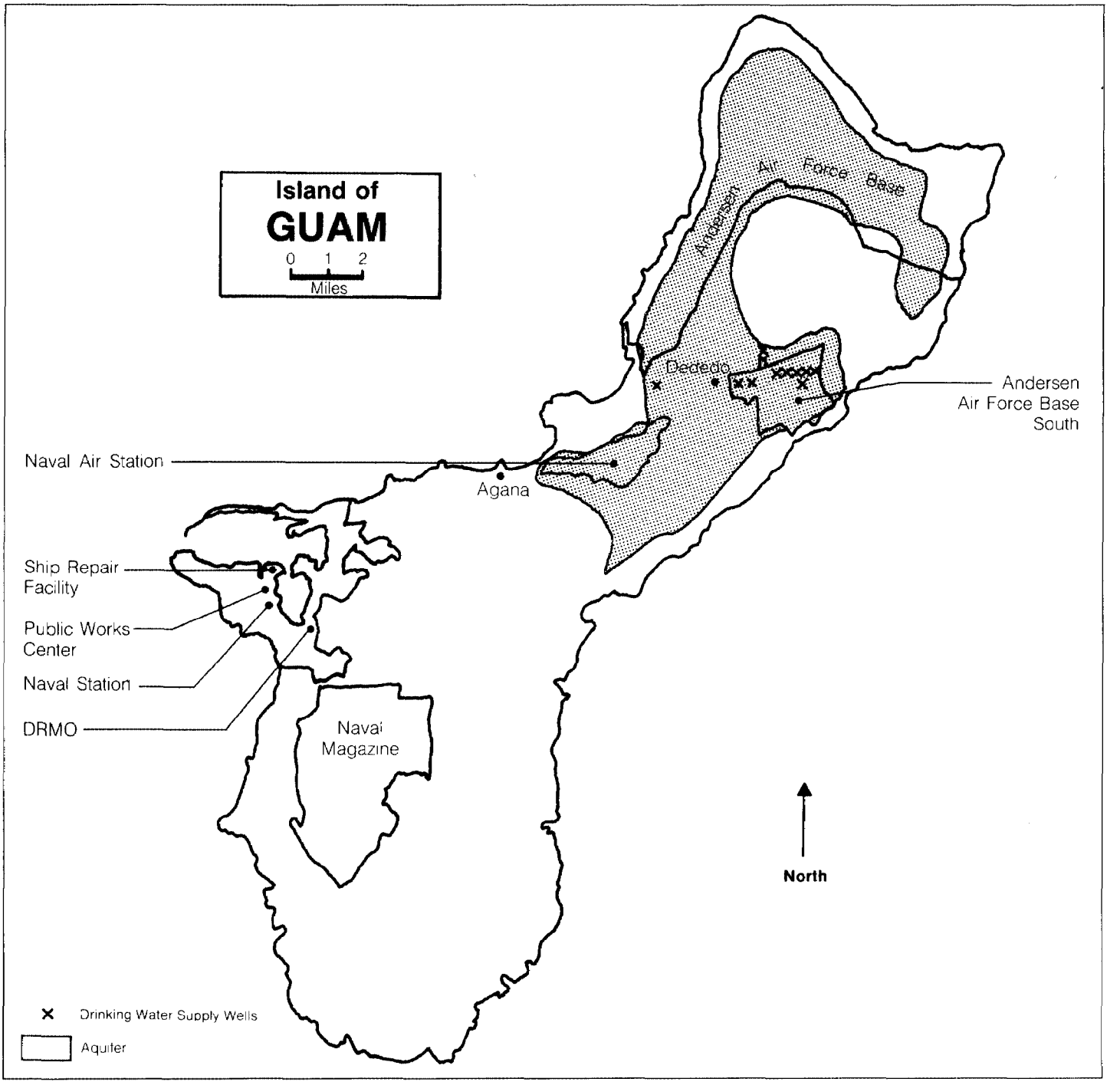
Although the Air Force and Navy installations in Guam have established procedures and provided training programs on how to handle, store, and dispose of hazardous waste, we observed instances where maintenance activities had improperly dumped or spilled hazardous waste. The improper dumping or spilling of hazardous waste at the Guam Naval Complex damages the environment on base and contaminates the ocean near the shore. With the exception of the Naval Air Station, contamination of the groundwater on base is of less concern because the groundwater at the Guam Naval Complex is not used as drinking water.

Since the Naval Air Station and Andersen AFB are located over Guam's aquifer,[2] the dumping or spilling of hazardous waste is of more concern at Andersen AFB because there are a large number of dry wells located on base. (See figure 2.3.) The storm water drainage system at Andersen AFB consists of more than 100 storm drains, which rapidly remove surface runoff water into the aquifer through dry wells.[3] As a result, these storm drains and dry wells can act as direct conduits for contaminants to enter the aquifer. Of the nine base maintenance shops and facilities we toured, we found that eight were still discharging pollutants, such as ethylene glycol (antifreeze) and cleaning solution (detergent), into storm drains or directly on the ground.

[2]In 1978, the groundwater resources of northern Guam were designated a "principal source aquifer" in recognition of their extraordinary importance as the primary source of drinking water for about three fourths of the island's population. The designation noted that aquifers are vulnerable to contamination and consequently require constant attention to protect against degradation.

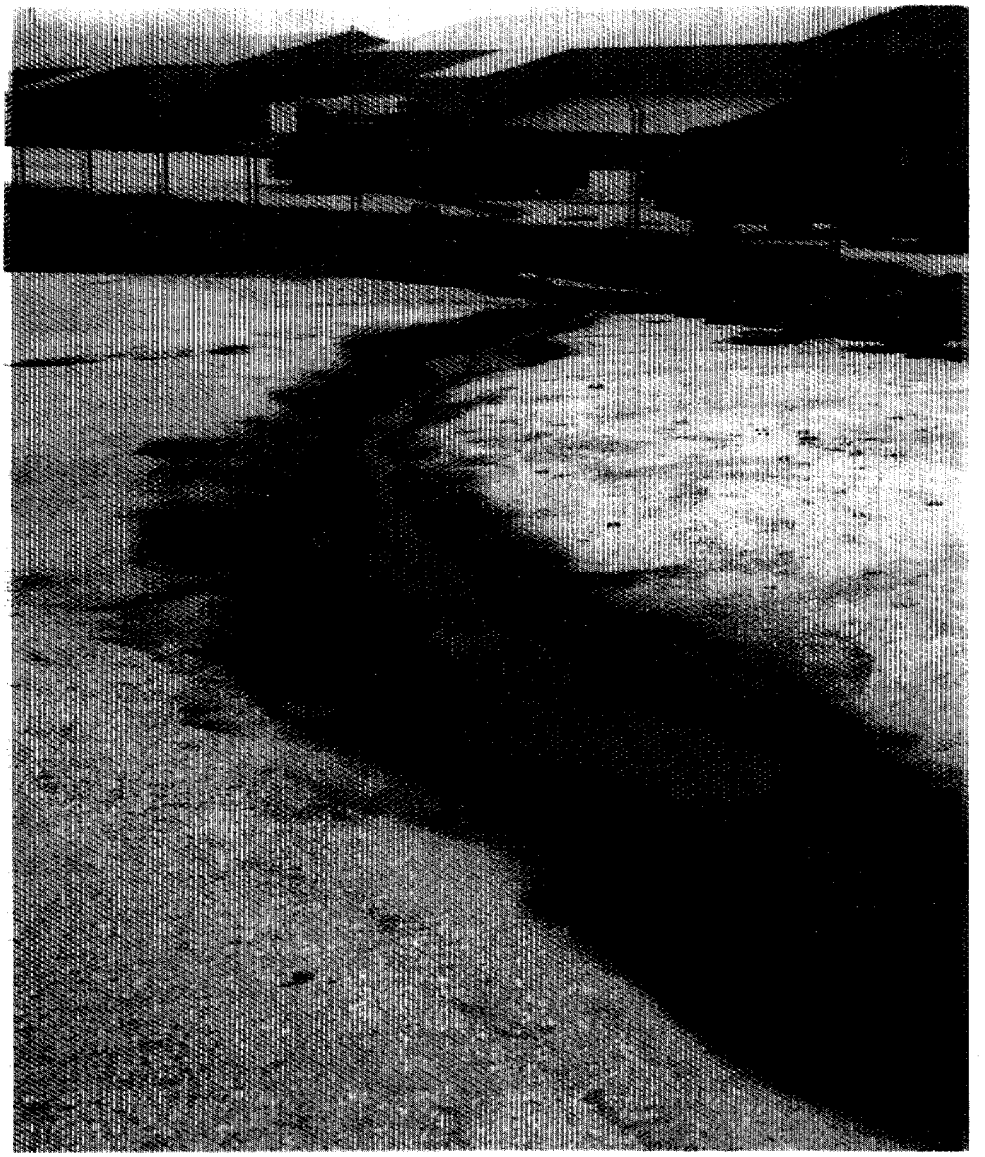
[3]Dry wells are holes drilled into the ground to facilitate the recharge of the aquifer by rainwater runoff.

**Figure 2.3: Map of Guam Showing DOD Installations and the Aquifer**



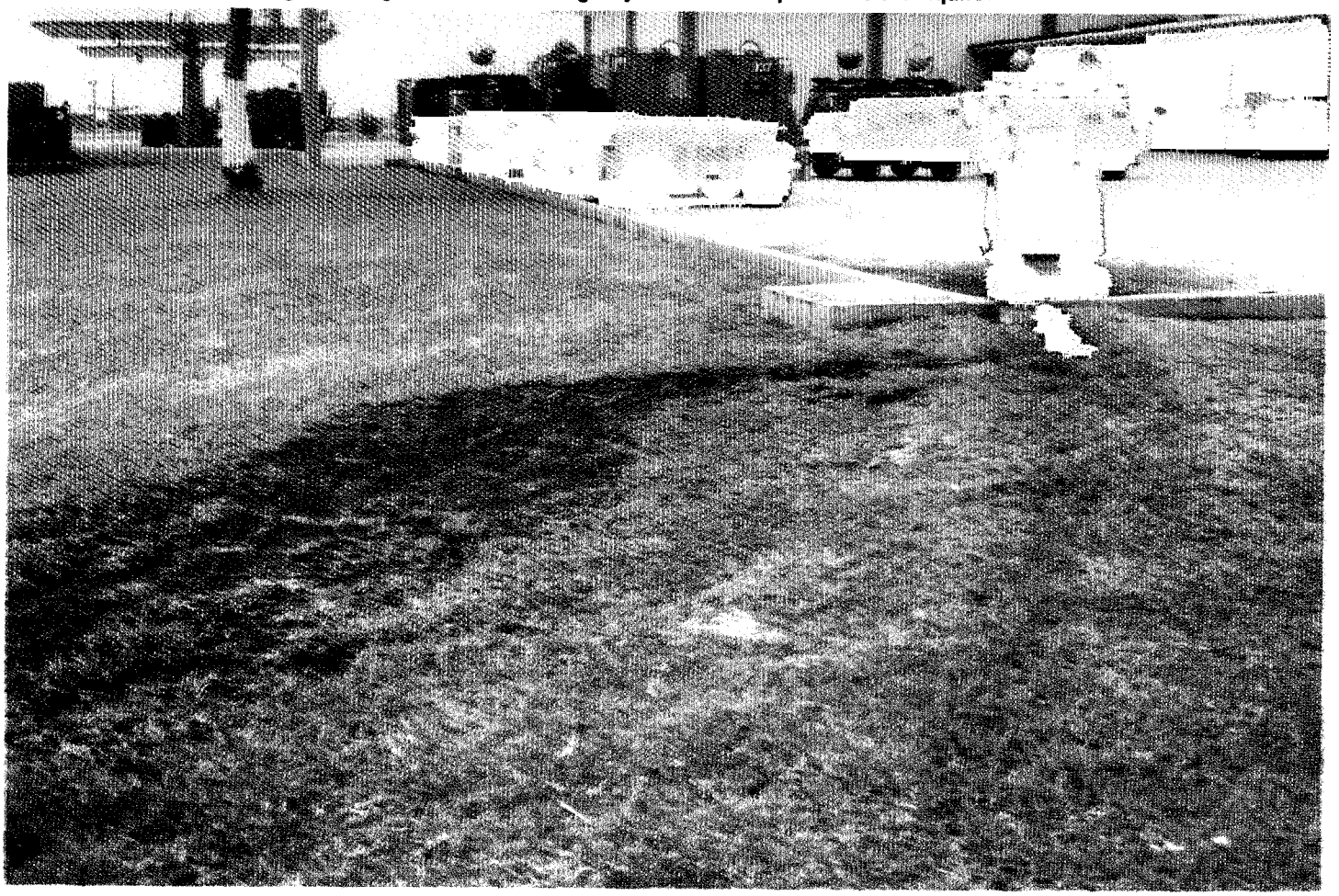
During our tour of the vehicle maintenance shop, we observed antifreeze and other contaminant spills, which drained either into the storm drain system or directly on the ground. We followed the storm drain from the vehicle maintenance shop and found that it empties into an area located over the aquifer. Figure 2.4 shows that contaminant spills at Andersen AFB's vehicle maintenance shop drain directly into the ground.

**Figure 2.4: Pollutants Discharged Directly on the Ground**



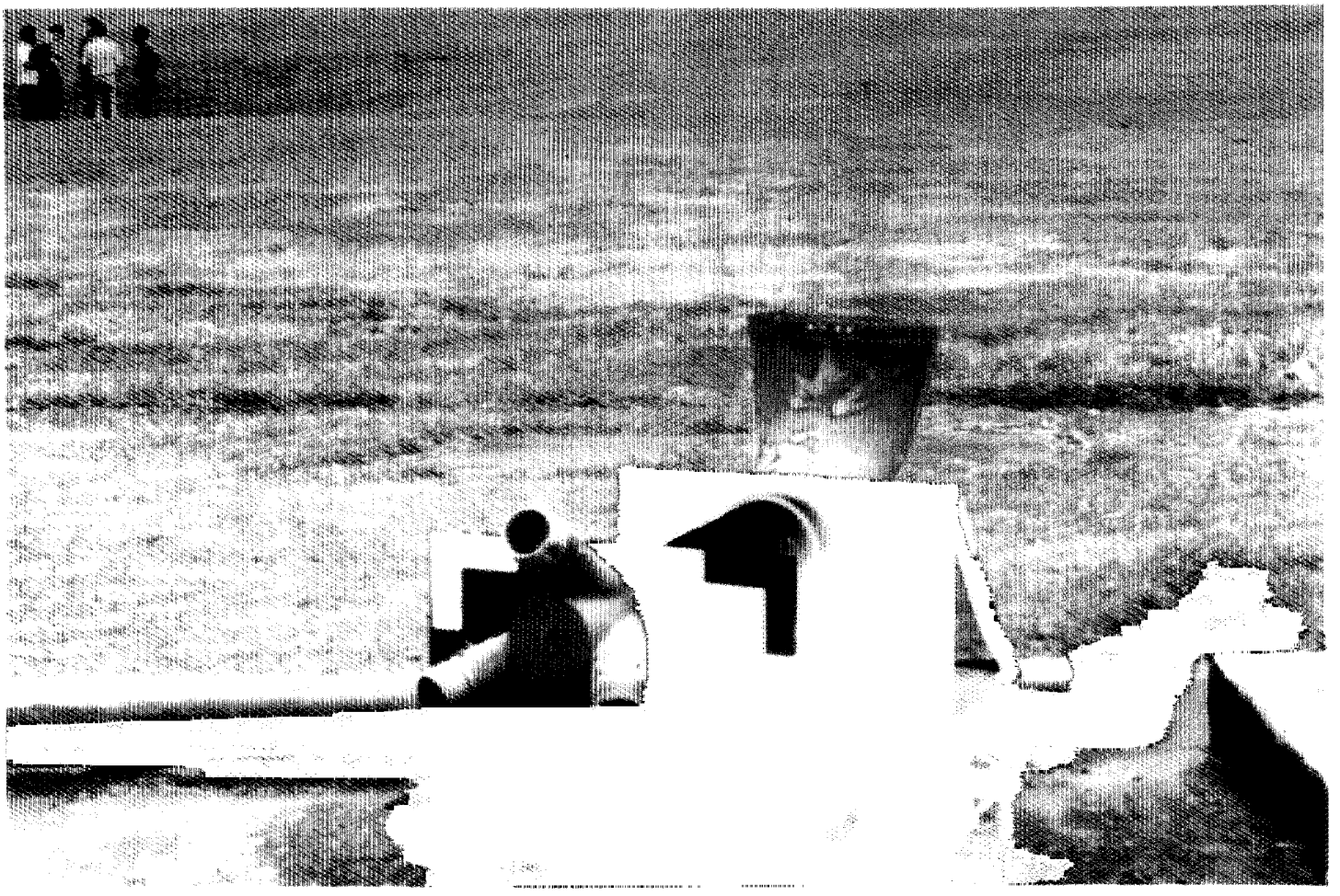
Figures 2.5 and 2.6 show pollutants from the aircraft ground maintenance shop being discharged directly into the storm drain system that empties into the aquifer. Andersen AFB had built a retaining wall around the maintenance area to trap any spilled hazardous waste. This retaining wall permitted the collection and proper disposal of the hazardous waste before it reached the environment. However, as shown, a hole had been made in the retaining wall, thus permitting the waste to run out on the ground and into the drainage system that empties into the aquifer.

**Figure 2.5: Pollutants Being Discharged Into the Drainage System That Empties Into the Aquifer**



While the vehicle maintenance shop obtained a work order to correct the drainage problem, other maintenance shops and facilities continued to discharge pollutants on the ground or into the storm drains. Officials at Andersen AFB stated that efforts had been made to educate maintenance personnel on the possible adverse effects of improperly discharging pollutants. They also stated that the constant turnover of maintenance personnel and the lack of staff to adequately inspect the hazardous waste generators were major causes of the improper handling of hazardous

**Figure 2.6: GAO and Air Force Officials Inspect a Dry Well Where Pollutants From the Ground Maintenance Shop Could Enter the Aquifer**



waste. They agreed that more should be done to prevent these improper practices, such as (1) making training in hazardous waste handling procedures part of the indoctrination procedures for incoming personnel who will be working in areas that could generate hazardous waste, (2) providing adequate collection containers and storage space in the maintenance shops, and (3) revising inspection procedures and job descriptions to ensure that someone is designated as the hazardous waste inspector and conducts inspections on a regular basis.

## Manifest Problems

Regulations implementing RCRA require that the transfer of hazardous waste to a disposal facility be documented using the EPA's manifest system. The manifest document is the EPA-required form used for recording the shipment of hazardous wastes from the generator to the disposal site. Hazardous waste generators are responsible for preparing the manifests and confirming that the waste is delivered to the designated disposal site. A copy of the manifest accompanies the shipment, is used by the disposal site to record wastes received, and is returned to the generator to allow confirmation that the wastes reached the disposal site.

DRMO has primary responsibility for disposing of hazardous waste generated by DOD in Guam. As such, DRMO is responsible for preparing manifests and confirming that the quantities of wastes recorded on the manifests are delivered to the designated disposal sites. To determine if DRMO adequately tracks the transfer of waste to disposal sites, we examined the seven manifests and other disposal documentation for its last contract shipment, which left Guam in January 1986.

### Disposal Documentation

The first step in shipping hazardous waste off the island is for the DRMO to develop a detailed list of waste on hand to be shipped. This list is converted into a delivery order and forwarded to the DRMO contracting officer at the Defense Reutilization and Marketing Region in Ogden, Utah. The contracting officer then sends the delivery order to the contractor, who has a specified period of time to pick up the wastes. From the delivery order the contractor prepares pickup orders, which list the material by type of waste he intends to pick up for each shipment.

When the disposal contractor arrives at the DRMO, he works with the DRMO staff to prepare the required EPA manifests.

## Quantity Manifested Was Not Equal to Quantity Received at the Treatment, Storage, or Disposal Facility

According to the seven manifests for the last commercial disposal contract shipment from Guam, the DRMO shipped 13,588 pounds of bulk hazardous waste and 14,216 gallons of hazardous waste in 460 drums. Our review of the manifests and other disposal documentation showed that the disposal site had received the bulk waste with little variation from what was listed on the manifests. However, on two of the seven manifests, we found significant discrepancies[4] in that the net number of containers noted as having been received at the disposal site was less than what was listed by DRMO as having been shipped. As an example of a significant discrepancy, one line item on one of the seven manifests listed five drums of waste battery acid as having been shipped, while only one drum was shown as having been received at the disposal facility.

According to EPA regulations, when significant discrepancies are discovered, the owner or operator of the disposal facility is required to attempt to reconcile the discrepancies with the waste generator or transporter. Discrepancies that cannot be resolved within 15 days must be reported by the disposal facility to EPA. As of October 1986, 9 months after receipt of the shipment, the discrepancies noted on the manifests had not been reported by the disposal site officials to EPA.

As of September 1986, the DRMO had not reconciled the discrepancies between the amount listed on the manifests as having been shipped and the amount recorded on the manifests as having been received by the disposal site operator. DRMO officials stated that they do not attempt to reconcile the differences because they use the Integrated Disposal Management System in addition to EPA's manifest system to track the waste. They believe that their management system is more accurate than EPA's system.

DRMO officials told us that the Integrated Disposal Management System, a computerized system for tracking DRMS materials, including hazardous waste, permits DRMS to track each container of hazardous waste from the time the DRMO receives the waste until it is disposed of. The delivery orders and pickup orders, which list each container, are used to record the movement of the waste in the system.

[4]EPA regulations state that significant discrepancies in quantity are (1) for bulk waste, variations greater than 10 percent in weight and (2) for batch waste, any variation in piece count, such as a discrepancy of one drum in a truckload.

As part of the Integrated Disposal Management System, DRMO maintains an inventory of all hazardous waste on hand, ready for shipment, and shipped for disposal. During our examination of the hazardous waste stored at the DRMO, we tried to trace some of the items in the storage area to the Integrated Disposal Management System inventory. In addition, we tried to trace items from the inventory to the actual containers in the storage area.

We could not find listings in the inventory of several items located in the storage area. Also, we could not locate in the storage area some of the items listed in the inventory. These problems indicate that the Integrated Disposal Management System may not adequately track the waste as was suggested by DRMO officials. DRMO officials stated that they had procedures for accounting for all hazardous waste, but they were aware that the lack of adherence to procedures on the part of some of their staff has in the past caused some problems in accounting for all of the hazardous waste.

Our review of the disposal documentation showed that no reconciliation had been made between what was listed on pickup orders, what was manifested, what was actually loaded on the disposal contractor's ship, and what was recorded in the Integrated Disposal Management System.

Because the hazardous waste disposal documentation had been inadequately maintained and discrepancies in documentation had not been reconciled, we could not determine if drums shown on the manifests as shipped by DRMO but not recorded as received by the disposal site had been disposed of properly.

## Inadequate Disposal Service

In order to comply with the RCRA regulation limiting temporary storage to 90 days and to limit the need for storage facilities, DOD requires timely disposal of hazardous waste. In 1980, this responsibility was transferred from DOD installations to DRMS. DRMS has encountered difficulties in providing timely service for the disposal of hazardous waste from the Guam installations because of a lack of capable contractors in the Pacific area willing to bid on the disposal contracts. A DRMO report showed that, as of July 31, 1986, 97 percent of the containers of hazardous waste awaiting disposal had been in storage for over 90 days.

The DRMO has been cited for various RCRA violations involving improper storage. Our inspection of the DRMO storage area showed that hazardous

waste was being stored in facilities that did not conform to EPA requirements, such as protection from the weather and spill containment.

DRMS has taken steps to improve contracting for commercial disposal services. It has worked with the contractors who submitted bids in response to the latest solicitation to try and solve the technical deficiencies of their proposals.

While DRMS has been working with the bidders, the Guam DRMO has contracted with the Military Traffic Management Command (MTMC) to ship hazardous waste to the continental United States for disposal.

## Most Violations Were Repetitive

In commenting on our observations, unit commanders stated that violations we had noted were of a transitory nature. We agree that some violations may have lasted briefly or violations may have been corrected shortly after Guam's EPA inspections. However, as noted previously, the Air Force and Navy installations have often been cited for the same category of violations in succeeding semiannual inspections. Our analysis of Guam's EPA inspection reports showed that 21 of the 33 violations, or 64 percent, cited in calendar year 1986 were in the same categories as the 1985 violations.

Unit commanders at the two DOD installations gave us their opinions of why their particular installations were in violation of RCRA. Though not necessarily applicable to each installation, the causes cited by the commanders were (1) lack of cooperation by tenants who report to commands other than the one to which the installation commander reports, (2) inattention to administrative matters by base personnel handling hazardous waste, (3) insufficient staff to make regularly scheduled inspections, (4) high staff turnover, (5) lack of storage facilities that meet RCRA requirements, and (6) climatic conditions (high humidity and rain) on Guam which cause rusting.

## Prior GAO and DOD Reports

The RCRA violations documented during our review of the two DOD installations in Guam were similar to the violations cited in our May 1986 report and a July 1986 DOD Inspector General's report.[5] Our report, Hazardous Waste: DOD's Efforts to Improve Management of Generation, Storage, and Disposal (GAO/NSIAD-86-60, May 19, 1986), noted that many

[5]Review of Hazardous Material/Hazardous Waste Management Within the Department of Defense, July 17, 1986.

DOD installations in the United States have yet to achieve full compliance with RCRA requirements and that DOD could do more to reduce the volume of waste requiring disposal. Reasons cited for noncompliance included the lack of command level emphasis on management of hazardous waste, the lack of storage facilities conforming to RCRA requirements, and the installation commanders' lack of authority over tenants. Officials at DOD installations located in the United States stated that, in addition to the above reasons, noncompliance was caused by (1) inattention to administrative matters by installation personnel handling hazardous waste and (2) insufficient staff to inspect generators regularly.

DOD, at the time we issued our 1986 report, issued a policy directive for hazardous waste management, and the services were implementing it worldwide. The policy incorporated the proposals we had made in a draft of the report sent to DOD for its comment. DOD's efforts to improve the hazardous waste management program are still in progress.

The July 1986 DOD Inspector General's report summarized the results of a worldwide review of DOD's hazardous waste management, including installations in Guam. It found that DOD was not in compliance with RCRA and that DOD's management of hazardous materials and hazardous waste was unsatisfactory. Specifically, the Inspector General cited

- limited DOD hazardous waste technical guidance (it is a broad policy statement only, and the major command and installation guidance implementing this policy is fragmented and at times inconsistent with RCRA requirements);
- lack of effective structured management (at various levels management is by committee, often without adequate guidance);
- lack of command awareness/emphasis and limited technical expertise of people handling the waste; and
- lack of communication at all levels.

## Efforts to Improve

Air Force, Navy, and DRMO officials stated that, during the last year, they have initiated several actions to improve hazardous waste management. These include

- instituting new inspection and accountability procedures for waste transferred to the DRMO;
- using alternatives to disposal such as selling, reusing, and recycling the waste;
- building new storage facilities that conform to RCRA requirements; and

- using nonhazardous materials instead of hazardous materials, thereby reducing the amount of hazardous waste generated.

## Conclusions

Despite instructions on the proper procedures for managing and disposing of hazardous waste, most DOD activities in Guam which generate hazardous waste are repeatedly cited for RCRA violations. We believe that inadequate emphasis has been placed on (1) the importance of complying with the procedures for handling, storing, and disposing of hazardous waste, (2) education and training programs for personnel on the dangers of mishandling these wastes, and (3) the need for sufficient inspection and enforcement activities at the base level.

Although RCRA requires that the transportation and disposal of hazardous waste be tracked using the EPA manifest system, the Guam DRMO relies on its Integrated Disposal Management System to track hazardous waste shipments rather than using the required EPA manifest system. Our analysis showed that the Integrated Disposal Management System contained some inaccurate information and variances in disposal documentation and Integrated Disposal Management System data were not reconciled. As a result, we believe the DRMO is not assured that the quantities of hazardous waste shipped are being disposed of properly.

## Recommendations

We recommend that the Secretary of Defense direct

- Air Force and Navy officials in Guam to take actions to ensure that all personnel handling hazardous waste know the proper procedures for disposing of the waste so as to eliminate the dumping of wastes in ways that could contaminate the environment and
- DRMO officials in Guam to place more emphasis on their procedures for reconciling discrepancies between what is listed on each disposal document for hazardous waste including delivery orders, pickup orders, manifests, and the Integrated Disposal Management System.

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