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

March 1986

HAZARDOUS WASTE

Review of Selected Air Force Hazardous Waste Reports

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National Security and
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March 31, 1986

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

Dear Mr. Chairman:

In September 1985 your staff asked us to review 30 contractor-developed Installation Restoration Program (IRP) Phase I reports and to identify issues which merit the subcommittee's attention. Phase I identifies areas of potential environmental contamination due to hazardous waste disposal at installations. We have reviewed these reports, compared them to the procedures outlined in the Air Force's Installation Restoration Program Management Guidance, discussed our analysis with agency officials, and reviewed data relating to these reports contained in Air Force summary reports such as the Installation Restoration Program Status Report. In accordance with discussions with your office, we did not attempt to validate the data contained in the Phase I reports with the bases or the contractors.

Based on the data contained in the 30 reports, it appears that the studies were made in accordance with the guidance provided. In addition, we noted that in each of the cases where Phase II work has begun, the Air Force has included all of the sites recommended by the Phase I contractors and, in some cases, has added sites. Phase II includes sampling the sites for suspected contaminants and analyzing the samples to confirm whether there is contamination.

Each potential hazardous waste site is rated using the Air Force's Hazard Assessment Rating Methodology (HARM) and is assigned a HARM score. This score provides the Air Force a relative indication of the potential for contamination over a wide range of sites and conditions. In 14 of the reports, the Phase I contractors did not recommend Phase II actions for sites with HARM scores that were higher than the scores for similar sites which were recommended for Phase II action. An Air Force official told us that a thorough analysis would be necessary to determine why the inconsistencies in recommendations relative to the HARM scores existed. We were also told that, while the method for computing a HARM score primarily uses

objective factors, some subjective evaluations had to be made by the Phase I contractors. The results of our analysis are presented in appendix I, data on Phase II recommendations are presented in appendixes II and III, and our analysis of selected Phase I study requirements is in appendix IV.

In accordance with your wishes, we did not request the Department of Defense to review and comment officially on a draft of this report.

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 issuance. At that time, we will send copies to the Secretary of Defense and other interested parties and make copies available to others upon request.

If you have any questions, please call me on 275-4262.

Sincerely yours,

Harry R. Finley
Senior Associate Director

Contents

ABBREVIATIONS

HARM	Hazard Assessment Rating Methodology
IRP	Installation Restoration Program

ANALYSIS OF AIR FORCE PHASE I STUDIES

STUDIES APPEAR TO BE MADE IN ACCORDANCE WITH AIR FORCE GUIDANCE

We reviewed the 30 contractor-developed Air Force Installation Restoration Program (IRP) Phase I reports. (See app. II.) These reports identify areas of potential environmental contamination due to hazardous waste disposal at installations and assess the probability of contaminant migration that could adversely affect public health and/or the environment. Based on the data contained in the 30 reports, it appears they were generally made in accordance with the Air Force's Installation Restoration Program Management Guidance. The guidance requires each contractor to perform certain actions to determine whether a base has disposal sites that could be contaminating the environment. Appendix IV lists these actions and how the contractors' included them in their Phase I reports. Because the Air Force guidance did not assign a weight or significance to the various required actions, we did not assign any more significance or importance to one action over another.

The scope and methodology section of the reports indicated that the study teams performed a number of these actions, such as determining the history of the bases and their related missions, reviewing files, interviewing past and present employees, and obtaining information from the applicable regulatory agencies.

The reports were organized along the lines set out in the guidance. They contained chapters outlining the purpose, scope, and methodology; location, history, and mission; environmental setting; findings developed; and conclusions reached. All but two reports contained recommendations for Phase II actions.

Table I.1 lists the contractors for the 30 reports.

Table I.1: Phase I Contractors

Contractor	Number of reports
Engineering-Science, Atlanta, Georgia	12
JRB Associates, Bellevue, Washington	5
Reynolds, Smith, and Hills, Inc., Jacksonville, Florida	4
Environmental Science and Engineering, Inc., Gainesville, Florida	3
Roy F. Weston, Inc., West Chester, Pennsylvania	3
CH2M Hill, Gainesville, Florida	2
Hazardous Materials Technical Center, Rockville, Maryland	1

Generally the studies took about 5 to 6 months to complete and used teams consisting of 3 to 4 members. The teams included members from one or more of the following fields of expertise: geology, chemical engineering, ecology, environmental engineering, and hydrogeology. All but two of the studies were conducted between January 1984 and July 1985. The other two studies were made in 1982. Air Force guidance states that on-base visits should be about 5 working days. In the reports where there was data on the subject, the length of time the contractors spent at the bases averaged about 5 working days each.

In analyzing the data, the contractors used the Air Force's "Records Search Methodology Decision Tree," as required by the guidance, to determine whether or not the potential for contamination at a disposal site warranted that site being recommended for further work under Phase II. Using the data collected, each site at a base was rated using the Air Force's Hazard Assessment Rating Methodology (HARM) and given a HARM score. The HARM score provides the Air Force with a relative indication of the potential for contamination over a wide range of sites and conditions. HARM scores may vary from 1 (low level or no contamination) to 100 (high contamination). The Air Force guidance does not provide that a site with a HARM score above a certain point be recommended for Phase II. An Air Force official told us that the HARM score ranking is one of the primary factors used for determining whether a site will be recommended for Phase II work.

Appendix II lists the 30 bases where the Phase I studies were made. It also shows the number of sites identified by the Phase I contractors, number of sites recommended for Phase II, and sites where Phase II work has begun. In these 30 reports, Phase II work was recommended for

--all the sites at 6 bases,

--at least half the sites at 15 bases,

--less than half the sites at 7 bases, and

--none of the sites at 2 bases.

The reasons given in the reports for not recommending Phase II work included

--no evidence of hazardous waste,

--small amounts of pollutants used in the area, or

--soil conditions were not conducive to contaminant migration.

INCONSISTENCIES IN HARM SCORES FOR SITES RECOMMENDED FOR PHASE II

In four of the reports[1] we found that the contractors did not recommend Phase II action for one or more sites with HARM scores higher than the HARM score for other sites located on the same base which were recommended for Phase II action. For example, at Laughlin Air Force Base, Texas, the Phase I contractor identified an underground storage tank that had been used for storing hazardous waste and gave it a HARM score of 59. However, it was not recommended for Phase II action, while a hazardous waste sludge disposal area with a HARM score of 44 was recommended for Phase II action.

In 14 reports[2] we found that the Phase I contractors had not recommended Phase II action for hazardous waste sites with a higher HARM score than the scores for similar sites which were recommended for Phase II action in other reports. (See app. III.) For example, a fire protection training site at Minot Air Force Base, North Dakota, with a HARM score of 47 was recommended for Phase II while a fire fighter training site at the Arnold Engineering Development Center, Tennessee, with a HARM score of 58 was not. The Air Force later decided to include the Tennessee site in Phase II.

From the data contained in the reports we could not ascertain why sites with higher HARM scores were not recommended for Phase II action while other sites with lower scores were recommended for Phase II. The Assistant for Environmental Quality, Office of the Deputy for Environment and Safety, in the Office of the Deputy Assistant Secretary of the Air Force (Installations, Environment and Safety), said he could not tell us why this happened without doing a thorough analysis of the data contained in the Phase I reports. He also stated that, while the method for computing a HARM score primarily uses objective factors, some subjective evaluations have to be made by the Phase I contractors. In those cases where there are variations in the Phase I contractors' conclusions, he said it is the Air

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[1]Air Force Plant PJKS, Laughlin AFB, Malmstrom AFB, and Mather AFB.

[2]Air Force Plant 59, Air Force Plant PJKS, Arnold Engineering Development Center, Columbus AFB, 15th ABW, Hanscom AFB, Lackland AFB, Laughlin AFB, Little Rock AFB, Malmstrom AFB, Mather AFB, Norton AFB, Shemya AFB, and Wake Island Airfield.

Force's responsibility to ensure that the differences in subjective evaluations are kept to a minimum.

He also told us that many of the Phase I contractors have been very conservative in assigning a HARM score to a site. As a result, he said, in a number of instances the Air Force has taken a close look at the contractors' recommendations and has usually decided to include more sites in Phase II than were recommended by the Phase I contractors.

The November 1985 Air Force IRP Status Report showed that for the 30 Phase I reports we looked at, 10 had begun Phase II work. For 7 of the 10, the Air Force had decided to do Phase II work at more sites than the Phase I contractors had recommended. For example, the Phase I contractor identified 23 possible hazardous waste sites at Mather Air Force Base, California. However, after the contractor had completed its work, it only recommended 11 sites for inclusion in Phase II. The Air Force, after further analyzing the contractor's data, decided to do Phase II work at 9 additional sites, bringing the total to 20.

For the other three bases where Phase II work had started, the Air Force has included all of the sites recommended by the Phase I contractor in Phase II.

PHASE I STUDIES AND NUMBER OF SITES RECOMMENDED FOR AND INCLUDED IN PHASE II

Base	Number of sites		
	Total	Recommended for Phase II	Included in Phase II
Air Force Plant 59, NY	2	1	2
Air Force Plant PJKS, CO	9	6	11[a]
Andrews AFB, MD	14	14	*
Arnold Engineering Development Center, TN	17	12	17
Idaho Air National Guard, Boise, ID	13	6	*
Bolling AFB, DC	3	3	*
Brooks AFB, TX	9	8	*
Columbus AFB, MS	15	13	*
Fairchild AFB, WA	22	12	12
15th ABW Satellite Installations, HI	15	13	*
Fort McArthur, CA	9	0	NA
Goodfellow AFB, TX	4	3	*
Hanscom AFB, MA	13	9	13
Lackland AFB, TX	7	3	*
Laughlin AFB, TX	9	5	*
Little Rock AFB, AR	13	3	*
Los Angeles AFS, CA	5	2	*
Malmstrom AFB, MT	19	16	19

[a]Two additional sites were found by the Air Force after the Phase I contractor issued its report.

Base	Number of sites		
	Total	Recommended for Phase II	Included in Phase II
Mather AFB, CA	23	11	20
Minot AFB, ND	9	3	3
Norton AFB, CA	20	12	14
Pittsburgh International Airport, PA	6	6	*
Pope AFB, NC	6	6	*
Randolph AFB, TX	6	4	*
Scott AFB, IL	7	7	*
Shemya AFB, AK	28	13	*
Sunnyvale AFS, CA	6	0	NA
Wake Island Airfield	15	12	*
Willow Grove Air Reserve Facility, PA	7	7	*
Youngstown Municipal Airport, OH	5	4	4

Notes:
* - Phase II work not begun.
ABW - Air Base Wing
AFB - Air Force Base
AFS - Air Force Station
NA - Not applicable

APPENDIX III

COMPARISON OF HARM SCORES OF SITES RECOMMENDED AND NOT RECOMMENDED FOR PHASE II BY TYPE OF SITE

Type of site	Lowest score recommended for Phase II	Highest score not recommended for Phase II	Number of sites not recommended for Phase II with higher HARM scores
Landfills, disposal sites, and waste pits	35	53	15
Spills and leaks	40	55	11
Fire protection training area	47	58	7
Explosive/ordnance testing or disposal	38	51	6
Drum storage/disposal	36	50	4
Evaporation ponds and leach pits	43	51	2
Drainage or run-off	52	56	2
Storage tanks or facilities	48	60	2
Outside storage yards	50	57	1
Sludge disposal	44	53	1
Underground storage tanks	56	59	1

ANALYSIS OF SELECTED

PHASE I STUDY REQUIREMENTS

To determine if the contractors made the Phase I studies in accordance with the requirements of the Air Force's Installation Restoration Program Management Guidance, we tested selected required Phase I actions which are listed in table III.1. Even though the resulting Phase I reports do not always document that a required action was taken during the study, it may not mean that the study was deficient in that area. For example, pre-performance meetings are required by the Air Force guidance. At the meetings, the study teams were to obtain data on the bases' history, mission, and organization among other things. We found that 20 of the reports did not mention the pre-performance meeting, but we found the reports contained sections addressing the history, mission, and organization of the bases.

Table III.1: Selected Required Phase I Study Actions

Required action	Included in study report	Not included in study report
Pre-performance meetings	10	20
Use of expert staff	30	-
Data on environmental aspects:		
Geological	30	-
Hydrogeological	30	-
Ecological	30	-
Environmental	28	2
Data obtained from regulatory agencies	30	-
Maps	30	-
Data obtained from overflights	12	18
Decisions made using Records Search Methodology Decision Tree	30	-
Rated sites using HARM score	28	2
Base photographs to support findings	21	9
Data on former tenants' operations	28	2
Data on spills or leaks	27	3
Data from drinking water well logs	19	11
Data from monitoring well logs	9	21
Spill contingency plans	8	22

In 12 of the 30 studies, overflights were made to look for indications of possible environmental damage caused by hazardous

waste disposal sites. In eight instances, overflights were not made because of inclement weather, the small size of the base, or aircraft were not available. In the remaining 10 studies, there was no mention of whether an overflight was made.

We also found that seven bases did not use drinking water wells, so there was no opportunity for the teams to test the well water for contaminants.

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