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Hazardous Waste Minimization Technology

CONCEPTUAL BASIS FOR A HAZARDOUS WASTE COMPONENT OF THE ARMY ENVIRONMENTAL DATA MANAGEMENT SYSTEM (AEDMS)

by
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FOREWORD

This research was conducted for the Army Environmental Office, Office of the Chief of Engineers (OCE) under Project 4A162720A896, "Environmental Quality Technology"; Work Unit BO-053, "Hazardous Waste Minimization Technology." The OCE Technical Monitor was LTC J. Stratta, DAEN-ZCE.

The work was performed by the Environmental Division (EN), U.S. Army Construction Engineering Research Laboratory (USA-CERL). Byung Kim was the Principal Investigator. Douglas Canete is employed by Argonne National Laboratory and Eric Pluckhorn was a cadet at the Military Academy working at USA-CERL under an Interagency Personnel Agreement. Dr. R. K. Jain is Chief, USA-CERL-EN. The Technical Editor was Gloria J. Wienke, USA-CERL Information Management Office.

COL Carl O. Magnell is Commander and Director of USA-CERL, and Dr. L. R. Shaffer is Technical Director.

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1 INTRODUCTION

Background

Hazardous waste management presents significant challenges for all levels of Army environmental management because of the diversity in waste type, the many installations generating waste, and the large amount of waste generated in the course of meeting the Army mission and readiness requirements. The potential liabilities associated with mismanagement of hazardous material and wastes and the ever more stringent Federal, State, and local regulations as well as Department of Defense (DOD) and Department of the Army (DA) requirements also present management challenges.

The Resource Conservation and Recovery Act (RCRA) of 1976 established the requirement for "cradle-to-grave" hazardous waste management.[1] This management method is designed to track and preserve a record of the movement of hazardous waste from its origin to its ultimate disposal. Although the Environmental Protection Agency (EPA) preferred waste reduction to waste treatment and disposal, waste reduction remained a low priority issue until the Hazardous and Solid Waste Amendments (HSWA) to RCRA were implemented in 1984. By passing the amendments, Congress declared hazardous waste minimization to be the national policy. To secure more effective voluntary implementation of HSWA, EPA imposed self-reporting and self-enforcing regulatory requirements on hazardous waste generators.

In July 1987, the Secretary of the Army established a formal hazardous waste minimization policy requiring a 50 percent reduction in the quantity of hazardous waste from the 1985 baseline by the end of 1992.[2] To fulfill the letter and spirit of HSWA, the Army is developing and implementing a hazardous waste minimization (HAZMIN) program. In 1987, a Memorandum from the Office of the Assistant Secretary of Defense allowed use of Defense Environmental Restoration Account (DERA) funds for appropriate hazardous waste minimization projects.[3]

The Army currently reports most of the hazardous waste information needed for a data management system to Federal and State authorities. Because this information is not quickly available in a form useful to managers, the Army determined that a centralized data base dedicated initially to managing hazardous waste data should be developed. The data base, called the Army Environmental Data Management System (AEDMS) will be centrally managed by DA. The U.S. Army Construction Engineering Research Laboratory (USA-CERL) is developing the initial hazardous waste component for AEDMS based on the concept developed in this study.

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[1] 40 CFR (Code of Federal Regulations), Chapter I, Subchapter I, Parts 260-280.
[2] *Memorandum: Hazardous Waste Minimization—Action Memorandum* (Office of the Assistant Secretary of the Army [OASA], 20 July 1987).
[3] *Memorandum: Hazardous Waste Minimization* (Office of the Assistant Secretary of Defense [OASD], 6 February 1987).

Objectives

The objectives of this study were to provide the Army with the conceptual basis for a nazardous waste component of AEDMS and to determine what data required for the proposed component is already being collected to meet DOD, Army, Federal, State, or local reporting requirements and is thus available without burdening Army environmental personnel with additional data collection.

Approach

Hazardous waste/hazardous material (HW/HM) management studies completed by the U.S. Army Audit Agency (AAA), Department of Defense Inspector General (DOD IG), and General Accounting Office (GAO) were evaluated.[4] Critical factors for a conceptual data management system were developed from these studies. Federal, State, local, and service-imposed HW/HM reporting and recordkeeping requirements were identified by analyzing pertinent legislation and regulations and conducting a telephone survey of engineers and managers. Finally, the conceptual basis for a hazardous waste component of the AEDMS was established. A questionnaire was sent to the various levels of Army environmental management to obtain information on reporting procedures and problems. In addition, Argonne National Laboratory assisted USA-CERL researchers in identifying future trends in reporting and recordkeeping requirements and hazardous waste regulations.

Scope

Although this study compiled and analyzed Federal and State hazardous waste regulations, it was not intended to do the same for regulations promulgated by local governments. Although many local governments adopt Federal and State hazardous waste regulations, managers are cautioned to verify local laws for additional requirements.

Mode of Technology Transfer

Based on the information gathered and evaluated during this research, USA-CERL will develop a hazardous waste component of AEDMS. The component will be turned over to the Army Environmental Office for distribution to Army users.

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[4] Department of Defense Inspector General (DOD IG), *Review of Hazardous Material/ Hazardous Waste Management Within the Department of Defense* (July 1987); U.S. Army Audit Agency (AAA), Special Report SO 88-700, *Management of Hazardous Waste* (26 October 1987); U.S. General Accounting Office (GAO), *DOD's Effort to Improve Management of Generation, Storage, and Disposal* (May 1986).

2 AVAILABLE HAZARDOUS WASTE MANAGEMENT INFORMATION

Major Federal Legislation

The increased awareness of environmental contaminations and threats to human health from hazardous waste lead to Congress passing the Resource Conservation and Recovery Act in 1976. The act calls for rigorous management of hazardous waste activities. The Toxic Substance Control Act (TSCA) was also passed in 1976 to control the introduction of toxic substances. In 1980, Congress passed the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). This act was to control cleanup of existing hazards presented by numerous abandoned hazardous waste dumps. CERCLA was amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA) to reinforce the cleanup fund, require emergency planning for communities, and refine reporting requirements. The HSWA of 1984 declared hazardous waste minimization as the national policy, and required all hazardous waste generators to initiate and certify their efforts to minimize both quantity and toxicity.

RCRA

The RCRA, an amendment to the Solid Waste Disposal Act of 1965, is the dominant solid waste regulating force in the United States. The act encourages conservation and reuse of solid waste for recovery of material and energy. Nevertheless, the focus of the act is primarily toward hazardous waste management practices. In compliance with the act, the EPA developed criteria to identify and list hazardous wastes that would be subject to regulation.

The EPA administers RCRA, and its regulations are codified in 40 CFR, Chapter I, Subchapter I, Parts 260-280. RCRA is designed to accomplish three objectives in hazardous waste management:

1. Provide a system to track and preserve a record of the movement of hazardous waste from its origin to its ultimate disposal (cradle-to-grave management),

2. Ensure that disposal of hazardous wastes is accomplished by methods that prevent the wastes from getting into the environment, and

3. Provide an enforcement mechanism to ensure compliance with the first two objectives.

To accomplish these objectives, EPA set operational standards for hazardous waste generators, transporters, and treatment, storage, and disposal (TSD) facilities. The emphasis for generators is to keep records of the quantity, components, and disposition of hazardous waste. The regulation requires generators to use a manifest system to track hazardous waste from the cradle to the grave. The regulations applying to the transporters assure safe transportation of hazardous waste from generators to TSD facilities holding appropriate permits. The standards for the TSD facilities were established through a permit program designed to ensure that hazardous waste is disposed of in a manner that protects human health and the environment.

CERCLA and SARA

After federal legislation was enacted to manage newly generated hazardous wastes, it became apparent that a separate federal program was needed to tackle the cleanup of

uncontrolled waste sites. Consequently, CERCLA was enacted and established the Superfund program to handle emergencies at abandoned sites and to clean up sites. The program contained measures to compensate for personal or environmental damages, and provisions to tax the oil and chemical industry, establish the Hazardous Substance Response Trust Fund, and appropriate monies for 5 years (ending in 1985).

In 1986, SARA authorized a significant Federal tax increase, from $1.6 billion for the first 5 years to $8.5 billion to fund projects for 5 more years. SARA imposed major modifications and reforms on CERCLA. The most unique feature is to help communities be prepared for accidental release of toxic or hazardous substances by emergency planning and reporting of toxic chemical inventories.

TSCA

The TSCA requires the manufacturer or processor of new chemical substances to test potentially toxic chemicals to determine the extent of adverse human health effects before the substance is manufactured or processed for public use. As the regulatory agency for this act, EPA is authorized to prohibit or condition the manufacture, distribution, and use of chemicals based on the test information. Manufacturers are also required to provide EPA with a premanufacturing notification (PMN) 90 days before beginning to manufacture any chemical substance not included on the TSCA Chemical Substances Inventory.

One of the chemical groups banned by this act is polychlorinated biphenyls (PCBs) or mixtures containing PCBs or PCB articles. Their alleged carcinogenic potential and ubiquity in the environment have made PCBs a target for environmental outcry banning their manufacture, processing, distribution, and use.

HSWA

The most comprehensive measures Congress took toward a safer and cleaner environment were embodied in the HSWA which amended the RCRA. The HSWA was a product of a decade of RCRA program implementation. The role of the RCRA program for the past 10 years has been to correct the mismanagement of hazardous wastes by bringing treatment, storage, and disposal facilities into compliance with national standards that are designed to protect human health and the environment. In contrast, the central emphasis of the HSWA is to minimize hazardous waste according to the Congressional declaration which states:

"The Congress hereby declares it to be the national policy of the United States that, wherever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible. Waste nevertheless generated should be treated, stored, or disposed of so as to minimize the present and future threat to human health and the environment."

Hazardous waste minimization is a preventive measure in contrast to conventional pollution control technology such as waste treatment and land disposal. Minimization of hazardous waste generation was not a new idea. In 1976, EPA issued a policy statement outlining its preferred hazardous waste management strategy, in which source reduction and recycling were favored over treatment and land disposal. However, hazardous waste reduction remained a low priority issue until HSWA was implemented.

In response to HSWA requirements, EPA imposed only self-reporting and self-enforcing regulatory requirements on generators for more effective voluntary implementation of the law. As stated in the Appendix of 40 CFR, Part 262, generators are required to sign on the manifest which reads "I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable, and I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment."

Due to the very dynamic nature and far reaching implications of the hazardous waste minimization practice, the HSWA requires the administrator of the EPA to evaluate the feasibility and desirability of:

1. Establishing standards of performance or taking additional actions under RCRA to require generators of hazardous waste to reduce the volume or quantity and toxicity of the hazardous waste they generate, and

2. Establishing required hazardous waste management practices or other requirements to ensure such wastes are managed in ways that minimize present and future risks to human health and the environment.

A recent Congressional report[5] stated that relatively low cost, unintrusive government actions based on persuation, assistance, incentives, and education seem the best current policies for a hazardous waste minimization program. An EPA report[6] concluded that mandatory performance standards or specific waste management practices to bring about waste minimization are neither feasible nor desirable in the near future. EPA believes that nonregulatory options will be among the most efficient ways to reach minimization goals, but with strong support and direction from Congress. EPA will provide resources and technical capabilities to the State which has a close knowledge of local industry.

Other Regulations and Guidelines

State and Local Regulations

Section 3006 of RCRA provides the mechanism for States to manage their own hazardous waste programs, in lieu of the Federal program, after authorization from EPA. To qualify for authorization, the state must submit State regulations which are at least as stringent as Federal requirements. Some states adopted the EPA-promulgated regulations verbatim. Some other states that had already passed regulations incorporated some features of the Federal regulations but retained features specific to their states' needs. Although local regulations are often less comprehensive than EPA and State regulations, each county, city, village, and township may have additional hazardous waste management regulations.

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[5]U.S. Congress, Office of Technology Assessment (OTA), *Serious Reduction of Hazardous Waste for Pollution Prevention and Industrial Efficiency* (Washington, DC, September 1986).

[6]U.S. Environmental Protection Agency (EPA), *Report to Congress, Minimization of Hazardous Waste* (Washington, DC, October 1986).

DOD Guidelines

An Office of the Assistant Secretary of Defense (OASD) memorandum[7] was issued to outline hazardous waste minimization plans and procedures. The DOD policy for hazardous waste has been changed from disposal in an "environmentally acceptable manner"[8] to minimization of generation of hazardous waste.

The OASD memorandum required each branch of the armed services and the Defense Logistics Agency (DLA) to assure that formal hazardous waste minimization plans were prepared and executed for their components. The memorandum also required that a summary implementation plan be submitted within 60 days. The memorandum pointed out that DERA funds could be used to promote the minimization effort. Another OASD memorandum[9] clarified the definition of hazardous waste.

The brief chronology of the DOD environmental policy can be seen from the series of Defense Environmental Quality Program Policy Memoranda (DEQPPMs). After DEQPPM 80-5 which designates the DLA as the organization responsible for hazardous waste disposal, DEQPPM 80-8[10] was written to provide additional policy guidance to implement the RCRA of 1976. DEQPPM 80-9[11] provided specific guidance on the use of PCBs and DEQPPM 81-3[12] provided additional guidance on hazardous waste spills, residue cleanup, and site restoration.

DA Guidelines

Army Regulation (AR) 200-1[13] prescribes DA policies, responsibilities, and procedures to protect and preserve the quality of the air, water, and land. Some chapters are devoted to hazardous materials and waste management programs and the control and countermeasures for oil and hazardous substance spills. The regulation directs each installation and activity having the potential to release a reportable quantity of oil or hazardous substance to prepare, maintain, and implement a current Spill Prevention Control and Countermeasure (SPCC) Plan and an Installation Spill Contingency Plan (ISCP).

AR 420-47[14] details the Solid and Hazardous Waste Management Program discussed in AR 200-1. It prescribes hazardous waste management responsibilities for the Chief of Engineers, MACOM commanders, installation commanders, facilities engineers, hazardous waste generators, and the Defense Reutilization and Marketing Office (DRMO). Installation commanders have overall responsibility for the installation hazardous waste management system, including compliance by tenant activities (Para 2-10a). The DRMO is responsible for disposal, marketing, and determining the marketability of all DOD-owned hazardous materials (Para 6-4). It also provides guidelines for developing an installation hazardous waste management (IHWM) plan that includes preparing the

[7] *Memorandum: Hazardous Waste Minimization* (OASD, 6 February 1987).
[8] *Defense Environmental Quality Program Policy Memorandum (DEQPPM) No. 80-5* (Department of Defense [DOD], 13 May 1980).
[9] *Memorandum: Definition of Hazardous Waste* (OASD, 30 May 1986).
[10] *DEQPPM No. 80-8* (DOD, 21 October 1980).
[11] *DEQPPM No. 80-9* (DOD, 10 November 1980).
[12] *DEQPPM No. 81-3* (DOD, 15 June 1981).
[13] Army Regulation (AR) 200-1, *Environmental Protection and Enhancement* (Headquarters, Department of the Army [HQDA], June 1982).
[14] AR 420-47, *Solid and Hazardous Waste Management* (HQDA, 1 December 1984).

hazardous waste inventory, identifying TSD facilities, and specifying acceptable operational procedures.

An Office of the Assistant Secretary of the Army (OASA) memorandum[15] required the major commands (MACOMs) to develop and maintain HAZMIN programs that (1) emphasize source reduction and recycling, (2) consider reducing the toxicity of hazardous wastes, (3) require routine audits of hazardous waste generating activities, (4) require an economic evaluation of HAZMIN alternatives, and (5) emphasize command support.

In November 1986, the U.S. Army Environmental Hygiene Agency (USAEHA) published "Protocol, Hazardous Waste Minimization Surveys"[16] as a guide for performing the HAZMIN program survey at each installation. The protocol is designed to investigate potential HAZMIN efforts and to recommend prioritization of these actions. The protocol also discusses possible HAZMIN opportunities for each type of hazardous waste (HW), and general HAZMIN techniques which could be easily overlooked but could result in significant improvements for an installation.

DA's effort to have each installation comply with the RCRA regulations resulted in development of the Environmental Review for Management Action (ERMA) checklist.[17] The checklist helps determine how well an installation complies with requirements of the RCRA. ERMA is color-coded for different activities of HW management and provides contact points to be consulted when working through the checklist. Completing this checklist at regular intervals will greatly clarify the status of HW management practices and will facilitate taking preventive measures at each installation.

Army Materiel Command and other HAZMIN Plans

The major generator of hazardous waste within the Army is undoubtedly the Army Materiel Command (AMC). AMC is the industrial command of the Army due to its mission to best equip the soldiers and the total Army. Its effort to fulfill its mission entails many processes and operations that generate hazardous waste such as spent solvents, sludge, unserviceable and obsolete munitions, and painting and electroplating wastes.

An AMC Commander's message in November 1985 to the major subordinate commanders emphasized the reduction or elimination of hazardous waste as the most desirable method of waste management. On 6 March 1986, a formal HAZMIN plan was issued to consolidate AMC's efforts. The basis for the HAZMIN plan is to protect human health and preserve the environment. Nevertheless, the plan's success is closely tied to the cost-benefit analysis. One HAZMIN goal is to eliminate all untreated hazardous waste by 1992. Another goal is to reduce hazardous waste generation 50 percent from the 1985 baseline by 1992.

The AMC HAZMIN plan,[18] issued on 20 April 1987, requires all AMC installations that generate hazardous waste to update and submit their installation HAZMIN plan by

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[15]OASHA, 20 July 1987.

[16]U.S. Army Environmental Hygiene Agency (USAEHA), *Protocol, Hazardous Waste Minimization Surveys* (November 1986).

[17]U.S. Army Construction Engineering Research Laboratory (USA-CERL), *Environmental Review for Management Action* (1987).

[18]*CY1987 AMC Hazardous Waste Minimization Plan* (Headquarters, Army Materiel Command [HQAMC], 20 April 1987).

March 1, 1988. The Installation Baseline Generation Data report was required to set the baseline from which installation hazardous waste reduction goals are measured. The Semiannual HAZMIN Generation Report will be used to track the HAZMIN progress.

The Training and Doctrine Command (TRADOC) and other MACOMs also have HAZMIN plans to meet DA requirements. MACOM HAZMIN plans require each installation HAZMIN plan to effectively implement a hazardous waste minimization program tailored for site-specific conditions.

Reporting and Recordkeeping Analysis

The Army is required to comply with both the substantive and the procedural aspects of the Federal, State, and local environmental laws and regulations. Maintaining comprehensive, up-to-date knowledge of all the potentially applicable regulations in all the many jurisdictions which legally regulate Army hazardous waste management activities is a formidable task. Fortunately, most hazardous waste regulations at the State and local levels are basically derived from the Federal regulations. The broad requirements for hazardous waste management reporting set forth in these regulations (e.g., the requirement for use of the Uniform Hazardous Waste Manifest) are generally applicable. The detailed requirements for any given installation are quite variable and are constantly changing.

EPA Requirements

40 CFR, Subchapter I, Parts 260 through 280 detail the hazardous waste management system authorized by the RCRA. The regulations divide hazardous waste activity into three groups: generation, transportation, and operation of a TSD facility, and define the management standards applicable to each group. The regulations also include land disposal restrictions and a description of the hazardous waste permit program. Subparts define explicit reporting and recordkeeping requirements in each hazardous waste activity group, and list the requirements for permit application.

The requirements applying to generators, transporters, and owners/operators of TSD facilities are explicitly specified in parts 262, 263, and 264, respectively. The first report for all phases of hazardous waste activity is the Notification of Hazardous Waste Activity, EPA Form 8700-12 (Appendix A). The EPA uses this form to assign a unique tracking number to each hazardous waste activity site. The owner or operator of each site must keep records of hazardous waste shipped in or out on the Uniform Hazardous Waste Manifest, EPA Form 8700-22 (Appendix B). This form is designed to keep track of hazardous waste from the cradle to the grave.

These regulations also require biennial reports; EPA Form 8700-13A from the generator and EPA Form 8700-13B from TSD facilities. The forms are due by March 1 of even-numbered years. Appendix C contains a biennial report. This report is a summary of hazardous waste activities for the reporting period and must contain a description of hazardous waste minimization efforts undertaken during the year.

Other reporting and recordkeeping requirements must be observed to be in full compliance with the regulations. USA-CERL researchers and Argonne Laboratory specialists have compiled all the explicit and implicit reporting and recordkeeping requirements based on Federal references (Appendix D).

40 CFR, Parts 300 through 306 (revision dated 1 July 1986) discuss the programs required by Section 105 of CERCLA and by Section 311 (c) (2) of the Clean Water Act (CWA). These parts contain the national oil and hazardous substances pollution contingency plan, CERCLA arbitration procedures, and CERCLA natural resources claims procedures.

40 CFR, Part 355 (effective May 17, 1987) is an extension of a subpart in Part 300 to reinforce emergency planning and notification. Title III of SARA, also known as the Emergency Planning and Community Right-To-Know Act, required the Administrator of EPA to publish a list of extremely hazardous substances and to establish a threshold planning quantity for each substance on the list. The list and planning quantities are to be used for emergency planning by State and local governments. Subtitle B of Title III requires every hazardous waste manufacturer to submit material safety data sheets (MSDS) and emergency and hazardous chemical inventory forms to State and local governments, and toxic chemical release forms to the State and EPA. Followup reports on any release, its effects, and response actions taken are also required.

State Requirements

Any State program is, at a minimum, supposed to be equivalent to and consistent with the Federal regulations. A few States, however, set more stringent standards or additional regulations for hazardous waste management. Almost all the State regulations were collected, analyzed, and compared. Appendix E contains a matrix of State hazardous waste regulations. Because of the ever-changing nature of State regulations, it is difficult to create an accurate listing of the hazardous waste regulations in each State; however, Appendix E compares the most recent regulations.

The *Law of Chemical Regulation and Hazardous Waste*[19] provides a broad understanding of a number of regulating programs concerning health, safety, and the environment. This book contains chapters that explain and analyze RCRA and CERCLA and an appendix which compares RCRA regulations to State regulations.

The *Hazardous Waste Regulatory Guide State Waste Management Programs*[20] is a practical guide for the first line personnel working at hazardous waste activities. The guide briefly explains the Federal requirements and summarizes more stringent features of each State's regulations. Forms that each State regulatory agency provides to the owners or operators of hazardous waste facilities are included.

DOD and DA Requirements

Information reported on DD Form 1485, the Defense Environmental Status Report (DESR), is used to summarize the annual status of installation environmental programs in DOD. DA submits the Army status to DOD every year after compiling the DESRs from every installation. The report contains nine categories of environmental quality programs; air, water, solid and hazardous waste, installation restoration, safe drinking water, pest management, natural resources management, historic resources management, and environmental auditing management.

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[19] Donald W. Stever, *Law of Chemical Regulation and Hazardous Waste* (Clark Boardman Co. Ltd., 1987).

[20] *Hazardous Waste Regulatory Guide State Waste Management Programs* (J. J. Keller and Associates, Inc., 1987).

The DESR consists of 17 tables that summarize the status of the Army environmental quality programs. Eight of the forms of interest are in Appendix F.

Although the data provide an overview of the hazardous waste activities, the quantities of hazardous waste generated, transported, disposed of, and stored are recorded without classification. Therefore, an AAA report[21] indicated that the DESR should not be used to compare quatities of waste generated at various installations.

Defense Department (DD) Form 1348-1, DOD Single Line Item Release/Receipt Document, is used to transfer material from an installation to the DRMO or to another installation under DRMO jurisdiction. This form (Appendix G) requires listing the stock number (nine digits), nomenclature, and quantity of material. Information about shippers and receivers must also be included.

Because this form was created to keep track of excess material within DOD, it does not contain the hazardous waste classification codes developed by EPA. Although this form was not designed to serve as the mechanism for hazardous waste data collection, it became the core of hazardous waste data collection when the DLA was charged with disposal of the hazardous waste generated by DOD.

The 1383 Report, Environmental Pollution Prevention, Control, and Abatement at DOD Facilities Report (Appendix H), is required by AR 200-1. This report was formulated according to the Office of Management and Budget (OMB) Circular A-106 and DOD Instruction 4120.14, which were intended to control environmental pollution at Federal facilities. The report identifies pollution control projects and the resources needed to effectively carry out DA environmental programs. The report contains two parts: Exhibit 1 is prepared at the installation or activity level and Exhibit 2 is prepared at the MACOM or National Guard Bureau (NGB) level. The reports are to be submitted by 15 May and 15 November each year.

Exhibit 1 is a proposed project report which is prepared on DD Form 1391c (Military Construction [MILCON] Project Data). There are seven pollution categories; the categories of interest are solid waste pollution and pesticide and hazardous/toxic material pollution. These categories require a narrative report of eight items: specific type of pollution; amount of pollution; the source and the discharge, emission, or deposit point; existing treatment and other control measures; effectiveness of existing treatment and control; remedial measures proposed and the estimated effect in correcting the problem; applicable standards; and other relevant information. The numerical data and amount of pollution can be an approximation.

Exhibit 2 provides a financial summary and the status of the projects and is prepared on EPA HQ Form 3500-7 (Federal Agency Pollution Abatement Plan - Project Report). The installation number and name, project number and name, cost, milestones, etc. are required. The current compliance status is required to show whether the pollution source for which this project is required is in compliance or in violation. This report does not require any substantive numerical data or hazardous waste classification.

AR 200-1 also requires the SPCC plan as well as recordkeeping and reporting of oil and hazardous substance spills. The SPCC plan must contain an inventory of all sources of oil and hazardous substances and detailed measures to prevent and contain an accidental discharge including constructing and installing equipment and/or training

[21] AAA (1987).

personnel. Each plan must be certified by a registered Professional Engineer and be reviwed and amended as required by the EPA Regional Administrator.

The CWA mandated a National Oil and Hazardous Substances Pollution Contingency Plan. The plan requires Federal agencies to develop a plan to clean up oil and hazardous substance spills. Installation commanders must maintain an ISCP to identify resources that can clean up discharges at installation and activities. To ensure timely response of personnel and equipment, the commander must provide a thorough annual training program. The plan also requires an Installation On-Scene Coordinator (IOSC) who will direct accidental spill clean up.

Reportable spills or discharges must be reported immediately by telephone to the EPA Regional Office, Coast Guard District Office, or National Response Center (NRC), and through command channels to Headquarters, Department of the Army (HQDA). The information required for the telephone report includes the name and location of the installation, Commander's name, location of the spill, date and time of the incident, the cause and source of the incident, injuries and property damage, quantity and duration of the discharge, the body of water that may be affected, remedial action taken, and agencies notified. A written report must be submitted to the EPA within 60 days after a single oil discharge of 1,000 gallons or more, or two spills in a 12-month period. CERCLA requires that the NRC be notified immediately when a hazardous substance amount equal to or greater than the reportable quantity specified by CERCLA is released. The reportable quantities are listed in Appendix I.

The CY (calendar year) 1987 AMC hazardous waste minimization plan required each AMC installation that generates hazardous waste to update and submit an installation HAZMIN plan, as part of the installation hazardous waste management plan, by 1 March 1988. The HAZMIN plan requires two reports. One report, titled Installation Baseline Generation Data, lists the 1985 hazardous waste generation quantities reported to the EPA or the state and will be used as the baseline from which installation hazardous waste minimization goals are measured. The other report, titled Semiannual HAZMIN Generation Report, is used to track the progress in hazardous waste minimization. EPA hazardous waste type codes are required for classification of the waste. Appendix J contains a sample of these reports.

Similarly, the TRADOC hazardous waste minimization plan requires each TRADOC installation to submit an installation HAZMIN plan. TRADOC also requires two reports; Form 165-R (Appendix K) provides 1986 baseline data, and Form 166-R (Appendix K) lists the installation hazardous waste minimization goals. EPA hazardous waste numbers are also required for classification.

Report Preparation and Problems Meeting Requirements

AMC and TRADOC were contacted to determine what reports they prepare, how they prepare them, and any problems they might have in meeting the reporting requirements. In addition, the MACOMs were asked to provide three or four representative installations that could provide the same information. The installations were subjectively selected; one model installation, one or two typical installations, and one installation experiencing problems. The reported information is important in that it is the installations and MACOMs that are ultimately responsible for the accuracy of data on hazardous waste because they must gather the data at the most basic level and comply with a series of hierarchical requirements. Consequently, any problems identified at this level will have important implications for reporting accuracy.

Appendix L contains a copy of the telephone interview questionnaire. These MACOMs indicated they had no problems meeting the reporting requirements. This is most likely due to the reporting requirements at the MACOM level. Essentially, MACOMs collect the data from their installations, total the numbers, and send the reports to DA. TRADOC maintains a file of the reports. Although TRADOC reported no problems, they did have comments relating to reporting requirements. First, they felt there were too many reporting requirements, particularly at the installation level. Closely related to this, the MACOMs questioned the relevance, usefulness, and accuracy of the data reported. Also, only the amount generated, not the classification, is reported. A total quantity generated is not itself very useful, particularly for hazardous waste minimization purposes. If the classification was reported, more choices on minimization would be available.

Respondents from TRADOC installations and AMC major subordinate commands differed in the responses to how they prepare reports and if they had problems meeting their reporting requirements. Two installations had developed data base management systems using dBase. Users considered these homegrown systems valuable in meeting reporting requirements in a fast, efficient, and economical manner. Organizations using homegrown data base management systems did not want to abandon them in favor of a centralized mainframe system. Some installations reported minor problems that lead to reporting discrepancies and inaccuracies. In these cases, the Directorate of Logistics (DOL) Supply did not always notify the environmental branch when a hazardous substance arrived at the installation or where it went. Also, some tenant organizations and Government Owned Contractor Operated (GOCO) plants failed to properly coordinate with and notify the environmental branch of their hazardous waste activities.

Trend Analysis

Before EPA had finished promulgating regulations designed to address all aspects of the original piece of legislation, Congress passed HSWA. These amendments served to dramatically increase the scope of RCRA. In particular, HSWA contained provisions designed to restrict and/or prohibit the land disposal of hazardous and solid wastes. With the passage of HSWA, EPA entered into a renewed cycle of proposing and promulgating hazardous waste regulations. To ensure that EPA would hasten the implementation of certain aspects of the new law, Congress imposed a series of "hammer" provisions that dictated the implementation of specific prohibitions and restrictions if EPA did not promulgate regulations according to the schedule written into the law. The result has been an acceleration of the regulatory development and implementation process. Thus, the regulated community has been faced with the problem of attempting to comply with an even more dynamic regulatory environment.

RCRA contains provisions that provide the states with an opportunity to establish and manage their own hazardous waste compliance programs. To obtain authority to manage an RCRA program, the State must obtain approval or authorization from EPA. Before passage of HSWA, states were required to submit a single application, the Base Program Final Authorization Package, to obtain authorization to manage their own program.

With the passage of HSWA, EPA took steps that dramatically changed the state program authorization process. State authorizations were divided into four distinct programs, including the base program and three separate authorization packages designated as "clusters." States may submit applications for authorization to manage the RCRA basic program, or the RCRA basic program and one or more clusters.

The regulated community is currently confronted with a set of extremely complex Federal and/or State regulatory requirements regarding the generation, handling, and disposal of hazardous wastes. In many cases, individual facilities are required to meet requirements established by both the State (in cases where the State has received final authorization to manage the basic program and one or more RCRA clusters) and the EPA (in cases where the State has not received final authorization for all clusters). A facility may be required to file reports to both the EPA and State government, and maintain records that meet the requirements of the EPA and the State. As the State receives final authorization for additional clusters and/or basic program revisions, regulated facilities are then required to meet the reporting and recordkeeping requirements of the State regulations. No mechanism is readily available for facilities to determine the status of their State's RCRA programs.

Preliminary Assessment/Site Investigation

To complement the corrective action provisions of HSWA found in Sections 3004(u), 3004(v) and 3008(h), EPA has developed the preliminary assessment/site investigation (PA/SI) process to gather appropriate data. EPA is planning to change the terminology for this process to a "RCRA Facility Assessment" consisting of a "Preliminary Review" and a "Visual Site Inspection." EPA and authorized states are developing and field testing the PA/SI process. The evaluation is conducted by EPA or an authorized State or agency contractor, to determine whether or not the site has experienced a release of hazardous waste requiring further investigation. The PA/SI will be performed on any facility attempting to obtain an RCRA permit. A copy of the report should be obtained from EPA or the state and kept in the facility operating records.

Landfill Waste Bans

HSWA banned the disposal of liquid HW in landfills effective May 1985 and nonhazardous waste liquids effective November 1985. In addition, EPA must review its list of HW; one-third by August 8, 1988; another one-third by June 8, 1989; and the last one-third by May 8, 1990. If EPA fails to make a determination concerning the conditions under which these wastes may be disposed, Congress has imposed a hammer provision in HSWA that bans land disposal of the wastes.

On January 14, 1986, EPA published its proposed rule on banning land disposal of hazardous wastes. The rule proposes to determine "safe" levels of hazardous materials in waste. EPA has established "safe" levels of these materials at a receptor point in the environment and back-calculated the corresponding concentration limits of those materials that may be contained in waste designated for land disposal. To comply with the proposed requirements, an affected generator/disposal facility must do one of the following:

- Ensure the wastes do not exceed the accepted concentration limits

- Use an EPA-approved specific waste treatment technology that reduces hazardous contaminant concentrations

- Submit a petition to EPA demonstrating that untreated landfill wastes will not be dangerous to human health and will not migrate from the site.

The proposed regulation makes it clear that the burden of proof is on the applicant desiring to dispose of listed wastes after the banning dates.

Liquids in Landfills

In March of 1986, EPA proposed to amend TSD permit application requirements to require owner/operators to demonstrate how they can qualify for an exemption from the nonhazardous liquid land disposal ban. Currently HSWA provides a variance from this ban in the following cases:

- The only alternative to disposal of nonhazardous liquid waste in a RCRA regulated landfill is an unlined landfill or surface impoundment

- The disposal of nonhazardous liquids in a landfill will not serve as a source of contaminants for underground drinking water supplies.

Aquifer Classification

EPA's philosophy for groundwater protection assumes the highest beneficial use for which the groundwater can potentially be used. As such, EPA plans to prevent the siting of new hazardous waste management facilities above Class I aquifers. (Class I aquifers are considered vulnerable because they are poorly protected by the surrounding geology and are either irreplaceable, due to a lack of potential alternative sources, or are ecologically vital.) The EPA is also expected to impose additional controls, including possible reporting and recordkeeping requirements, on existing hazardous waste management facilities that may impact on Class I aquifers.

Burning and Blending of Waste Fuels and Used Oil

Hazardous waste burned as fuel and off-specification used oil burned in industrial and utility boilers and furnaces is subject to Part 266 (standards for management of specific HW and specific types of HW management facilities) of RCRA which is less restrictive than Part 264 (standards for owners and operaters of HW TSD facilities). However, it appears that EPA is leaning towards regulating HW fuels to only be stored by manufacturers and burners that have submitted Part A permit applications and meet existing RCRA HW storage requirements. Although EPA was also examining proposals to regulate used oil destined for energy recovery in a similar manner, it appears that this approach has been abandoned.

3 AUDIT AGENCIES SURVEY RESULTS

In recent years, the GAO, DOD IG, and AAA have evaluated DOD/DA hazardous material/waste management programs and made recommendations for improvement. Some findings and recommendations of interest are summarized and analyzed in this chapter.

GAO Survey

Many DOD installations were not in compliance with RCRA at the time of the survey. However, no RCRA violations were observed at Army installations. GAO pointed out that DOD noncompliance was partly due to the inability of DLA to dispose of hazardous waste and construct storage facilities in a timely manner. Although installation commanders had full responsibility for RCRA compliance, they had, since 1980, depended on DLA, the single manager in DOD. Conseque: tly, DOD established a new policy in 1985 emphasizing that installation commanders have the authority and flexibility to achieve RCRA compliance, including the determination of who would dispose of hazardous wastes. DA will implement the policy effective 1990.

The existing DOD hazardous waste management information system (MIS) was based on DESRs submitted by services. DOD representatives told GAO that information contained in the DESRs could not be compared from year to year because the kinds of information DOD requested changed somewhat every year. They also said that the information submitted by the services was not reported on the same basis and that services did not use the same definitions for specific terms. They further said that DOD planned to revise the MIS to improve DOD's ability to oversee the services' RCRA compliance status. The major revisions included:

- Standard definitions prepared by DOD and used by all the services to assure comparability of the data.

- Data requirements in certain areas (e.g., programs designed to reduce wastes requiring disposal) will be expanded to enable DOD to measure the success of environmental policies and programs.

- Much of the data will be deleted from the status report because DOD will obtain it from EPA's computerized data base. Specifically, it will obtain data on EPA and state inspections of installations and data related to permits required under RCRA and other environmental laws.

- GAO found out that the Defense Reutilization nd Marketing Service (DRMS) did not always provide timely and reliable disposal service to installations which resulted in the installation commander's noncompliance of RCRA storage requirements. Furthermore, the delay of DRMS storage facility construction forced many installation commanders to build their own storage facilities. GAO also found out some inadequate contracting operations of DRMS. Since these problems were mostly attributed to inadequate staff of DRMS, the service plans to hire and train additional staff to improve the performance. DRMS officials told GAO that other plans to improve the contracting operations included systematic monitoring of contract pickups, preaward evaluations, and requiring contractors' performance bonds.

In response to a GAO draft report, DOD said that responsibility and authority for providing hazardous waste storage facilities and disposal services to comply with RCRA continue to be vested in the DLA as the primary manager. DOD further stated that dual capability by the services and DLA in contracting for disposal and storage provided DOD with the necessary flexibility to manage hazardous waste and that this capability did not duplicate efforts, but rather, allowed timely service.

GAO encouraged DOD to use the existing industrial waste treatment plants to a greater extent in support of the Used Solvent Elimination (USE) program and to place emphasis on the hazardous waste minimization program.

Finally, GAO recommended that the Secretary of Defense monitor the implementation of the new policy (dual capability by the services and DLA) to assure that in practice it would provide the services, commands, and installations with the authority and flexibility needed to accomplish DOD's goal and the requirements of RCRA regarding generation, storage, and disposal of hazardous waste.

DOD IG Survey

DOD IG revealed that DOD was not in full compliance with RCRA and the DOD's overall management of HW/HM was not satisfactory. However, the report did not specify the Army's compliance and performance status. The unsatisfactory rating was attributed to:

- HW/HM technical guidance that was limited to the broad DOD policy, and fragmented MACOM and installation guidelines.

- The lack of staffing with technical expertise.

- The lack of communication at all levels. Research results and lessons learned were not disseminated.

- The original intent of assigning the hazardous waste disposal mission to DLA was to reduce duplication. However, excluding eight categories of waste (Appendix B, AR420-47) has caused unnecessary confusion. Although DLA/DRMS was primarily responsible for disposal, the services were disposing of approximately 80 percent (by volume) of the total DOD hazardous waste.

- DOD IG also indicated that minimization programs for HW/HM are fragmented and ineffective. In many instances, procurement of hazardous materials was not controlled to ensure that such materials were kept to a minimum. HW/HM storage facilities were nonexistent or inadequate at either DRMO or installations. Furthermore, management of the conforming storage construction program was unsatisfactory. The hazardous waste disposal contracting procedure was inefficient and costly. The Hazardous Material Information System (HMIS) was antiquated, ineffective, and duplicative of other systems. Training of hazardous material handlers, supervisors, and commanders was inadequate.

The DOD IG made the following recommendations:

- Form a task force at the Assistant Secretary of Defense level to conduct DOD-wide HW management.

- Issue requisite HW/HM policy through the installation level.

- Establish a formal DOD environmental structure to ensure qualified environmental specialist support is available through all DOD levels.

- Evaluate the overall DOD requirements for conforming storage facilities by geographic area.

AAA Audit

Procedures for reporting the quantities of hazardous waste generated in the Army had not been clearly established and, as a result, the quantities reported were not accurate and could not be used for comparison. Installations did not have definitive requirements to maintain accountability of the materials turned in to DRMO, because they were not hazardous waste by definition. Also, procedures used to account for hazardous waste treated and disposed of at the installation were not adequate.

Generally, a material would not become a hazardous waste until the DRMO made a determination that the material could not be reutilized, transferred, donated, or sold. Procedures were not established to define when and how DRMO determined that the material was hazardous waste, and advised installations of the hazardous waste quantity. Each DRMO prepared an EPA manifest for its area, but not for each installation as a generator.

The AAA suggested that standard procedures be established for the installations and DRMO to use in identifying and reporting hazardous wastes. As an alternative, the possibility of reporting hazardous waste data directly to DOD should be investigated. Procedures should be developed to establish hazardous material accountability if it is needed. The AAA also indicated that DESR should not be used and recommended that a separate form be developed to compare the quantities of hazardous waste generated.

4 HAZARDOUS WASTE DATA MANAGEMENT SYSTEMS

Existing Systems

Hazardous waste management is a major concern for both the regulatory agencies and the regulated community. Waste management requires the assimilation of large amounts of data from diverse sources. Data management systems lend themselves very well to such a task. Consequently, numerous commercial, government, and homegrown systems have been developed.

Commercial

The private sector is always sensitive to the need for new products. The response time in developing products to satisfy perceived consumer demand is fast. The following companies were frequently mentioned in conversations with Army, Air Force, and Navy personnel:

HAZOX (Toxic Alert), Mr. Roy Hayes, 408-978-7744
North America Software, 714-830-6248
York Consultants, 303-237-1065
Pro Am, 412-443-0410

Government

Many government agencies have or are developing data management systems to manage the large amount of information required by hazardous waste regulations. These agencies include the Air Force, Navy, Hazardous Materials Technical Center (HMTC), Department of Energy (DOE), Army Medical Department, EPA, and DRMS.

The Air Force appears to be quite active in developing data base management systems relating to gathering and updating the various reporting requirements. Vandenburg Air Force Base is currently using an HW/HM tracking system that runs on either a personal computer (PC) or a mainframe. The system assigns drum numbers to personnel who need the drums for hazardous material and the system then tracks the drum from the time that it arrives until the time that it is disposed of, or until 60 days after its initial entry into the system. It is a violation for a drum to be kept longer than 60 days. The system can also send HW/HM information to DRMO and can be used to monitor the overall picture of HW/HM management at several installations linked to a mainframe computer. The tracking system uses a Bernoulli box and the Knowledge Mat copyright. Licensing fees would be around $125,000. This system is the only one of its kind currently in use at DOD. It could be ideal for both MACOM and installation level because of the link it can sustain between PCs and mainframe computers to provide an overall picture of HW/HM management as well as the situation at each installation.

Headquarters, U.S. Air Force (HQ USAF) is currently developing a management information system that will track Installation Restoration Program (IRP) sites and DERA money expended, and will generate status reports. This system is too limited in scope for detailed reporting. In 1986, USA-CERL developed an Environmental Compliance and Management Program (ECAMP) for HQ USAF that is basically the same as the ERMA checklist. Because the Federal requirements used in the document are already outdated, HQ USAF has contracted Oak Ridge National Laboratory to compile a complete list of Federal and State requirements. It is likely that information from many sources will be pooled to keep the data current.

The Navy has worked with the commercial HAZOX program on several occasions. The system is updated annually and contains recent rules and regulations.

The HMTC, operated by DLA, has been working on keeping Federal and State requirements current for their HMIS. Because of this, they are a resource for all the DOD agencies to draw upon. However, HMTC realized that updating data was expensive and a potential problem.

DOE has contracted the Oak Ridge National Laboratory to gather data on state requirements although they are not developing an MIS. The effort is rather limited in scope and all the information has not yet been analyzed.

The Army Medical Department (AMEDD) has developed the Occupational Health Management Information System (OHMIS), a PC-based data management system archived at a mainframe located at Fort Detrick, MD. The system has three modules: medical information data, industrial hygiene, and hearing evaluation. Although this is strictly a medical data base, concerned organizations may integrate HW into an OHMIS module.

The EPA is currently developing a Hazardous Waste Data Management System (HWDMS) which uses a hierarchical data base consisting of six different branches of information. The first branch contains information on the HW/HM storage and generation facilities, including the location, owner, and basic characteristics. The second branch contains information about the facilities' capacity, Standard Industrial Classification (SIC) codes, waste codes, and permit types. The third branch has information on permit tracking for the facilities. The fourth branch includes dates and actions taken by both the facility and the EPA to ensure compliance with regulations. The fifth branch stores data on groundwater samples. The sixth branch contains the facility's financial information.

The HWDMS uses the FOCUS language and can be used on PCs. The data base information is currently on an S2000 system but may be switched to RCR15, depending on a review from Oak Ridge National Laboratory. Several contractors are participating with the EPA; the Computer Sciences Corporation is working on system development and operations maintenance, General Sciences Corporation is responsible for maintenance and support, and CRC is doing the systems testing and evaluation.

The DRMS uses the Defense Automated Information System (DAISY) essentially as a property accounting system. One part of the system stores cradle-to-grave information, including the date and method of disposal and the permit numbers of all transporters and disposal facilities. Although this system is rather limited in scope, some of the data might be useful. DAISY has an interface to HMIS.

The Army has been using a computer-based environmental information system developed by USA-CERL, the Environmental Technical Information System (ETIS), to provide information resources and analysis tools for environmental planning and impact assessment. As a subsystem of ETIS, the Hazardous Materials Management System (HMMS) is designed to provide the environmental coordinators and managers at Army installations with information needed to comply with environmental laws regulating the use, transportation, and ultimate disposal of hazardous wastes.

HMMS consists of six subsystems: RCRA contains information on substances regulated by RCPA, TRANS is the transportation database from HMIS, SAFETY is based on the safety information of HMIS, Trade Name Translator (TNT) provides a quick cross-reference between the item name and national stock number (NSN), HAZARD allows

access to HAZARDLINE, a chemical information system developed and vended by Occupational Health Services, and finally, TRACKER identifies hazardous materials from installation procurement records.

Homegrown

Many installations are proactive in their approach to hazardous waste management. Such installations have the resources and ability to develop their own software using dBase and LOTUS. Two such systems identified during telephone interviews are used for reporting, inventory, tracking, and manifests. They are quite complex, yet user friendly. Personnel using the systems cited tremendous savings in manpower and the ability to better manage waste. There are many computer systems developed for a variety of particular needs related to hazardous waste.

AEDMS Concept and Critical Component Factors

Hazardous waste management information is constantly being solicited from installations and Headquarters elements at various levels within DA and DOD. Unfortunately, the information submitted is not readily available in a form useful to Army managers. The existing hazardous waste data management systems available from both commercial and government sources appear insufficient to meet the Army's extensive and diversified need for hazardous waste management information in a timely manner. Consequently, DA determined that a new centralized data base system dedicated initially to managing hazardous waste data should be developed. Because the data base is primarily intended as a management tool for the Army's environmental managers at all levels, it will be designed to allow flexibility for recording all environmental information required for reporting purposes. Hence, the data base is commonly referred to as the Army Environmental Data Management System (AEDMS).

AEDMS will give the Army a much clearer and more reliable picture of its overall environmental status than is currently available and should help identify and resolve Army environmental problems and in the formulation of Army policy.[22]

Basis for Designing Hazardous Waste Components

A substantial amount of hazardous waste information is already available to Army environmental managers to meet the regulatory requirements. However, more information is needed to evaluate and improve the effectiveness of the Army hazardous waste management program and to plan and analyze future programs. It is very unlikely that a system that attempted to include all this information would be supportable due to the budget and manpower limitations at all levels. The resource problem will be especially serious at the installation level. Fortunately, all the data are not equally important; some are critical and some are nice to have. In developing a conceptual basis for the hazardous waste component of AEDMS, the guiding principle has been to provide all the information that the various levels of the Army require to successfully meet their goals for the hazardous management, but not to waste time and money compiling and maintaining information beyond the optimum level.

[22]N. Pomerleau, J. McCarthy, and J. Bandy, "Waste Minimization Practice," 8th Symposium on Hazardous and Industrial Solid Waste Testing and Disposal (American Society of Testing and Materials [ASTM], November 12, 1987).

Hazardous Materials/Wastes Goals

The goals of the Army's hazardous materials and wastes management programs have been identified somewhat differently by the various commands and levels within the Army and DOD which formulate policy; however, the following items are basic:

- The Army will comply with all Federal, State, and local regulations governing the management of hazardous materials and wastes including reporting and public notification and providing adequate conforming storage.

- The Army will take appropriate measures to protect the health and well-being of its personnel involved with or potentially exposed to HW/HM as well as the health and well-being of the general public and the environment.

- The Army will seek to minimize its expenditures for HW/HM management both now and in the future, consistent with the achievement of the first two goals.

Critical Success Factors

If the Army is to achieve the goals identified above, it is critical that it develop and use certain capabilities. At a minimum, these capabilities are:

- Every element of the Army that faces regulations governing the handling of hazardous materials and hazardous wastes and regulations requiring that it prepare and submit hazardous waste management reports to regulatory authorities must clearly understand what these requirements are. Further, every element and level of the Army must know its current compliance status (permits, violations, etc.).

- To effectively manage its hazardous wastes, the Army must have a clear understanding of what hazardous materials it is procuring, what hazardous wastes it is generating, how these materials are being procured and wastes being generated, and how they are being stored, used, treated, transported, and disposed of. It must be able to determine how all these processes are changing over time.

- To effectively reduce the generation of hazardous waste, the Army must know how much of what kinds of waste will be generated in producing Army products or services and how this generation could be reduced through process changes, material substitution, waste segregation, and/or recycle/reuse. The Army must also know how much these possible reductions would cost relative to their benefits, and what projects or other actions have been undertaken or programmed to realize those reductions determined to be worthwhile. It must be able to monitor its progress in implementing these selected waste reduction efforts.

- To ensure that the Army policy on regulatory compliance and protection of human health and the environment is being implemented as planned, the Army must develop and employ a system of controls that will detect significant deviations (violations, adverse health effects, or environmental contamination) from the Army's intended performance early enough for appropriate corrective measures to be taken. The Army's control system must be able to provide the same assurance to DOD, the EPA, State and local regulatory agencies, and the Congress through the records which it generates.

5 PROPOSED HAZARDOUS WASTE COMPONENT OF AEDMS

To provide the critical capabilities defined in the previous chapter, a variety of measures and indicators could be employed. The following proposed system provides for each of the critical capabilities. Much of the required data is already being collected for various reports although considerable data standardization would have to be accomplished and some additional data collected. The tracking and economic analysis capabilities being developed under parallel DERA projects are to be integrated into this structure.

Installations

The installation systems would include the following:

- Summarized output from the comprehensive hazardous materials identification system(s) being developed.

- Detailed information on the procurement of hazardous materials, the generation of hazardous wastes (identified in the installation hazardous waste management plan and the Notification of Hazardous Waste Activity), and the inventories of each. The hazardous waste information must be reported by process and by waste in a consistent manner (processes, wastes, fiscal year, manner of handling, and accounting for transfers to DLA) by all installations to permit unambiguous roll-ups to subordinate commands, MACOMs, the Army Environmental Office, and the OASA Installations and Logistics (I&L).

- A database of hazardous wastes actually generated, associated levels of productive activity (e.g., number of engines overhauled), waste generation norms for the generating processes where available, and comparisons of expected versus actual generation of hazardous waste for each generating process.

- A hazardous waste minimization data base including FY (fiscal year) 85 baseline generation (total and in terms of the underlying level of production), hazardous waste minimization goals by year for each of the wastes included in the installation, a hazardous waste minimization plan (total and in terms of the underlying level of production), and variances from planned progress with notes where required.

- Provision for storing historical data from the above items and identifying annual changes and long term trends.

- A data base covering all hazardous waste analyses and determinations of a solid waste's status as a RCRA hazardous waste. The data base will document the procedures followed and the findings of all such analyses.

- A data base of accumulation points, accumulation point managers, and a record of accumulation point inspections that will prove that required inspections have been accomplished.

- A data base of storage facilities, storage facility managers, a record of storage facility inspections to document required inspections as well as any shortcomings in facilities or in DRMS or contractor performance which may exist, and a data base of hazardous materials storage facilities as required for SARA.

- A data base listing all transfers of hazardous wastes to DRMS and/or to third party transporters, including a description of the quantities and types of wastes transferred, the date, and required supporting information such as the transporter's EPA identification number.

- A data base listing all hazardous waste treatment facilities on the installation and summarizing their operations.

- A data base containing all relevant information on hazardous waste minimization projects planned or underway at the installation, including summary economic analysis data.

- A training records data base to document determinations of training requirements and training programmed against these requirements and to enable installations to prove that required training has been carried out.

- A permits data base to include information on all permits required, applied for, and held. This infomation needs to be consistent at all installations to permit unambiguous roll-ups to higher commands.

- An installation hazardous waste audit data base that creates a standard record of audit results that can be rolled-up to higher headquarters (with installation identities hidden if necessary). Audit results are the best overall indicator of hazardous waste management perfomance at the installations and, considered collectively, within the various higher commands on up to DA. To be most useful, these audits, internal and external, should have a common content across the entire Army. Yes/no type information (e.g., Does the installation have emergency response plans as required in SARA?) would be included here.

- A violations data base which documents and tracks the status of any violations identified by regulatory agencies (and, if desired, installation environmental audits and AAA audits, etc.).

- On-line tools which assist in evaluating the life cycle costs of hazardous waste minimization technologies and processes (USA-CERL's on-going Economic Analysis Model).

Subordinate Commands and MACOMs

The subordinate command and MACOM systems would include:

- Comprehensive hazardous materials procurement identification information rolled up from the installations.

- Rolled-up information on the stocks of hazardous materials maintained and the generation and stocks of hazardous wastes at the installations (output of the standardized data bases created for the installations).

- Rolled-up information on specific hazardous wastes actually generated, associated levels of productive activity (e.g., number of engines overhauled), waste generation norms for the generating processes where available, and comparisons of expected versus actual generation of hazardous waste for each generating process.

- Rolled-up hazardous waste minimization information including FY85 baseline generation (total and in terms of the underlying level of production), hazardous waste minimization goals by year for each of the wastes included in the installation hazardous waste minimization plan (total and in terms of the underlying level of production), and variances from planned progress with notes where required.

- Provision for storing historical data from the above items and identifying annual changes and long term trends with breakouts by installation (and subordinate commands in AMC).

- A roll-up of installation hazardous materials and hazardous waste storage facility data bases including any shortcomings in facilities or in DRMS or contractor performance that the installations may have identified.

- A roll-up of installation data bases covering all transfers of hazardous wastes to DRMS and/or to third party transporters, including a description of the quantities and types of wastes transferred, the date, and required supporting information such as the transporter's EPA identification number.

- A data base listing all hazardous waste treatment facilities on the installations and summaries of their operations.

- A data base that will roll-up all relevant information on hazardous waste minimization projects planned or underway at the installations to include summary economic analysis data.

- Summary information from the training records data bases being maintained at the installations to include requirements indentified by the installation, training programmed during each reporting period, and training accomplished.

- An installation permits data base including information on all permits required, applied for, and held.

- An installation hazardous waste audit data base.

- A roll-up of installation violations data bases which documents and tracks the status of any violations identified by regulatory agencies.

- On-line tools which assist in evaluating the life cycle costs of hazardous waste minimization technologies and processes.

Army Environmental Office and OASA(I&L)

The Army Environmental Office and OASA(I&L) systems would include roll-ups of the same information provided to the MACOMs and subordinate commands. The data could be disaggregated as desired down to the MACOM, subordinate command, or installation level, as desired. In addition, the DA (and possibly MACOM) systems could include:

- PPBES information relating to the hazardous waste storage and hazardous waste minimization programs of the Army.

- External information such as EPA Federal Facilities File extracts and DRMS data base extracts that would supplement and support the data reported up through the Army.

All systems could share access to a central hazardous waste regulatory data base that might be developed and maintained on a cost-sharing basis in cooperation with the other organizations who have shown similar interests. Some level of support for this data base may already be provided for through HMTC. All systems could share access to other automated hazardous waste information systems such as HMIS, HMMS (through ETIS), and HAZARDLINE. Army-relevant hazardous waste disposal/disposition information could be abstracted from DLA data bases for HQDA if desired. A determination should be made whether this kind of information is an ongoing requirement (in which case it might be incorporated in the proposed data base) or an occasional requirement which would be more appropriately and economically provided on an ad hoc basis.

Hazardous Materials Procurement and Pre-Issue Management

Managing hazardous materials and wastes most effectively and economically involves more than managing waste after it has been generated. It is essential to reduce to an absolute minimum the amounts and toxicities of wastes. Basic objectives are as follows:

- Never use a hazardous material or generate a hazardous waste when it is economically practical to accomplish the same function without procuring or generating a hazardous material or waste.
- Never use a more toxic material if a less toxic material is available.
- Use only as much of a hazardous material as necessary; generate as little hazardous waste as possible.
- Match demand and supply as accurately as possible to minimize overstock situations (consistent with maintaining a prudent operational reserve).
- Identify potential overstock situations as early as possible so that appropriate action can be taken to prevent unused hazardous materials from becoming hazardous waste.
- Ensure that supply organizations do not frustrate the intent of hazardous waste minimization efforts (by substituting an overstocked more hazardous solvent for a less hazardous solvent).

Progress in achieving these objectives could be tracked in an MIS; however, since the Directorate of Engineering and Housing (DEH) does not control many of the critical activities involved in pursuing these objectives, they have not been included in the proposed systems. Were there an appropriate agreement with the logistics and industrial operations people, it might be possible to integrate measures and indicators for the Army's accomplishment of these objectives.

Users' Input

The information in this chapter was discussed at a DERA In Progress Review (IPR) meeting in July 1987. Although the principles were agreed upon, users differed in their opinion on how important each piece of information is and what level the information should be rolled up to. To refine the conceptual basis for a hazardous waste component of AEDMS reflecting the users' need, a questionnaire (Appendix M) was developed and dispatched to selected environmental managers representing each level of the Army.

Six responses to the questionnaire were received: one from HQDA, two from MACOMs, one from an installation, and two from a supporting agency. It is difficult to present a consensus of the responses because the participants expressed opinions based on their perspectives at different levels of the Army. Opinions regarding which level of the Army the information should be rolled up to varied greatly. Therefore, the responses are listed without any attempt to reach a consensus for optimizing the structure of a hazardous waste component of AEDMS.

The responses are summarized below. The numbers correspond to the questionnaire numbers.

1. Five respondents saw a critical need for detailed generation data. A HQDA representative commented that the data management system would begin with baseline CY 1985 data and include information identical to the installation hazardous management plan, the notification of hazardous waste activity, biennial reports for generators and TSDF, and operating records. One respondent said that all information should be rolled up to HQDA. Another indicated that only summary information needed to be rolled up to HQDA. Three respondents favored a roll-up to MACOM and one wanted to maintain the information at installation level.

Other comments included:

- DESR should be the primary source of information and additional, complicated paper work is not recommended.
- Costs data cannot be compiled until DRMS reports accurate cost data.

2. Five respondents commented that it would be worthwhile to have an installation hazardous waste audit data base.

Appropriate levels that the audit information should be rolled up to were HQDA by one participant, MACOM by four, and no roll-up by one.

Other comments included:

- There is no need to hide installation identities for audit results.
- A system could be designed to provide the DOD/HQDA guidance to MACOMs, major subordinate commands (MSCs), and installations.
- An Armywide standard hazardous waste management audit check list/questionnaire should be developed.
- Since some installation audit results are very site specific, the information could be irrelevant to operations at other installations or of no value to higher headquarters.

3. Three respondents regarded transfer data as critically needed information. Two other respondents said the data was worthwhile or nice to have. The other respondent made no comment. One respondent indicated that all transfer information should be rolled up to HQDA. Another participant thought that only summary information should be rolled up to HQDA. Three participants favored roll-up to MACOM and one participant said no roll-up.

Other comments included:

- Transfer data should include the information required by the Uniform Hazardous Waste Manifest.

- Since all turn-ins do not go through the DEH Environmental Office, it is difficult for an installation to track all transfer information without input from the DRMSs.

4. Questionnaire results indicated widespread opinion on hazardous material identification information. Opinions on the relative importance of such information ranged from nice to have, to worthwhile, to critical. Opinions on the appropriate level of roll-up ranged from HQDA and MACOM, to installations.

Other comments included:

- Compatibility with the logistic procurement system and inclusion of NSN should be considered to develop such an information system.

- Many hazardous materials are used in such a manner as to not generate waste.

5. Three respondents said it would be worthwhile to have hazardous waste minimization project information, including economic analysis data. Two respondents considered this information nice to have and one made no comment. Opinions on the appropriate level roll-up ranged from HQDA and MACOM to no roll-up.

Other comments included:

- A simple economic analysis should be available to installation personnel.

- It may be worthwhile to exchange hazardous waste minimization project ideas between installations.

6. Four participants said it would be nice to have actual hazardous waste generation data associated with productivity and a comparison of expected versus actual generation. One respondent considered this worthwhile and one made no comment. Three said no roll-up was needed. Two favored roll-up to MACOM and one favored roll-up to HQDA.

7. Three respondents said information on hazardous waste minimization goals and progress data would be nice to have. Two considered it critical and one thought the data would be worthwhile. One said the information should be rolled up to HQDA. Two said MACOM and one said no roll-up.

8. Four respondents said on-line tools that assist in evaluating the life-cycle costs for hazardous waste minimization technology would be nice to have. One said they would be excellent while the other one said they were not needed. One said it should be rolled up to HQDA while five said there was no need for a roll-up.

9. Two respondents said violation data was critically needed and two saw no need for the data. One said it was worthwhile and the other one made no comment. Three said it should be rolled up to HQDA, one said to MACOM, and two said no roll-up.

Other comments included:

- Since violation data is tracked by MACOM, it would not be necessary for HQDA to see all violation notices. If the decision is made to rollup to HQDA, only summary reports should be submitted.

10. Three participants said a permits data base is critically needed, while two said it would be worthwhile. One said it would be nice to have and one made no comment. Four said roll-up to MACOM is needed and two favor roll-up to HQDA.

Other comments included:

- AMC said the data base was being used and updated by the Deputy Chief of Staff, Engineering (DCSENG).

- It was suggested that the permit data base be directly connected to the EPA hazardous waste data management system.

11. Five respondents said roll-up of a training records data base would be needed and one said information on the number of trainees and frequency of training should be available to HQDA. Opinions on the relative importance of the information were widely divided: one saw no need; two said it was worthwhile; two said nice to have; and one said critical.

Other comments included:

- The training data base should include requirements in 40 CFR Section 264.16 (Personnel training for TDSF).

- Some States require training information on Part B of the hazardous waste permit.

12. Three respondents said a hazardous waste treatment facilities and operation data base should not be rolled up to higher headquarters. Two favored roll-up to MACOM and one to HQDA. Two said the information was critically needed. Each of the other four participants had a different opinion: worthwhile, nice to have, not needed, and no comment. One made a comment that the information should come from EPA through the Federal facilities docket.

13. Five respondents said that storage facility data should not be rolled up to the higher headquarters. One said the data should be rolled up to MACOM. Two said the data would be nice to have and two considered it worthwhile. One said the need for the data was critical. One participant commented that SARA Title III does not apply to Federal facilities. However, it applies to the National Guard since they are State operated.

14. All participants agreed that roll-up of hazardous waste analyses data to higher headquarters is needed. Four said the information would be worthwhile and one said nice to have.

15. All participants agreed with no roll-up of accumulation point data. However, one said a need of such information at installations would be critical. Two said nice to have and two said worthwhile. One made no comment.

16. Four participants made no comments on the need for budget information. One said such information would not be needed. Another one said it might be useful if the information was simple and concise.

Three participants did not see a need for a central hazardous waste regulatory data base on a cost sharing basis with the Air Force and Navy. The reasons they addressed were: coordination with DOD would have limitations and affect the ability to complete the hazardous waste component of AEDMS, it would duplicate the existing data system in the private sector, a considerable amount of money has been spent already by HMTC and it would be almost impossible to keep the data updated for all the state and other requirements.

6 SUMMARY

Hazardous waste management presents significant challenges for all levels of Army management. The Congressional policy on hazardous waste management is toward hazardous waste minimization. To keep abreast of new developments and maintain an effective hazardous waste management program, an Army Environmental Data Management System is needed. This system is intended to serve as a management tool for the Army's environmental managers at all levels.

Chapter 2 analyzed what portion of the data required for the proposed hazardous management information system is already being collected. DOD, DA, Federal, State, and local reporting and recordkeeping requirements were compiled and analyzed.

Chapter 3 discussed results of the auditing agencies surveys to improve the Army hazardous waste management programs.

Chapter 4 compiled information on existing hazardous waste data management systems and discussed goals and success factors for Army hazardous waste management programs.

Chapter 5 presented the conceptual basis for a hazardous waste component for AEDMS. The proposal includes 16 systems for installations, 14 systems for the subordinate commands and MACOMs, and 16 systems for DA. To refine the component concept, a questionnaire was developed and sent to selected environmental managers. Their comments were summarized.

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DEQPPM No. 80-8 (DOD, 21 October 1980).

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Hazardous Waste Regulatory Guide State Waste Management Programs, (J. J. Keller and Associates, Inc., 1987).

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40 Code of Federal Regulations (CFR), Parts 260-280.

40 CFR, Parts 300-306, "Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)" (Rev. July 1, 1986).

40 CFR, Part 355, "Emergency Planning and Notification" (Effective 17 May 1987).

APPENDIX A:

NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

Form Approved OMB No. 2050-0028 Expires 3-30-88
GSA No. 0248-EPA-OT

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

United States Environmental Protection Agency
Washington, DC 20460

EPA Notification of Hazardous Waste Activity

Please refer to the *Instructions for Filing Notification* before completing this form. The information requested here is required by law (*Section 3010 of the Resource Conservation and Recovery Act*)

For Official Use Only

Comments

C

C

Installation's EPA ID Number	Approved	Date Received (yr mo day)	
C T/A C			
F 1			

I. Name of Installation

II. Installation Mailing Address

Street or P.O. Box

C
3

City or Town	State	ZIP Code
C 4		

III. Location of Installation

Street or Route Number

C
5

City or Town	State	ZIP Code
C 6		

IV. Installation Contact

Name and Title (*last, first, and job title*)	Phone Number (*area code and number*)
C 2	

V. Ownership

A. Name of Installation's Legal Owner	B. Type of Ownership (*enter code*)
C 8	

VI. Type of Regulated Waste Activity (*Mark 'X' in the appropriate boxes. Refer to instructions.*)

A. Hazardous Waste Activity

- ☐ 1a Generator ☐ 1b Less than 1,000 kg/mo
- ☐ 2 Transporter
- ☐ 3 Treater/Storer/Disposer
- ☐ 4 Underground Injection
- ☐ 5 Market or Burn Hazardous Waste Fuel (*enter 'X' and mark appropriate boxes below*)
  - ☐ a Generator Marketing to Burner
  - ☐ b Other Marketer
  - ☐ c Burner

B. Used Oil Fuel Activities

- ☐ 6 Off-Specification Used Oil Fuel (*enter 'X' and mark appropriate boxes below*)
  - ☐ a Generator Marketing to Burner
  - ☐ b Other Marketer
  - ☐ c Burner
- ☐ 7 Specification Used Oil Fuel Marketer (*or On-site Burner*) Who First Claims the Oil Meets the Specification

VII. Waste Fuel Burning Type of Combustion Device (*enter 'X' in all appropriate boxes to indicate type of combustion device(s) in which hazardous waste fuel or off-specification used oil fuel is burned. See instructions for definitions of combustion devices.*)

☐ A. Utility Boiler ☐ B. Industrial Boiler ☐ C. Industrial Furnace

VIII. Mode of Transportation (*transporters only — enter 'X' in the appropriate box(es)*)

☐ A. Air ☐ B. Rail ☐ C. Highway ☐ D. Water ☐ E. Other (*specify*)

IX. First or Subsequent Notification

Mark 'X' in the appropriate box to indicate whether this is your installation's first notification of hazardous waste activity or a subsequent notification. If this is not your first notification, enter your installation's EPA ID Number in the space provided below.

☐ A. First Notification ☐ B. Subsequent Notification (*complete item C*)

C. Installation's EPA ID Number

EPA Form 8700-12 (Rev. 11-85) Previous edition is obsolete.

Continue on reverse

ID – For Official Use Only

C W | T A | C 1

X. Description of Hazardous Wastes *(continued from front)*

A Hazardous Wastes from Nonspecific Sources Enter the four digit number from 40 *CFR* Part 261.31 for each listed hazardous waste from nonspecific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	8	9	10	11	12

B Hazardous Wastes from Specific Sources Enter the four digit number from 40 *CFR* Part 261.32 for each listed hazardous waste from specific sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

C Commercial Chemical Product Hazardous Wastes Enter the four digit number from 40 *CFR* Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
37	38	39	40	41	42
43	44	45	46	47	48

D Listed Infectious Wastes Enter the four digit number from 40 *CFR* Part 261.34 for each hazardous waste from hospitals, veterinary hospitals, or medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E Characteristics of Nonlisted Hazardous Wastes Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles *(See 40 CFR Parts 261.21 – 261.24)*

☐ 1 Ignitable *(D001)* ☐ 2 Corrosive *(D002)* ☐ 3 Reactive *(D003)* ☐ 4 Toxic *(D000)*

XI. Certification

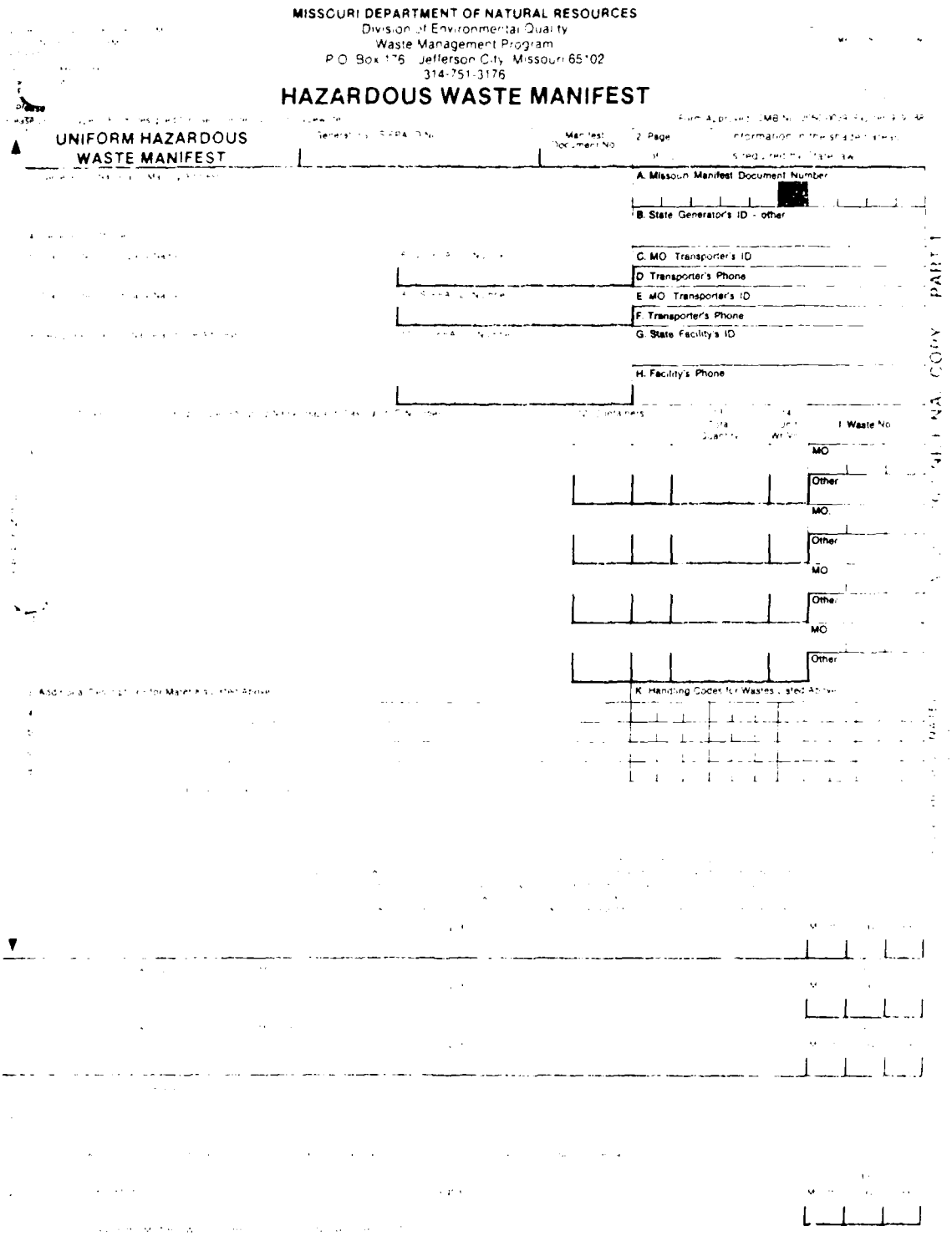
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature | Name and Official Title *(type or print)* | Date Signed

EPA Form 8700-12 Rev. 11-85) Reverse

APPENDIX B:

HAZARDOUS WASTE MANIFEST



MISSOURI DEPARTMENT OF NATURAL RESOURCES
Division of Environmental Quality
Waste Management Program
P.O. Box 176 Jefferson City, Missouri 65102
314-751-3176

HAZARDOUS WASTE MANIFEST

UNIFORM HAZARDOUS WASTE MANIFEST

Generator's U.S. EPA I.D. No.

Manifest Document No.

2. Page

Information in the shaded areas

A. Missouri Manifest Document Number

B. State Generator's ID - other

C. MO Transporter's ID

D. Transporter's Phone

E. MO Transporter's ID

F. Transporter's Phone

G. State Facility's ID

H. Facility's Phone

I. Waste No.

MO

Other

MO

Other

MO

Other

MO

Other

K. Handling Codes for Wastes Listed Above

PART 1 - MO COPY

APPENDIX C:

GENERATOR BIENNIAL HAZARDOUS WASTE REPORT

ENVIRONMENTAL PROTECTION AGENCY

GENERATOR BIENNIAL HAZARDOUS WASTE REPORT FOR 1985

This report is for the calendar year ending December 31, 1985
Read All Instructions Carefully Before Making Any Entries on Form

I. NON-REGULATED STATUS

Complete this section only if you did not generate regulated quantities of hazardous waste at any time during the 1985 calendar year. Circle the one code at right that best describes your status during the entire year (see instructions for explanation of codes).

1 Non-handler
2 Small Quantity Generator
4 Exempt
5 Beneficial Use
9 *Out of Business*

(Use typewriter with elite type (12 characters per inch))

This Installation's Non-Regulated Status is Expected to Apply

☐ For 1985 Only ☐ Permanently

☐ Other ______________

II. GENERATOR'S EPA I.D. NUMBER

T/A C

E _ _ _ _ _ _ _ _ _ _ _ _ E 1
1 2 13 14 15

C003 ENTRY (OFFICIAL USE ONLY): ☐

III. NAME OF ESTABLISHMENT

30 ______________________________ 69

IV. ESTABLISHMENT MAILING ADDRESS

B ______________________________
15 16 45
Street or P.O. Box

B ______________________________
15 16 41 42 47 51
City or Town State Zip Code

V. LOCATION OF ESTABLISHMENT (if different than section IV above)

B ______________________________
15 16 45
Street or Route number

B ______________________________
15 16 41 42 47 51
City or Town State Zip Code

VI. ESTABLISHMENT CONTACT

B ______________________________
15 16 45
Name (last and first)

___-___-____
46 55
Phone No. (area code & no.)

VII. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Print/Type Name | Title | Signature | Date Signed

EPA Form 8700-13A (Rev. [illegible])

Page 1 of __

ENVIRONMENTAL PROTECTION AGENCY

Generator Biennial Hazardous Waste Report for 1985 (cont.)

This report is for the calendar year ending December 31, 1985

Date rec'd: _____ Rec'd by: _____

VIII. GENERATOR'S EPA I.D. NO.

IX. FACILITY NAME (specify facility to which all wastes on this page were shipped)

XI. FACILITY ADDRESS

X. FACILITY'S EPA I.D. NO.

XII. TRANSPORTATION SERVICES USED

XIII. WASTE IDENTIFICATION

Sequence #	A. Description of Waste	B. DOT Hazard Code	C. EPA Hazardous Waste No. (see instructions)	D. Amount of Waste	E. Unit of Measure
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

XIV. COMMENTS (enter information by section number - see instructions)

Page _ of _

ENVIRONMENTAL PROTECTION AGENCY

Generator Biennial Hazardous Waste Report for 1985 (cont.)

This report is for the calendar year ending December 31, 1985

Date rec'd: _____ Rec'd by: _____

XV. GENERATOR'S EPA I.D. NO.

T/A C

C														
1	2											13	14	15

XVI. WASTE MINIMIZATION (narrative description)

Page ____ of ____

APPENDIX D:

HAZARDOUS WASTE REPORTING AND RECORDKEEPING REQUIREMENTS

HAZARDOUS WASTES REPORTING AND RECORDKEEPING REQUIREMENTS FOR THE GENERATORS

Requirements	RP/RK	Description	Reference	Remarks
1.Inventory of Hazardous waste(HW)	RK	* In order to determine the nature of the solid waste generated, an inventory of all solid waste must be developed and maintained. The inventory should include type and quantity of wastes and be keyed to the HW determinations.	§261.5(a)	
2.Notification of HW activity	RP/ RK	* A generator of HW must notify his HW activity to the regional administrator (RA) by using Form furnished by EPA. * EPA will assign an identification number. *The generator will maintain a record of notification/EPA ID number on file.	RCRA 3010	EPA Form 8700-12
3.HW determination	RK	* Generators of solid waste must determine if that waste is a HW. * Keep the records of the determination.	§262.11, §261.4, Subpart D & C of 40 CFR, PART 261	
4.Manifest	RK	* A generator who transport, or offers for transportation of HW for off-site treatment, storage, or disposal(TSD). * The generator must sign the manifest certification, and obtain the signature and the date of acceptance from the initial transporter. * Keep one copy and give transporter the remaining copies. * Must be kept for 3 years.	§262.20-23	EPA Form 8700-22 & 8700-22A
5.Inspection of HW storage facilities	RK	* While accumulating(less than 90 days & less than 6000kg), the generator must inspect containers & tanks in compliance with the requirements for the storage facilities. * For small quantity generator(SQG), the maximum accumulation period is 180 days with less than 6000 kg limit.	§262.34 §265.16 §265.174 §265.194	

6.Emergency procedures	RP	* Designate an emergency coordinator; Post: The name & phone number of coordinator; Location of fire & spill control equipment; The phone number of fire dept. Ensure that all employees are familiar with emergency procedures.	§262.34	
7.Emergency report	RP	* In the event of a fire, explosion, or other release which could threaten human health or a spill has reached surface water, immediately notify the National Response Center.	§262.34	
8.Biennial report	RP	* To the RA by March 1, even numbered year. * A description of the efforts undertaken during the year to reduce the volume & toxicity of waste generated. * Comparison to previous years.	§262.41	EPA Form 8700-13A
9.Exception report	RP	* If a generator does not receive a copy of the manifest within 45 days of acceptance by transporter, he must report to the RA.	§262.42	
10.Additional report	RP	* As required by the RA. * Concerning the quantities & disposition of wastes.	§262.43	

** Small Quantity Generators (100 - 1000 kg/mo.) are exempted from Biennial report and Exception report requirements (§262.44).

*** The period or retention referred are extended automatically during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator.

REPORTING AND RECORDKEEPING REQUIREMENTS FOR TRANSPORTERS OF HAZARDOUS WASTE

Requirements	RP/RK	Description	Reference	Remarks
1.Notification of HW activities	RP	* Apply to the Administrator for a EPA identification number.	§263.11 RCRA 3010	EPA Form 8700-12
2.Manifest (Transporter's copy)	RP	* A transporter must sign & date the manifest acknowledging acceptance of the HW from the generator. * A transporter who delivers a HW to another transporter or to the facility must: Obtain the date of delivery & the hand written signature of the receiver; Retain one copy for 3 years.	§263.20	
3.Nonmanifested HW records	RK	* Transportation from the SQG need not comply with the manifest system provided that: The waste is being transported pursuant to a reclamation agreement(cf §262.20(e)); The transporter records the name, address, & EPA Id. number of the generator, the quantity of waste, DOT-required shipping information, & date accepted; The transporter carries this record to the reclamation facility: Retains these records for 3 years.	§263.20	
4.Shipment by water records	RK	* Water transporter must retain a copy of the shipping paper for 3 years.	§263.22(b) §263.20(e)	
5.Shipment by rail records	RK	* The initial rail transporter must keep a copy of the manifest & shipping paper for 3 years. * The final rail transporter must retain a copy of manifest or shipping paper for 3 years.	§263.22(c) §263.20(f)	
6.Transport out of US	RK	* Keep a copy of the manifest indicating that the HW left the US for 3 years.	§263.22(d)	
7.HW discharge notice	RP	* Transporter who has discharged HW must: Give notice,if required, to the National Response Center; Report in writing to the Director.	§263.30(c)	

** The periods of retention of records are extended automatically during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator.

HAZARDOUS WASTE REPORTING AND RECORDKEEPING REQUIREMENTS FOR TREATMENT, STORAGE, AND DISPOSAL(TSD) FACILITIES

Requirements	RP/RK	Description	Reference	Remarks
1.Notification of HW activity	RP	* Notify HW activity to RA & get EPA identification number.	§264.11	Use EPA Form 8700-12
2.Notice of HW from a foreign source	RP	* To receive HW from foreign source, the owners or operators(O/O) must notify the RA in writing at least 4 weeks in advance.	§264.12(a)	
3.Notice to Off-site generators	RK	* The O/O must inform the generators in writing that he has the appropriate permit(s) for & will accept, the HW. * Keep this written notice as part of the operating record.	§264.12(b)	
4.Notice to new O/O	RK	* The O/O must notify the new O/O in writing of the requirements of Parts 264 & 270.	§264.12(c)	
5.General waste analysis	RK	* Develop & follow a written waste analysis plan. * Parameters to be measured & rationale for the selection. * Test method to be used to measure these parameters. * Sampling method * Frequency * Additional methods, where applicable * For ignitable, reactive, or incompatible wastes, the O/O must document compliance, if required.	§264.13 §264.17	

6.General inspection requirements	RF	* Develop & follow a written schedule for inspecting monitoring, safety & emergency, security devices, & operating & structural equipment. * Keep this schedule at facility * The schedule specify the types of problems to be looked for during inspection. * The frequency of inspection. * Record in an inspection log or summary and keep at least 3 years. - include date & time, name of inspector, a notion of the observations, date & nature of any repairs or remedial actions.	§264.15
7.Personnel training.	RF	* A program of classroom instruction or on-the-job training. - include, where applicable, procedures for using, inspecting, repairing, & replacing emergency &monitoring equipment; key parameters for automatic waste feed cut-off systems; communications or alarm systems; response to fires or explosions; response to ground-water contamination incidents; & shutdown of operations. * Complete the program within 6 months of employment or assignment. * Take part in an annual review of the initial training. * Maintain the following documents & records: The job title, the name of the employee for each position; A written job description including the §264.16 requisite skill, education, or other qualifications, & duties; Type & amount of both introductory & continuing training; The training or job experience required has been given to, & completed by, facility personnel. * Training records on current personnel must be kept until closure of the facility; former employees- 3 years.	§264.16
8.Documentation of ignitable, reactive, incompatible	RF	* The O/O must take precautions to prevent accident from reactive wastes & must document the compliance by reference of published literature, trial tests, etc.	§264.17

9.Contingency Plan	RK RP	* Each O/O must have a contingency plan. * The plan must be designed to minimize hazards to human health & environment. * The provisions of the plan must be carried out immediately whenever there is an emergency. * The plan must contain the information specified in §264.52. * A copy of the plan & all revisions must be: Maintained at the facility; Submitted to all local police department, fire department, hospitals, & State & local emergency response teams.	§264.50-53
10.Contingency plan Amendment	RP RK	* The contingency plan must be reviewed, & amended whenever: The facility permit is revised; The plan fails in an emergency; The facility changes; The list of emergency coordinators changes; The list of emergency equipment changes.	§264.54
11.Emergency report	RP	* Whenever there is an imminent or actual emergency situation, the coordinator must immediately notify appropriate State or local agencies if their help is needed.	§264.56
12.Post emergency report	RP RK	* Immediately after an emergency, the O/O must notify the RA, & State & local authorities. * The O/O must note in the operating record the details of incident that requires implementing the contingency plan. * Within 15 days after the incident, he must submit a written report to the RA.	§264.56
13.Manifest system	RK	* O/O of TSD facility must retain manifest for 3 years. * Whenever a shipment of HW is initiated from a facility, the O/O must comply with the requirements of generator.	§264.71
14.Manifest discrepancy report	RP	* If discrepancy is not resolved within 15 days of receiving, the O/O must immediately submit to the RA a letter describing the discrepancy with a copy of the manifest.	§264.72

		*** Manifest System does not apply to O/O of on-site facilities that do not receive any HW from off-site sources.	§264.70	
15.Operating record	OR	* Information that must be recorded & maintained until closure: A description & quantities of each HW generated, the method(s) & date(s) of its TSD; The location of each HW, & the quantity at each location on a map or diagram; Records & results of waste analyses performed; Summary reports & details of all incidents that require implementing the contingency plan; Records & results of inspections; Monitoring, testing, or analytical data where required; All closure cost estimates, &, for disposal facilities, post-closure cost estimates; A certification of a HW minimization program(no less often than annual). * Where State or local authorities decline to enter into preparedness & prevention arrangement, the O/O must document the refusal in operating record.	§264.73 §264.37	
16.Submission of HW disposal map	RP	* A copy of records of waste disposal locations & quantities must be submitted to the RA & local land authority upon closure.	§264.74	
17.Biennial report	RP	* A single copy, to the RA by March 1 of each even numbered year. * must cover facility activities during the previous calendar year.	§264.75	EPA Form 8700-13B
18.Additional reports	RP	* Releases, fires, & explosions. * Facility closures. * As required by RA.	§264.77	
19.Detection monitoring report	RP	* For an O/O required to establish a detection monitoring program: If there is a significant increase for parameters or constituents specified: Notify the RA in writing within 7 days; Submit an application for a permit modification within 90 days; Submit within 180 days: All data necessary to justify any variance; An engineering feasibility plan for corrective action program.	§264.98	

20.Compliance monitoring program report	RP	* For an O/O required to establish a compliance monitoring program: Basically same as 9. above.	§264.99
21.Corrective action program report	RP	* For an O/O required to establish a corrective action program: Report in writing to the RA on the effectiveness of the action semi-annually; if not satisfactory, submit, within 90 days, an application for a permit modification to make changes.	§264.100
22.Closure plan; amendment of plan	RP RA	* Plan: must be submitted with the permit application; become a condition of any RCRA permit. A copy of the approved plan & all revisions must be furnished to RA upon request. Contents: A description of each unit & final facility closure; An estimate of the maximum inventory of HW ever on-site & a detailed description of the methods for partial & final closures; A detailed description of the steps to remove or decontaminate all HW residues & containment system; Other activities necessary during the closure period; A schedule for each HW management unit & for final closure of the facility. * Amendment of plan: Submit a written request for a permit modification whenever: changes in operating plans or facility design affect the closure plan; change in the expected year of closure; unexpected events require a modification, 60 days prior to the proposed change in design or operation. * Notification of partial & final closure: 60 days prior to the beginning date for surface impoundment, waste pile, land treatment or landfill unit, 45 days prior to for other units.	§ 264.112
23.Certification of closure	RP	* Within 60 days of completion of closure of surface impoundment, waste pile, land treatment, & landfill units, & within 60 days of the completion of final closure, the O/O must submit to the RA, by registered mail, a certification signed by the O/O & by an independent registered PE.	§264.115

24.Survey plat	RP	* No later than the submission of the certification of closure, the O/O must submit to the local zoning authority, & to the RA, a survey plat indicating the location & dimensions of landfills or other HW disposal units with respect to permanent benchmarks, certified by a professional land surveyor.	§264.116
25.Post-closure plan; amendment of plan	RP	* Equivalent to the Closure plan(12.).	§264.118
26.Post-closure notices	RP	* Within 60 days of certification of closure, the O/O must submit to the local zoning authority & to the RA a record of type, location, & quantity of HW disposed. Record a notion on the deed to the facility property that: The land has been used to manage HW; its use is restricted under 40 CFR reg.; The survey plat has been filed with the local zoning authority & with the RA. Submit a certification that he has recorded the notion to the RA.	§264.119
27.Certification of completion of post-closure care	RP	* Equivalent to the Certification of closure(13.).	§264.120
28.Inspections of containers	RA	* At least weekly, the O/O must inspect areas where containers & containment system.	§264.174
29.Inspections of Tanks	RA	* The O/O must inspect: Overfill control equipment; data gathered from monitoring equipment once each operating day; For uncovered tanks, the level of waste once each operating day; The construction materials of the above-ground portions weekly; The area immediately surrounding the tank weekly.	§264.194
30.Surface impoundment failure report	RP	* When a surface impoundment must be removed from service as required [the level of liquids suddenly drops or the dike leaks], the O/O must notify the RA in writing within seven days after the problem.	§264.227

11.Unsaturated zone monitoring in land treatment	RP RK	* If the O/O determines that there is a significant increase of hazardous constituents below the treatment zone, he must: Notify the RA in writing within 7 days; Within 90 days, submit an application for a permit modification. * The O/O must include HW application dates & rates in the operating record.	§264.278 §264.279
12.Surveying & recordkeeping in landfills	RP	* The O/O of a landfill must maintain the following items in the operating record: On a map, the exact location & dimensions, including depth, of each cell with respect to permanent bench marks; The contents of each cell & the approximate location of each HW type within each cell.	§264.309
13.Monitoring & inspection in incinerators	RK	* The O/O of incinerator must conduct the following monitoring: Combustion temperature, waste feed rate, & the indicator of combustion gas velocity; CO on a continuous basis; analysis of the waste & exhaust emissions upon request by the RA. * The incinerator must be inspected, & tested regularly. * The monitoring & inspection data must be recorded & be placed in the operating log.	§264.3[illegible]
14.Additional waste analysis for thermal treatment	RK	* In addition to the general waste analysis(1.), the O/O must sufficiently analyze any waste to determine, at a minimum: Heating value; Halogen content & sulfur content; Concentrations of lead & mercury, if applicable.	§265.375
15.Monitoring & inspection of thermal process	RK	* The O/O must conduct, at a minimum, monitoring & inspections in accordance to §265.377(a).	§265.377
16.Certification for thermal treatment of particular waste	RK	* For the thermal treatment of EPA HW F020, F021, F022, F023, F026, or F027, the O/O must receive a certificate from the Assistant Administrator for Solid Waste & Emergency Response.	§265.383

17.Additional waste analysis for chemical, physical, and biological (CFR) treatment	R*	* In addition to the general waste analysis(1.), the O/O must: Conduct waste analyses & trial treatment tests; or Obtain written, documented information on similar process.	§2o5.402
18.Inspection for I-S treatment	S*	* The O/O must inspect. Discharge control & safety equipment daily; Data gathered from monitoring equipment daily; The construction materials of the treatment system & surroundings weekly.	§2o5.403

REPORTING AND RECORDKEEPING REQUIREMENTS FOR THE SPECIFIC HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE

Requirements	RP/RK	Description	Reference	Remarks
1.Notification of HW fuel activities	RP	* By HW fuel marketers - include generators who market HW fuel directly to a burner, persons who receive HW from generators & produce, process, or blend HW fuel from these HW, & persons who distribute but do not process or blend HW fuel. By HW fuel burners-certified O/O of industrial furnaces & boilers: Renotify his HW fuel activities even if he has EPA ID number.	§266.34 §266.35	
2.Manifest on HW fuel	RP	* For off-site shipment, the standards for generators apply. * Before a marketer initiates or accepts the first shipment of HW fuel, he must obtain or provide with a one-time written & signed certification that he notified EPA under section 3010 of RCRA & identified his HW fuel activities.	§266.34 §266.35	
3.Recordkeeping on off-spec[1] oil [1. see p. 627, 40 CFR	RP	* In addition to the applicable recordkeeping requirements of Parts 262, 264, & 265, a marketer & a burner must keep a copy of each certification notice he receives or sends for 3 years.		
4.Notification of used oil management activities	RP	* By marketers & burners of off-spec used oil fuel. * Stating the location & general description of used oil management activities. Renotify even if he has EPA ID number.	§266.43 §266.44	

5.Invoice system	RF	* By marketers. When initiates a shipment of off-spec used oil, he must send the receiving facility an invoice containing: An invoice number; His & receiver s EPA ID number; The name & address of shipping & receiving facility; The quantity delivered; The date(s) of shipment or delivery; & statement: "This used oil is subject to EPA regulation under 40 CFR Part 266".	§266.43
6.Recordkeeping ("Off-spec Oil")	RF	* By marketers & burners. Keep a copy of each invoice, a copy of each certification notice that he receives or sends, & copies of analyses of used oil fuel for 3 years. ** For used oil that meets the spec is subject only to the analysis & recordkeeping requirements.	§266.43 §266.44 §266.40

Subpart G - Spent Lead-Acid Batteries Being Reclaimed

* Only reclaimers of spent lead-acid batteries are subject to the regulations. * Notification requirements under 3010 RCRA. * All applicable provisions in Part 264 of 40 CFR.	§266.80

PART 267 - INTERIM STANDARDS FOR OWNERS AND OPERATORS OF NEW HAZARDOUS WASTE LAND DISPOSAL FACILITIES

* This part are applicable to O/O of new HW landfills, surface impoundments, land treatment facilities, or underground injection facilities until final Part 264 regulations for such facilities become effective or until February 13, 1983, whichever is earlier.

HAZARDOUS WASTE REPORTING AND RECORDKEEPING REQUIREMENTS FOR LAND DISPOSAL APPLICATION

(40 CFR, PART 268 - LAND DISPOSAL RESTRICTIONS)

Requirements	RP/RK	Description	Reference	Remarks
1.Restricted Wastes	RP	*SQG/Solid Waste Generators *SQG s are required to test any solid wastes to be disposed at a land disposal facility (on- or off-site) or to use general knowledge of the wastes to determine if the wastes are restricted from land disposal. The facility should have written procedures for collection and analyzing the wastes and maintain records of the results of any laboratory testing/analyses.	40 CFR 268.7	
2.Restricted waste Extensions and Exemptions	RP	*SQG's of Restricted Wastes *Generators of restricted wastes that require pretreatment prior to disposal need to apply for an extension or exemption if the wastes are to land disposed w/o pretreatment.	40 CFR 268.1(c)	
3.Restricted Waste Notice and Certification	RP	*SQG's of Restricted Wastes *Generators of restricted wastes that do not require pretreatment prior to disposal must provide the disposal facility with a notice and a certification that the wastes can be land disposed without treatment.	40 CFR 268.7(a) (2)	
4.Restricted Waste Treatment Standards	RP	*SQG's of Restricted Waste *Generators of restricted wastes requiring pretreatment prior to land disposal must send a written description of the appropriate waste treatment standard.	40 CFR 268.7(a) (1)	
5.Restricted waste Recordkeeping Requirements	RK	*SQG's of Restricted Wastes *Generators of restricted wastes should maintain copies of (1)extensions and exemptions; (2)notices and certifications; and (3)waste treatment standards applied for or prepared to comply with the reporting requirements for restricted wastes.	40 CFR 268.1(c), 268.7(a) (1) & (2)	

PART 270 - EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM

For "existing HWM facilities," the requirement to submit an application is satisfied by submitting only Part A of the permit application. Part A consists of Forms 1 and 3 of the Consolidated Permit Application Forms, attached, until the date the Director sets for submitting Part B of the application.

Timely submission of both Notification under section 3010 and Part A qualifies owners and operators of exiting hazardous waste management (HWM) facilities for interim status under section 3005(e) of RCRA.

For existing HWM facilities, the Director shall set a date, giving at least six months notice, for submission of Part B of the application. There is no form for Part B of the application; rather, must be submitted in narrative form and contain the information set forth in the applicable sections of §§270.14 through 270.29.

...new HWM facilities must submit Parts A and B of the permit application at least 180 days before physical construction is expected to commence.

Requirements	RP/RK	Description	Reference	Remarks
1.Permit application Part A	RP	* By operator with owner's signature * Infomations: see § 270.13 & applicable sections in §§ 270.14 - 270.29. * For SQG & TSD facility on-site, by March 24, 1987.	§270.10	EPA Form 3500-1 & 3500-3 (attacned)

2.Permit application Part B	RP	* By operator with owner s signature. * At any time when requested by Administrator(shall be allowed o months minimum) * Contents of Part B: -General description of the facility; Chemical & physical analyses of the HW; A copy of the waste analysis plan(see §264.13); security procedure & equipment(see §264.14); general inspection schedule; A justification of any request for a waiver(s) of the preparedness & prevention requirements; A copy of the contingency plan; A description of procedures, structures, or equipment used; A description of precautions to prevent accidental ignition or reaction of ignitable, reactive, or incompatible wastes; Traffic pattern, volume(number, types of vehicles) & control; Location information- concerning seismology & flood [very intensive engineering data are to involved if the location is in the seismic zone or floodplain]; Training programs; Closure plan & post-closure plan; Documentation that notices required under §264.119 has been filed(for HW disposal units); Closure cost estimate; Post-closure cost estimate; A topographic map showing a distance of 1000 ft around the facility with all the information written on it. * Additional information- HW surface impoundments, piles, land treatment, & landfills: A summary of the ground-water monitoring data; Identification of the uppermost aquifer & aquifers interconnected beneath the facility property; On a topographic map, a delineation of HWM area, property boundary, groundwater monitoring wells, any plume of contamination; detailed plans & engineering report describing groundwater monitoring program.	§270.19	No fixed form
3.Incinerator permit application(new)	RP	* O/O of PCB incinerator under section (6)(e) of the TSCA may file an application for a RCRA permit to incinerate HW.	§270.19	

4.Updating permit	RP	* By O/O who filed Part A but not Part B; When the facility is TSD any of those newly listed or identified wastes.	§270.10
5.New application	RP	* Any HWM facility with an effective permit; At least 180 days before the permit expiration.	§270.10
6.Permit application recordkeeping	RP	* All applicants shall keep all data used & any supplemental information submitted for 3 years.	§270.10
7.Exposure information	RP	* By O/O of landfill, surface impoundment; exposure information on the potential public health effect-release from normal operation & accidents including release associated with transportation; potential pathways to human; potential magnitude & nature of the human exposure.	§270.10
8.Planned change reporting	RP	* The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the facility.	§270.30
9.Anticipated noncompliance	RP	* Advance notice to the Director of any planned changes or activity which may result in noncompliance.	§270.30
10.Recommencing notice	RP	* After facility modification, the permittee must submit to the Director by certified mail or hand delivery a letter signed by the permittee & a registered PE stating that the facility has been constructed or modified in compliance with the permit before recommencing the TSD facility.	§270.30
11.Monitoring report	RP	* Monitoring results shall be reported at the intervals specified in the permit. * Concerning the proper use, maintenance, & installation of monitoring equipment or methods; monitoring types, intervals, & frequency; Based on the impact of the regulated activity & as specified in Parts 264,266, & 267.	§270.30 §270.31

12.Compliance report	RP	* Reports of compliance or noncompliance with, or any progress reports on, interim & final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule dates.	§270.30
13.24 Hour oral reporting	RP	* Any noncompliance which may endanger health or the environment within 24 hours from the time of aware of the circumstances, including: -Release of any HW; Fire or explosion; The description of the occurrence & its cause.	§270.30
14.Follow-up written report	RP	* Within 5 days of the incident which was reported orally. * The Director may allow 15 days.	§270.30
15.Other noncompliance report	RP	* All instances of noncompliance, at the time monitoring reports are submitted.	§270.30
16.Other information	RP	* Any relevant facts which were not submitted or incorrect information submitted must promptly be corrected.	§270.30

REPORTING AND RECORDKEEPING REQUIREMENTS FOR HAZARDOUS WASTE UNDER CERCLA ("SUPERFUND") AND SARA

*** Title III of SARA is also known as the "Emergency Planning and Community Right-to-Know Act of 1986"**

Requirements	RP/RK	Description	Reference	Remarks
1.Notification of Hazardous Substance(HS) release	RP	* Any person in charge of a vessel or an offshore or onshore facility * The National Response Center must be notified immediately (800-424-8802) of any release of any hazardous substance in quantities equal to or exceeding its reportable quantity (as listed at 40 CFR 302.6). A federally permitted release which is in compliance with a permit under any other environmental law is exempt from the notification requirement.	103(a) CERCLA	
2.Notification of HW TSD facilities	RP	*Hazardous waste treatment, storage, disposal facility owner or operator *As a continuation of the explicit requirement to notify EPA and states by June 1981 of the location and identity of all HW TSD facilities (past and current) which were not permitted or accorded interim status under RCRA, all sites discovered since the initial notification must be reported to the appropriate EPA regional office.	103(c) CERCLA	
3.Emergency Planning Requirements	RP	*Facility O/O *Any facility at which there is present an amount of any extremely hazardous substance in excess of its threshold planning quantity (as listed at 40 CFR Part 300, App.D) shall notify the state emergency planning commission on or before May 17, 1987 or within 60 days after a facility becomes subject to this section's requirements. Information to be communicated includes: location of the facility, any changes occurring at the facility which may be relevant to emergency planning,the name of the facility representative, and any other information, as requested, necessary for development or implementation of the local emergency plan.		40 CFR 300.97

4.Emergency Release Notification	RP	*Facility O/O *This notification applies to any facility: (1) at which a hazardous chemical is produced, used, or stored and (2) at which there is release of a reportable quantity of any extremely hazardous substance or CERCLA hazardous substance which results in exposure to persons outside the boundaries of the facility. The notification shall include: (i) the chemical name or identity of any substance involved in the release; (ii) an indication of whether the substance is on the list referred to in section 302(a); (iii) an estimate of the quantity of any such substance that was released into the environment; (iv) the time and duration of the release; (v) the medium into which the release occurred; (vi) any known or anticipated acute or chronic health risks associated with the emergency and, where appropriate, advice regarding medical attention necessary for exposed individuals; (vii) proper precautions to take as a result of the release, including evacuation (unless such information is readily available to the community emergency coordinator pursuant to the emergency plan); (viii) the name and telephone number of the person or persons to be contacted for further information. As soon as practicable this must be followed by a written notice setting forth and updating the initial information. * The notification should be reported to local emergency planning committee and state emergency planning commission.	40CFR 300.94

5. National Contingency Plan Responsibilities	RP/ RK	*The DOD official designated as an On-Scene Coordinator (OSC) for removal actions and as Remedial Project Manager (RPM) for remedial actions resulting from releases of hazardous substances, pollutants or contaminants from DOD vessels and facilities. *All federal agencies should plan for emergencies and develop procedures for dealing with oil discharges and releases of hazardous substances, pollutants, or contaminants from vessels and facilities under their jurisdiction. *The OSC/RPM must, to the extent practicable under the circumstances, collect pertinent facts about the discharge or release. *The OSC/RPM should notify the affected land managing agency and trustees of natural resources, as promptly as possible, of releases and discharges affecting Federal resources under their jurisdiction. *Where the OSC/RPM becomes aware that a discharge or release may adversely affect any endangered or threatened species, or result in destruction or adverse modification or the habitat or such species, the OSC/RPM should consult with Department of Interior (DOI) or Department of Commerce (DOC). *The OSC must submit pollutant reports to the Regional Response Team and appropriate agencies as significant developments occur during removal actions. *The OSC/RPM should ensure that all appropriate public and private interests are kept informed and that their interests are considered throughout a response. They should coordinate with available public affairs/community relations resources.	40CFR Parts 300.33(b)(2),300.-33(b)(12)

6.Oil Removal Response Operations	RP/ RK	*The On-Scene Coordinator (OSC) *Documentation must be collected and maintained to support all actions taken under the Clean Water Act(CWA) and to form the basis for cost recovery. In general, documentation should be sufficient to prove the source and circumstances of the incident, the responsible party or parties, and impact and potential impacts to the public health and welfare and the environment and for the research and development of improved response methods and technology. *The OSCs shall ensure the necessary collection and safeguarding of information, samples, and reports. Samples and information must be gathered expeditiously during the response to ensure an accurate record of the impacts incurred. Documentation materials shall be made available to the trustees of affected natural resources. *The designated COE officials.	40CFR Part 300.54
7.Hazardous Substances Response Operations	RP/ RK	*The lead agency must develop and implement a formal community relations plan for removal actions taken pursuant to Section 300.65 and for remedial action at NPL sites. Such plans must specify the communications activities which will be undertaken during the response. *In remedial actions at NPL sites, including Fund-financed and enforcement actions, feasibility studies that outline alternative remedial measures must be provided to the public for review and comment for a period of not less than 21 calender days. Such review and comment shall precede selection of the remedial response. Public meeting(s) shall, in most circumstances, be held during the comment period. The lead agency may also provide the public with an opportunity to comment during the development of the feasibility study. *A document which summarizes the major issues raised by the public and how they are addressed must be included in the decision document approving the remedy.	40CFR 300.67

APPENDIX E:

MATRIX OF STATES REQUIREMENTS

	Generators					Transporters			TSD Facility					Permit Program						
	1 SOG	2 Manifest	3 Accum Time	4 Report	5 Add'tional HW	1 Facility Req'mt	2 Manifest	3 Other St Req'mt	1 Location Standards	2 Manifest	3 Operating Records	4 Report	5 Groundwater Protection	1 Permit Req'mt	2 Hearings	3 Permit Duration	4 Max Civil Penalty	5 Max Criminal Penalty	Army Installation?	See the Following Remarks
AL	Shipping Approval Req'd	SAF	SAF	B	PCB	SAF	SAF	St Permit	SAF	SAF	SAF	SAF	SAF	SAF	SAF	SAF	SAF	SAF	Y	
AK	SAF	SAF	SAF	A	None	SAF	SAF	None	SAF	SAF	SAF	SAF	SAF	SAF	SAF	SAF	SAF	SAF	Y	
AZ	Special Report	One Copy to St	SAF	M, A	None	SAF	One Copy to St	None	More Stringent	One Copy to St	SAF	M, A	Add'n Terms(1)	Add'n Terms(2)	At Request	10Y	ARS 36 2823 2825 (3)		Y	1
AR	SAF	One Copy to St	SAF	B	PCB	SAF	SAF	St Permit	Add'n Criteria (1)	One Copy to St	SAF	B	SAF	Fee System (2)	Req'd	5Y	82 4213(b)	Yes(3)	Y	2
CA	No Exemption	One Copy to St	1Y	M, B	PCB Waste Oil etc	SAF	SAF	Annual Regist'n	2000' Buffer Zone	SAF	SAF	M, B	SAF	Add'n Terms(1)	SAF	5Y	Art 8 25189 25208 9	Art 8 25189 5 at Seq	Y	3
CO	SAF	SAF	SAF	A	None	SAF	SAF	None	SAF	SAF	A	SAF	SAF	Fees	At Request	10Y	$25,000/d	25-15-310 CRS	Y	
CT	Shipping Approval Reqd	1 Copy to St. W, 3 d	SAF	A	Yes(1)	Yes (2)	Monthly Report	Fees(3)	More Stringent	St Version	SAF	A	SAF	Add'n Terms(4)	Req'd	5Y	22a-131 CGS	22a-131a CGS	N	4
DE	<1000Kg/m	1 Copy to St	SAF	A	None	SAF	St Version	None	More Stringent	St Version	SAF	A	Hydrologic Report	SAF	At Request	10Y	$25,000/d	16309 (f)(g)	N	
DC	Add'n Term (1)	SAF	SAF	A	None	SAF	SAF	None	SAF	SAF	SAF	A	SAF	SAF	At Request	10Y	6-530	6-531	N	5
FL	SAF	SAF	SAF	A	PCB	SAF	SAF	None	SAF	SAF	SAF	A	Add'n Terms(1)	Fees (2)	At Request	5Y	$10,000/ Vio	$25,000/ Vio	N	6
GA	SAF	St Version	SAF	B	PCB LNG LLRM(1)	SAF	SAF	Travel Route Restriction	SAF	St. Version	SAF	B	SAF	$100 Ann Fee	At Request (>25)	10Y	$25,000/d	12-8-82 HWMH	Y	7
HI	SAF	SAF	SAF	B	None	SAF	SAF	None	SAF	SAF	SAF	B	SAF	SAF	SAF	SAF	SAF	SAF	N	
ID	SAF	SAF	SAF	Q	None	SAF	SAF	None	SAF	SAF	SAF	Q	SAF	SAF	At Request	10Y	39-4413 4414 Act	39 4415 Act	N	
IL	<1000Kg/m <100Kg/m for Spec W	1 Copy to St W, 2 d	SAF	A	None	SAF	St. Version	St. Permit	Add'n Criteria (1)	St Version	SAF	A	Add'n Terms 703.185	SAF	At Request	<1Y-Tran <10Y-TSD	42, Act (2)	44, Act (3)	Y	8
IN	<1000Kg/m	St Version	SAF	B	None	SAF	St Version	Yes (1)	SAF	St. Version	SAF	B	SAF	Add'n Terms(2)	Req'd	5Y	Code 13-7	Code 13-7	Y	9
LA	SAF	SAF	SAF	B	None	SAF	SAF	None	SAF	SAF	SAF	B	SAF	SAF	SAF	SAF	SAF	SAF	N	
KS	25Kg/m	SAF (1)	SAF	B	None	SAF	SAF	Yes(2)	SAF	SAF	SAF	M	SAF	Fees (3)	Req'd	10Y	$10,000/d	65-3441 Act	Y	10

Note: SAF = Same As Federal ; A = Annual ; Q = Quarterly ; M = Monthly

	Generators					Transporters			TSD Facility					Permit Program						
	1 SQG	2 Manifest	3 Accum Time	4 Report	5 Additional HW	1 Facility Reqmt	2 Manifest	3 Other St Reqmt	1 Location Standards	2 Manifest	3 Operating Records	4 Report	5 Groundwater Protection	1 Permit Reqmt	2 Hearings	3 Permit Duration	4 Max Civil Penalty	5 Max Criminal Penalty	Army Installation ?	See the Following Remarks
KY	No Exemption	SAF	180 d (SQG)	A	Add'n Terms (1)	SAF	SAF	Yes (2)	Yes (3)	SAF	SAF	A	More Stringent	Add'n Terms (4)	At Request	10 Y	KRS 224.994		Y	11
LA	Cond'nal Exemptions (1)	Add'n Information Reqd (2)	SAF	Q, A	None	SAF	Q, A	Stringent Marking Reqmt	SAF	Quarterly Report	SAF	A	SAF	Add'n Terms (3)	At Request	10 Y	LHWL §1137		Y	12
ME	<100 Kg/m	St Version	SAF	A	PCB	SAF	St Version	St License	SAF	St Version	SAF	A	SAF	Fees (2)	Req'd	5 Y	§ 349 Subsection 283		N	13
MD	SAF	St Version	SAF	A	PCB	SAF	SAF	St Certificate (1)	SAF	Add'n Terms (2)	SAF	A	SAF	Own Terms & Forms	Req'd	3 Y	§8-1413.2 A 1	§8-1501 Art	Y	14
MA	SAF	St Version	SAF	A	PCB Waste Oil	SAF	Monthly	St License	SAF	1 Copy to St w/, 2 wk	SAF	M, A	Extensive Terms 310 CMR	Own Terms, Fees	Req'd	5 Y	$25,000/ Vio	$25,000/ Vio + 5 Y Prison	Y	
MI	SAF	Send to St Each Mo	SAF	B	Add'n Terms (1)	SAF	St Version	No Short Term Storage	SAF	St Version	(2)	M	SAF	Add'n Terms (3)	Req'd	5 Y	$25,000/d	$25,000/d + 1 Y Prison	Y	15
MN	Minor Exemption (2)	1 Copy to St	SAF	A	PCB	SAF	St Version	None	Add'n Terms (3)	1 Copy to St	SAF	A	Add'n Terms (4)	Add'n Inform.	At Request	5 Y	$10,000/ Vio	$10,000/ Vio	N	16
MS	<1000 Kg/m	SAF	SAF	B	None	SAF	SAF	None	Add'n Terms (1)	SAF	SAF	B	SAF	Add'n Terms (2)	At Request	5 Y	Miss Code §17-17-29		Y	17
MO	SAF	St Version	SAF	A	Waste Oil etc	SAF	St Version	Add'n Terms (2)	SAF	St Version	More Stringent	M	Extensive Monitoring Reqmt	Add'n Reqmt & Fees (3)	At Request	1Y-Trans 10Y-TSD	260.425 Act		Y	18
MT	SAF	SAF	SAF	A	None	SAF	SAF	None	SAF	SAF	SAF	B	SAF	SAF	At Request	10 Y	$10,000/d	$10,000/d + 6 Mo Prison	N	19
NE	SAF	SAF	SAF	A	None	SAF	SAF	None	SAF	SAF	SAF	A	SAF	SAF	Discretion of Director	5 Y	$10,000/ Vio	$10,000/Vio + 1 Mo Prison	N	
NV	SAF	SAF	SAF	A	PCB	SAF	SAF	None	SAF	SAF	SAF	A	SAF	SAF	At Request	5 Y	$10,000/d	$25,000/Vio + 1 Y Prison	N	
NH	<100 Kg/m	1 Copy to St	SAF	Q	None	SAF	A	St Permit	St Site Reg 1905.08(y	St Version	SAF	A	SAF	Fees (2)	At Request	5 Y	$50,000/d	$50,000/d + Prison	N	20
NJ	<100 Kg/m	Add'n Inform (1)	SAF	A	Waste Oil	SAF	St Form	Add'n Terms (2)	SAF	St Version	SAF	A	SAF	Add'n Terms (3)	Req'd	5 Y	NJSA 13.1E	NJS St 58.10A-1	Y	21
NM	<1000 Kg/m	SAF	SAF	B	None	SAF	SAF	None	SAF	SAF	SAF	B	SAF	SAF	At Request	SAF	$10,000/d	$25,000/d	Y	
NY	<100 Kg/m	1 Copy to St w/, 5 d	Add'n Terms (1)	A Exception Differ (2)	PCB	Yes (3)	St Version	St Permit	Add'n Siting Rules	1 Copy to St w/, 2 d	SAF	A	More Stringent (375-2.6)	Add'n Terms (4)	Strict Terms (5)	5 Y	(6)	(6)	Y	22
NC	<1000 Kg/m	St Version	SAF	A	None	SAF	St Version	None	Buffer Zone	St Version	SAF	A	Stringent Landfill	SAF	At Request	10 Y	$10,000/Vio	$10,000/Vio	N	

Note: SAF = Same As Federal ; A = Annual ; Q = Quarterly ; M = Monthly

	Generators					Transporters			TSD Facility					Permit Program					Army Installation?	See the Following Remarks
	SQG	(2) Manifest	(3) Accum Time	(4) Report	(5) Additional Wastes	(1) Facility Reqmt	(2) Manifest	(3) Other St Reqmt	(1) Location Standards	(2) Manifest	(3) Operating Records	(4) Report	(5) Groundwater Protection	(1) Permit Reqmt	(2) Hearings	(3) Permit Duration	(4) Max Civil Penalty	(5) Max Criminal Penalty		
ND	<1000Kg/m	1 Copy to St	SAF	A	None	SAF	SAF	None	SAF	SAF	SAF	A	SAF	SAF	At Request	5Y	$25,000/d	$25,000/d	N	
OH	<1000Kg/m	SAF	SAF	A	None	SAF	SAF	St Registration	Add'n Terms (1)	SAF	SAF	A	SAF	SAF	Req'd	5Y	$10,000/d	$25,000/d (2)	Y	23
OK	<1000Kg/m	St Version	SAF	Q	Waste Oil	SAF	St Version	St Registration	Add'n Term (2)	St Version	SAF	M	SAF	Extensive Fee System	At Request	5Y	At Discretion of Court		Y	24
OR	<1000Kg/m	SAF	SAF	Q	PCB Pesticides	SAF	SAF	None	SAF	SAF	SAF	Q	SAF	SAF	Req'd	10Y	$10,000/d	$25,000/d	Y	
PA	<1000Kg/m	Add'n Inform	SAF	Q	None	SAF	St Version	Add'n Terms (2)	SAF	St Version	SAF	Q	SAF	St Forms	At Request	5Y	Penn SWM Act 6018.605	Penn SWM Act 6018.606	Y	25
RI	No Exemption	1 Copy to St	SAF	B	None	SAF	St Version	St Permit & Vehicle Insp	SAF	1 Copy to St	SAF	B	SAF	Fees	Not Available	1Y-Trans 10Y-TSD	$10,000/ Vio	$10,000/Vio + 5Y Prison	N	
SC	<100Kg/m	1 Copy to St	SAF	Q	Waste Oil Waste Battery	SAF	1 Copy to St	St Permit Q'ly Report	SAF	1 Copy to St	SAF	Q	SAF	Add'n Terms (1)	Any Person May Reqst	3Y-Trans 5Y-TSD	SC Law 44-56-50		Y	26
SD	<1000Kg/m	SAF	SAF	B	None	SAF	SAF	None	SAF	SAF	SAF	B	SAF	SAF	At Request	5Y	$10,000/d	Class 4 Felony	N	
TN	<1000Kg/m (1)	SAF	SAF	A	None	SAF	SAF	Add'n Terms (2)	Add'n Terms (3)	SAF	Keeps Until Closing	A	Add'n Terms (4)	Add'n Terms (5)	At Request	1Y Between Revision	$10,000/d	(6)	Y	27
TX	<1000Kg/m	Add'n Terms (2)	SAF	M A	None	SAF	SAF	None	Specifies Unsuitable Sites	St Version	SAF	M, A	SAF	Add'n Inform	Req'd	5Y	$25,000/d	$25,000/d 1Y Prison	Y	28
UT	<1000Kg/m	SAF	SAF	B	None	SAF	SAF	None	Add'n Terms (1)	SAF	SAF	B	SAF	SAF	At Request	10Y	$10,000/d	(2)	Y	29
VT	<100Kg/m	1 Copy to St	SAF	A (1)	(2)	SAF	SAF	St License	SAF	SAF	SAF	A	SAF	SAF	Req'd	5Y	10 VSA §6612 3 VSA §2822		Y	30
VA	<1000Kg/m	SAF	SAF	A (on EPA Form)	None	SAF	Annual Report	St Permit	Impact Analysis	SAF	SAF	A	SAF	Fees	Req'd	10Y	$10,000/d	$10,000/d + 1Y Prison	N	
WA	<4000lbs/m (1)	SAF	SAF	A	Yes (2)	SAF	SAF	None	Add'n Terms (3)	SAF	SAF	A	SAF	Demonstration of Safety	At Request	10Y	$10,000/d	$10,000/Vio + 1Y Prison	N	31
WV	<100Kg/m (1)	SAF	SAF	A (on EPA Form)	None	SAF	SAF	None	St Siting Standards	SAF	SAF	A	Add'n Terms (2)	Add'n Terms & Fees (3)	At Request	10Y	$25,000/d	$50,000/d + 2Y Prison	N	32
WI	<100Kg/m Annual Reports	St Version	SAF	A	None	SAF	St Version	St License	Municipality May Participate	St Version	SAF	Q	Underground Injection Prohibited	Feasibility Report	At Request	2Y	$25,000/d	$25,000/Vio + 1Y Prison	N	
WY	No State Program / EPA Administers Wyoming HWM Program																		N	

Note: SAF = Same As Federal ; A = Annual ; Q = Quarterly ; M = Monthly

Remarks:

1. Arizona

(1)* TSDs may be required to detoxify and immobilize wastes prior to disposal in a landfill.

* Underground injection of HW is prohibited.

* All underground tanks for storing HW must have secondary containment and leak detection, and there are closure standards for underground tanks.

(2)* Increased information requirements regarding the character background of key employees of TSDs.

(3)* Criminal penalties for noncompliance are more severe (by statute).

2. Arkansas

(1) New TSD facility siting criteria that are more restrictive than EPA requirements such as "bottom of the liner system or inplace soil barrier should be more than 10 feet above historical high water table."

(2) Initial application fee, $5000; permit renewal, $5000; annual permit evaluation, $5000; noncommercial facilities, $1000.

(3) Misdemeanor, imprisonment 1 year; fine, $10,000/violation.

3. California

(1)* State requires permit for extremely HW disposal (Art. 7, 66570).

* Two stages for permit (i) Department of Health Service permit for TSD (ii) State Water Resources Conservation Board permit to place HW into land.

* Fee system: $10,000, initial; $5,000, reissuance; $1000 or less for interim status (Art. G, 25205.1).

4. Connecticut

(1) Regulated wastes (i) PCB (ii) waste oil (iii) wastewater soluble oil (iv) paint waste (v) grinding waste (vi) waste sludges (vii) liquid waste (viii) other.

(2) HW transport storage criteria, 25-54 CC(c) -12 Regs.

(3) $500 for initial, $350 for renewal.

(4) Facilities must obtain certificate of public safety and necessity.

5. DC

(1) DC is in the process of lowering the generator exclusion limit to 50 kg/month. Upon promulgation of this regulation, any business generating more than 50 kg/month will be required to comply with all existing generator requirements.

6. Florida

(1) Groundwater discharge considerations under §17-4.25 F.A.C. shall be incorporated into the facility permits.

(2) $1000 for construction permits for new facility, $500 application for modification.

7. Georgia

(1) LLRM - Low Level Radiation Materials.

8. Illinois

(1)* Facility location information (§703.184) concerning any active or inactive shaft or tunneled mine below the facility; location of active faults (2 miles); existing private wells (1000 ft); corporate boundary of any municipalities (1.5 miles).

(2). ...shall be liable to a civil penalty of not to exceed (NTE) $10,000 for said violation and an additional civil penalty of NTE $1000 for each day during which violation continues...

(3) Criminal disposal of HW is a class 3 felony. In addition to any other penalties prescribed by law, a person is subject to a fine NTE $250,000 for each day of such offense.

* Also has extensive fee schedule for all the levels of HW activities.

9. Indiana

(1) Liquid industrial waste hauler program. Any liquid waste that is residual to waste water treatment, or incidental to an industrial or commercial activity, including but not limited to waste oil, salt brine, or other liquid used for road oiling and dust control. Permit is renewable every year. All haulers must maintain records of all trips and monthly reports must be submitted to the state.

(2) Require a certificate of environmental compatibility from Solid Waste Facility Site Approval Authority before issuance of a permit.

10. Kansas

(1) Generators cannot dispose of HW without first obtaining disposal authorization. Generator documentation of weekly inspection of storage area is emphasized.

(2) Transporters must pay annual fee of $250, must register with the department, and must follow specific routing requirements (28-31-7 Regs.).

(3) HW monitoring fees $1500/year for storage facility; $2500/year for treatment facility; $5000/year for disposal facility; $10,000/year for landfill or underground injection; generators fee is prorated to the amount of HW generated ranging from $100 to $5,000.

11. Kentucky

(1) "Special wastes" - those wastes of high volume and low hazard which commonly include utility wastes, mining wastes, sludge from pollution control equipment, water treatment facilities, and sewage treatment facilities, etc. They are defined not as HW but as solid waste.

(2) Transporters (as well as generators and TSD facilities) must register with the Cabinet and need a permit for the transportation of hazardous materials and/or radioactive materials from the Department of Transportation. There is a yearly fee of $25 for the permit.

(3) In Part b of the permit application, the applicant must demonstrate compliance with the seismic standard in 19 (out of 120) western Kentucky counties.

*Requirement of certificate of public safety.

(4) In addition to filing an EPA notification form (EPA Form 8700-12), Kentucky requires generators, recyclers, transporters, and owners/operators of TSD facilities to register with the Cabinet.

12. Louisiana

(1) Small quantity exclusion for waste generated by person who generates and disposes small quantities that pose minimum threat to the environment, {Chapter 11.3(d)(1)}.

(2) State requires additional manifest information.

Also required are use of sequentially numbered manifest for each generator and attachment of Chem-Card or equivalent for each shipment of HW. Moreover, the generator is responsible for mailing the completed original to the state no later than 7 days after receiving the manifest from the TSD facility.

(3) State requires greater specificity, and has own forms. Fee program: $2000 plus site analysis fee.

13. Maine

(1) Generator must keep copies of all records and test results for 10 years (Rules Chapter 851.9).

(2) Disposal facility, $10,000 + $1500/year; commercial treatment facility, $7000 + $1000/year; on-site treatment facility, $4000 + $1000/year; at the facility, $2000 + $500/year.

14. Maryland

(1) Both the transporter and the driver must be certified by the state.

(2) O/o must send a copy of the manifest to the Department within 10 days after receipt of the waste (10.51.05.05).

15. Michigan

(1)* Additional listing of toxic wastes. * Additional EP Toxic parameters: copper, zinc, and total chromium are added to the EPA parameters. * Severely Toxic Wastes: 7 chemical list (001s-007s).

(2) Facility must be inspected four times a year and file a written report.

(3) State has its own terminology and facilities must be licensed. Act 64 requires that "a person shall not establish a disposal facility without a construction permit from DNR" (section 18) and "shall not conduct, manage, maintain, or operate a disposal facility without an operating license from DNR" (section 22). Also has permit fee schedule.

16. Minnesota

(1) Seven metropolitan counties must have county ordinances for the regulation of HWM, which are subject to state approval.

(2) SQG are not required to submit contingency plans or conduct personnel training.

(3) In addition to Federal's, restrictions on wetland and shoreland.

(4) Special groundwater monitoring requirements (6 MCAR 7045.0484).

17. Mississippi

(1) Buffer zones are required, and other more stringent location standards, including stringent geological requirements. (Part 264 subpart b).

(2) Perpetual care plans must be submitted with permit application. Also, performance history of applicants for commercial landfills is required.

18. Missouri

(1) State registration is required and state has own identification number system.

(2) Transporters must be licensed by Department and must maintain daily log.

(3) $1000 for disposal facilities; $500 for all other TSD facilities for application.

19. Montana

(1) All Montana generators, except conditionally exempt SQG, are required to maintain annual registration, and to pay a fee for this registration.

20. New Hampshire

(1) Records must be retained for 7 years.

(2) $5000, facility; $100, transporters; $0.04/kg, generators.

21. New Jersey

(1) The state requires additional information and the generators and o/o of TSD facilities must send copies to DEP by the next day.

(2) Requires licensing, employee training and disclosure statements (7:26-7.5).

(3) State has own terms and requirements; Environmental and Health impact statement required.

22. New York

(1) Generators that store waste in sufficient quantities must have permit even though they store less than 90 day period which the EPA doesn't require any permit.

(2) Exception reports must be sent within 20 days of shipment instead of 45 days in contrast to Federal regulation.

(3) More stringent regulations on transporter facilities, and exemption applies only for the facilities which store HW less than 5 days (EPA is 10 days).

(4)* More stringent interim regulations such as HWM facilities located over federally-designated sole source aquifers are not eligible for interim status, and land disposal and commercial HW facilities are also not eligible for interim status.

* State has own permit requirements (Facility Permitting Requirements, Title 6, Chapter 373-1).

(5) Adjudicating public hearing required by facilities siting board.

(6) Article 71 Environmental Conservation, Article 27, Title 9.11.13. Also has a provision for a reckless endangerment.

23. Ohio

(1) Facilities shall not be located within 2000 ft. of any residence, school, hospital, or prison.

(2) Reckless violators are guilty of a felony and subject to a fine of $25,000 and imprisonment of 4 years.

24. Oklahoma

(1) All generators must submit a disposal plan and receive approval prior to disposing HW.

(2) Site must be capable of retaining total precipitation and runoff generated by a 24-hour, 100-year flood, plus a minimum freeboard of 2 feet; buffer zone also required (7.2.2).

25. Pennsylvania

(1)* State requires the records retention period of 20 years.

*Contingency plans are required for all generators and transporters as well as o/o of TSD facilities.

* Additional marking and labeling are required for containers of 110 gallons or less.

(2) Extensive safety requirements are imposed including personnel training. Also transporters must be licensed by the state.

26. South Carolina

(1) State permit program has separate regulations and technical requirements (e.g., one commercial off site HW disposal site is restricted to a rate of land disposal by burial not to exceed 135,000 tons each 12-month period).

27. Tennessee

(1) Anyone who generates 100kg/month or greater must notify, although only generators who produce more than 1000KG/month are actually regulated. Also more detailed information is required on the notification (state form).

(2) Must have a permit; certain explosives are forbidden from being transported (173.51); extensive recordkeeping requirements (1200-1-11-.04 Rules).

(3) State prohibits sites on wetlands or endangered species habitats.

(4) Monitoring wells must be inspected and approved by state staff geologist.

(5)* Permit must be approved by the county. * Fee system: $100, transporter; $2500, TSD.

(6) Misdemeanor, the fine is $10,000 + 1 year imprisonment; knowing violations is a felony, the fine is $50,000 + 2 years imprisonment.

28. Texas

(1) Texas requires the Industrial Solid Waste Classification system, which results in some recordkeeping and reporting requirements for non-hazardous waste.

(2) Requires the state manifest; requires state waste load identification number and shipping tickets (335.10).

29. Utah

(1) The HW facility siting act requires the state HW committee to develop a statewide plan for siting HW TSD facilities. The Act authorizes the committee to certify sites.

(2) Knowing violation, Class A misdemeanor, $15,000 per day. Also has provision for reckless endangerment.

30. Vermont--(No off-site disposal site exists)

(1) Generators who produce greater than 100kg/month of HW must provide documentation of the annual training of the employees involved in handling HW.

(2) State has its own HW codes including PCBs and infectious and pathogenic wastes.

31. Washington

(1) Several quantity generators exemptions dependent upon waste classification [WAC-173-303-070(8)].

(2) State has own criteria for waste classification: extremely hazardous or dangerous; toxicity, persistency, and carcinogenicity are used to identify HW. Some PCB's are classified as dangerous waste.

(3) Additional siting standards and buffer zone requirement are specified (WAC-173-303-420).

32. West Virginia

(1) Notification requirement for generators less than 100kg/month. Recordkeeping requirement for less than 1000kg/month generators.

(2) All new land disposal facilities must have both double liners and ground waste monitoring.

(3) Requires preparation of environmental impact analyses when permitting major new TSD facility (>1,000kg/month).

APPENDIX F:

FORMS FROM THE DEFENSE ENVIRONMENTAL STATUS REPORT

TABLE 3
OIL AND HAZARDOUS SUBSTANCE SPILLS SUMMARY

PERIOD COVERED: FY _____ COMPONENT _____

SPILL DATA	AS OF LAST PERIOD	AS OF CURRENT PERIOD
1. NO. OF MAJOR OIL SPILLS* (NOTE 1)		
2. NO. OF MEDIUM OIL SPILLS*		
3. NO. OF MINOR OIL SPILLS*		
4. NO. OF REPORTABLE HAZARDOUS SUBSTANCE SPILLS* (NOTE 1)		
5. SPCC* STATUS BY INSTALLATION		
A. NO. OF PLANS REQUIRED BY SERVICE REGULATIONS OR ENVIRONMENTAL LAWS		
B. WRITTEN PLANS INCOMPLETE		
C. CONSTRUCTION ACTIONS INCOMPLETE		

NOTE 1: NARRATIVE: ON A SEPARATE SHEET BRIEFLY DESCRIBE GALLONS SPILLED, LOCATION, EFFECT, AND CONTROL FOR THE CURRENT PERIOD.

NOTE 2: TERMS UNDERLINED AND MARKED WITH AN ASTERISK ARE DEFINED IN THE GLOSSARY, PART 3.

TABLE 4
HAZARDOUS WASTE COMPLIANCE STATUS

PERIOD COVERED FY _____ COMPONENT _____

COMPLIANCE DATA	AS OF LAST PERIOD	AS OF CURRENT PERIOD
1 NO OF INSTALLATIONS		
A WITH PART A PERMITS (INTERIM STATUS)		
B WITH PART B APPLICATION IN PROCESS (NOTE 1)		
C WITH FINAL PART B PERMITS		
D PART B PERMITS REQUIRED SOLELY DUE TO STORAGE		
2 NUMBER OF FACILITIES* (TOTAL)		
A TREATMENT*		
B STORAGE*		
C DISPOSAL*		
3 NO OF NOTICES OF VIOLATION (NOVs)		
A NO OF NOVs UNRESOLVED AT THE START OF PERIOD (TOTAL)		
1 NOVs WHICH REQUIRE ADMINISTRATIVE OR OPERATIONAL CHANGES TO RESOLVE		
2 NOVs WHICH REQUIRE POLLUTION ABATEMENT PROJECT(S) TO RESOLVE		
B NO OF NOVs RECEIVED DURING PERIOD (TOTAL)		
1 NOVs WHICH REQUIRE ADMINISTRATIVE OR OPERATIONAL CHANGES TO RESOLVE		
2 NOVs WHICH REQUIRE POLLUTION ABATEMENT PROJECT(S) TO RESOLVE		
C NO OF NOVs RESOLVED DURING PERIOD (TOTAL)		
1 BY ADMINISTRATIVE OR OPERATIONAL METHODS		
2 BY POLLUTION ABATEMENT PROJECT(S)		
4 NO OF INSTALLATIONS WITH RCRA REQUIRED GROUNDWATER MONITORING PROGRAMS		
5 NO OF INSTALLATIONS WITH GROUNDWATER CONTAMINATION* FROM RCRA FACILITIES		
6 NO OF INSTALLATIONS WITH REMEDIAL ACTION REQUIRED AT TSD FACILITIES (TO SATISFY NOVs)		

NOTE 1 PART B REFERS TO A PART B PERMIT WHICH HAS BEEN CALLED OR SUBMITTED BUT NOT ISSUED
NOTE 2 TERMS UNDERLINED AND MARKED WITH AN ASTERISK ARE DEFINED IN THE GLOSSARY, PART 3

TABLE 5
LEAKING UNDERGROUND STORAGE TANKS (LUST) PROGRAM SUMMARY

PERIOD COVERED: FY _____ COMPONENT _____

LUST PROGRAM DATA	AS OF LAST PERIOD	AS OF CURRENT PERIOD
1. NO. OF INSTALLATIONS SUBJECT TO LUST REGULATIONS*		
2. NO. OF TANKS SUBJECT TO LUST REGULATIONS		
3. NO. OF INSTALLATIONS/TANKS OUT OF COMPLIANCE		
A. WHICH REQUIRE ADMINISTRATIVE OR OPERATIONAL CHANGES TO RESOLVE	/	/
B. WHICH REQUIRE POLLUTION ABATEMENT PROJECT(S) TO RESOLVE	/	/

NOTE 1: TERMS UNDERLINED AND MARKED WITH AN ASTERISK ARE DEFINED IN THE GLOSSARY, PART 3.

TABLE 6A
PCB INVENTORY SUMMARY

PERIOD COVERED CY _____ COMPONENT _____

PCB INVENTORY DATA (UNITS IN GALLONS, EXCEPT AS NOTED)	AS OF LAST PERIOD	AS OF CURRENT PERIOD
1. FOR PCBs FOR WHICH THE COMPONENT IS ACCOUNTABLE		
A. QUANTITY OF PCB LIQUID IN STORAGE FOR DISPOSAL		
1. PCB LIQUID (GREATER THAN 50 PPM PCB)		
B. QUANTITY (CUBIC FEET) OF PCB CONTAMINATED SOLID WASTES IN STORAGE FOR DISPOSAL		
2. FOR PCBs FOR WHICH THE DPDO IS ACCOUNTABLE		
A. QUANTITY OF PCB LIQUID IN STORAGE FOR DISPOSAL		
1. PCB LIQUID (GREATER THAN 50 PPM PCB)		
B. QUANTITY (CUBIC FEET OF PCB CONTAMINATED SOLID WASTES IN STORAGE FOR DISPOSAL)		
3. FOR DLA ONLY. CUMULATIVE DATA ON PCB DISPOSED, AND CONTRACT COSTS.		
A. QUANTITY > 50 PPM PCB DISPOSED		
B. QUANTITY < 50 PPM PCB DISPOSED		
C. AMOUNT OF PCB WASTES AND PCB CONTAMINATED SOIL DISPOSED		
D. COSTS OF PCB DISPOSAL		

TABLE 6B
HAZARDOUS WASTE ACTIVITY SUMMARY

PERIOD COVERED CY _____ COMPONENT _____

HAZARDOUS WASTE DATA (UNITS IN KILOGRAMS)	AS OF LAST PERIOD	AS OF CURRENT PERIOD
1 NO OF INSTALLATIONS GENERATING* HAZARDOUS WASTE*		
2 QUANTITY OF HAZARDOUS WASTE GENERATED ON-SITE		
3 HAZARDOUS WASTE GENERATION		
A TRANSFERRED TO DEFENSE PROPERTY DISPOSAL OFFICE		
1 FOR ACCOUNTABILITY* ONLY		
2 FOR ACCOUNTABILITY AND CUSTODY*		
B TREATED BY COMPONENT		
1 ON-SITE		
2 OFF-SITE		
C DISPOSED BY COMPONENT		
1 ON-SITE		
2 OFF-SITE		
4 HAZARDOUS WASTE STORED ON-SITE AS OF 31 DEC		
1 IN CONFORMING STORAGE*		
2 NOT IN CONFORMING STORAGE		

NOTE TERMS UNDERLINED AND MARKED WITH AN ASTERISK ARE DEFINED IN THE GLOSSARY, PART 3

TABLE 8
MANAGEMENT OF SPECIALIZED WASTE SUMMARY

PERIOD COVERED CY _____ COMPONENT _____

	AS OF LAST PERIOD	AS OF CURRENT PERIOD
USED SOLVENT ELIMINATION (USE) PROGRAM		
A NO OF INSTALLATIONS WITH USE PROGRAMS		
B NO OF INSTALLATIONS RECYCLING SOLVENTS BY (DISTILLATION/OFF-POST RECYCLE)	/	/
C NO OF INSTALLATIONS USING REPLACEMENT OF ORGANIC SOLVENT SYSTEM BY (WATER BASED/SOLVENT RENTAL* /OTHER SYSTEM)	/ /	/
D REVENUE (OR COST) FROM USE PROGRAM (GROSS/NET) (IN THOUSANDS)	/	/
II USED OIL MANAGEMENT		
A NO OF INSTALLATIONS (NOTE 1)		
1. SELLING USED OIL ITEMS*/RECEIVING PROCEEDS OF SALE	/	/
2 DONATING (OUTSIDE FED GOVT)/TRANSFERING (OTHER FED GOVT)	/	/
3. REUTILIZING (OTHER SERVICE OR OTHER DOD)		
4 DISPOSING AS WASTE		
5 OTHER		
B NO OF INSTALLATIONS BURNING USED OIL FUEL*		
1 AMOUNT* OF USED OIL FUEL BURNED		
2 AMOUNT OF VIRGIN FUEL* MIXED* WITH USED (GALS)		
C FOR DLA ONLY NUMBER OF ENTITIES RECEIVING DOD USED OIL AND TOTAL GALLONS RECEIVED BY		
1 SALE (ENTITIES TOTAL GALLONS)		
a TOTAL PROCEEDS FROM SALE		
2 DONATION (ENTITIES/TOTAL GALLONS)		
3. TRANSFER (ENTITIES/TOTAL GALLONS)		
4 REUTILIZATION (ENTITIES/TOTAL GALLONS)		
5 A&D (ENTITIES/TOTAL GALLONS)		
III RECYCLABLE-GROSS REVENUES FROM RECYCLABLES (ALL CATEGORIES)		

NOTE 1 COUNT INSTALLATIONS USING MORE THAN ONE METHOD AS OFTEN AS NECESSARY

NOTE 2 TERMS UNDERLINED AND MARKED WITH AN ASTERISK ARE DEFINED IN THE GLOSSARY, PART 3.

TABLE 9

INSTALLATION RESTORATION PROGRAM OVERVIEW

PERIOD COVERED: FY _____ COMPONENT

PROGRAM DATA	AS OF LAST PERIOD	AS OF CURRENT PERIOD
1. NO. OF INSTALLATIONS WITH PHASE I INITIATED		
A. WITH PHASE I COMPLETED		
2. NO. OF SITES* WHICH HAVE:	[redacted]	
A. BEEN RECOMMENDED FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDIES (RI/FS) *		
1. RI/FS STARTED (NOTE 2 & 3)		
2. RI/FS COMPLETED (NOTE 2 & 3)		
B. RI/FS RECOMMENDING REMEDIAL ACTION (RA) *		
1. RA DESIGN STARTED (NOTE 2)		
2. RA DESIGN COMPLETED (NOTE 2)		
3. RA STARTED (NOTE 2)		
4. RA COMPLETED (NOTE 2)		
C. RI/FS RECOMMENDING LONG TERM MONITORING (LTM) *		
1. RA LTM INSTALLED (NOTE 2)		
3. SITES WHICH REQUIRE PERMITS		
A. WHICH PERMITS HAVE BEEN OBTAINED (NOTE 2)		

NOTE 1: TERMS UNDERLINED AND MARKED WITH AN ASTERISK ARE DEFINED IN THE GLOSSARY, PART I.
NOTE 2: PROVIDE A BRIEF NARRATIVE LISTING THE ACTIVITY AND COST DATA ASSOCIATED WITH EACH SITE FOR THE CURRENT PERIOD ONLY. COST DATA NOT APPLICABLE TO OBTAINING PERMITS.
NOTE 3: INCLUDE PHASE III TECHNOLOGY DEVELOPMENT (TD) PROJECT.

TABLE 17

ENVIRONMENTAL AUDITING SUMMARY

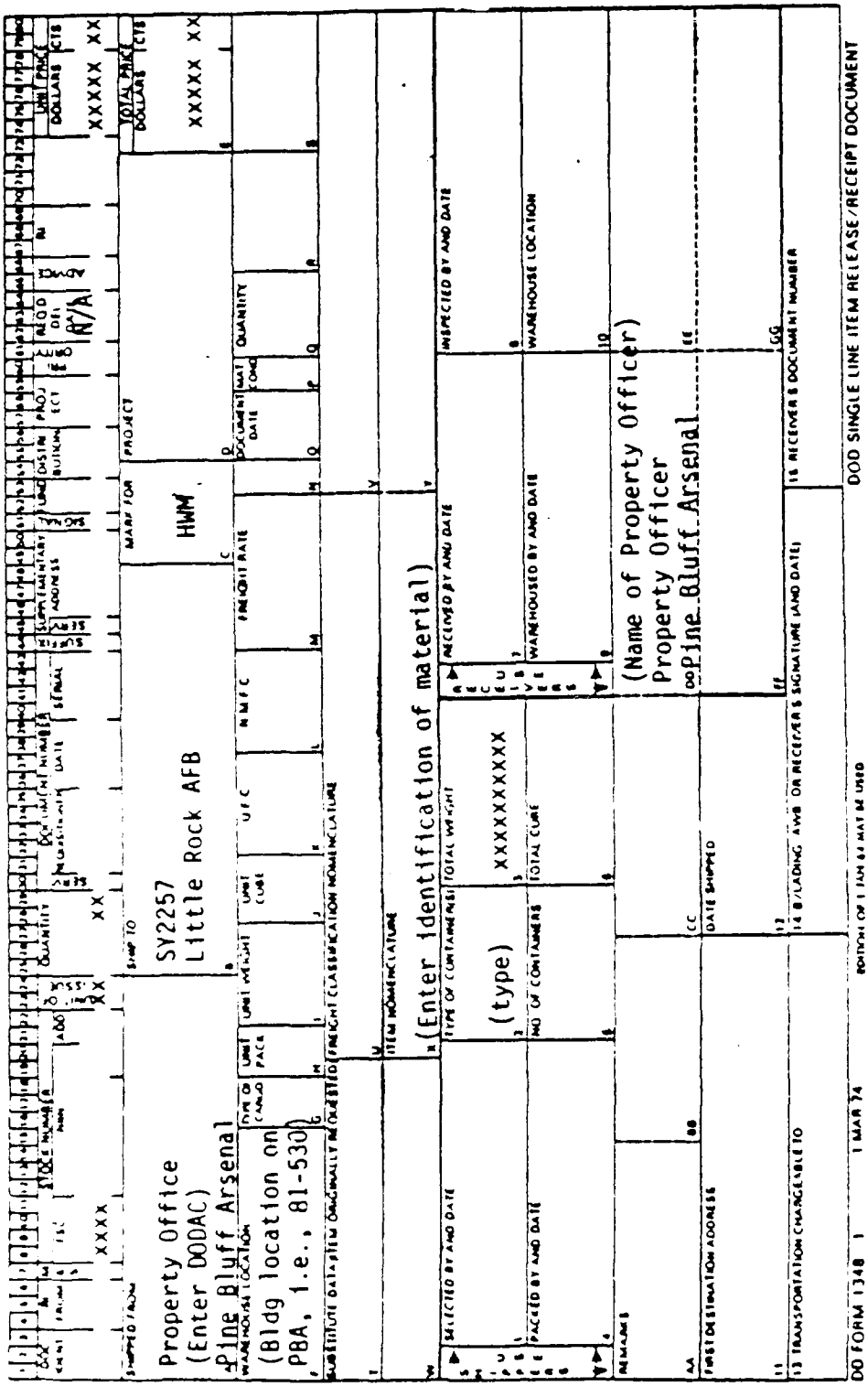
PERIOD COVERED: FY _____ COMPONENT _____

COMPLIANCE DATA	AS OF LAST PERIOD	AS OF CURRENT PERIOD
1. NO. OF INSTALLATIONS		
A. PARTICIPATING IN AN AUDITING PROGRAM* (MULTI-MEDIA/SINGLE-MEDIA)	/	/
B. AUDITED DURING PERIOD (MULTI-MEDIA/ SINGLE-MEDIA)	/	/
2. NO. OF INSTALLATIONS WHERE AUDITS IDENTIFIED REPORTABLE VIOLATIONS		
3. TOTAL NO. OF REPORTABLE VIOLATIONS IDENTIFIED BY AUDITS		

NOTE: TERMS UNDERLINED AND MARKED WITH AN ASTERISK ARE DEFINED IN THE GLOSSARY, PART 3.

APPENDIX G:

DOD SINGLE LINE ITEM RELEASE/RECEIPT DOCUMENT



APPENDIX H:

ENVIRONMENTAL POLLUTION PREVENTION, CONTROL, AND ABATEMENT AT DOD FACILITIES REPORT

1383 Report Exhibit 1
Supplemental Information Sheet
(Attach to EPA Form 3500-7)

DATE PREPARED:
LOCAL INSTALLATION PROJECT NO.:

1. PROJECT NARRATIVE/DESCRIPTION (Short Statement of Work):*

FUNDING TYPE: INSTALLATION STATUS: Active Inactive
REQUIRED FOR MOBILIZATION: Yes No

2. SPECIFIC TYPE OF POLLUTION/CONTAMINATION:

3. AMOUNT OF POLLUTION/CONTAMINATION:

4. POLLUTION SOURCE AND DISCHARGE, EMISSION OR DEPOSIT POINT (Facility Desc):

5. EXISTING TREATMENT AND OTHER CONTROL MEASURES (Existing Conditions):

6. EFFECTIVENESS OF EXISTING TREATMENT AND CONTROL:

7. REMEDIAL MEASURES PROPOSED AND ESTIMATED EFFECT IN CORRECTING PROBLEMS:

8. APPLICABLE STANDARD (State and Federal):

9. OTHER RELEVANT INFORMATION:

*If project is study, etc., and not one installation specific, fill in only applicable numbered section and expand this project description section.

Exhibit 2

United States Environmental Protection Agency
Washington DC 20460

EPA Federal Agency Pollution Abatement Plan — Project Report

I Facility Information

1 State Alpha	2 Agency Bureau	3 GSA Installation	4 EPA Region	5 Country	6 New Installation
	2138			USA	☐ Yes ☐ No

7 Name of the Installation

8 Street Address

9 City Name	10 ZIP Code if known	11 Ownership Type
	—	

II Basic Project Information

1 Agency Project Number	2 Various Locations	3 Media	4 Pollutant Category	5 Funding Account	6 Year Funding Required
	☐ Yes ☐ No				

7 Project Name (Brief description)

8 Project Contact Name	9 Contact Telephone	10 Total Cost Estimate (in $1,000's)
	— —	

11 Project Assessment

- ☐ High (H) Project critical to Agency program and/or cleanup of local environment
- ☐ Med (M) Project important to Agency program and/or cleanup of local environment
- ☐ Low (L) Project desirable to Agency program and/or cleanup of local environment

12 Compliance Status

- ☐ ESDP Does not meet established standard and compliance deadline has passed
- ☑ ESDF Does not meet established standard and compliance deadline is in the future
- ☐ PSDF Does not meet pending standard and compliance deadline is in the future
- ☐ ESRD Meets established standard but needs replacement due to obsolescence
- ☐ ESRE Meets established standard but needs replacement due to need for expansion
- ☐ ESDL Meets established standards but needs to demonstrate leadership
- ☐ OTHR Other

13 Project Cost

Fiscal Year	Budgeted ($1,000)	Funded ($1,000)

14 Project Milestones/Progress (All dates are month, year)

Design Plan Completion	Construction Work Start	Construction Work Completion

Final Compliance Required	Program Code	Fiscal Year Completed

For DOE Use Only

Program ID	Field Office

Project Narrative (including description of legal requirements the pollutants to be controlled)

EPA Form 3500-7 (Rev. 8-88) Previous edition is obsolete

APPENDIX I:

REPORTABLE QUANTITIES OF HAZARDOUS SUBSTANCES*

Material	Category	RQ in pounds (kilograms)
Acetaldehyde	C	1,000 (454)
Acetic acid	C	1,000 (454)
Acetic anhydride	C	1,000 (454)
Acetone cyanohydrin	A	10 (4.54)
Acetyl bromide	D	5,000 (2,270)
Acetyl chloride	D	5,000 (2,270)
Acrolein	X	1 (0.454)
Acrylonitrile	B	100 (45.4)
Adipic acid	D	5,000 (2,270)
Aldrin	X	1 (0.454)
Allyl alcohol	B	100 (45.4)
Allyl chloride	C	1,000 (454)
Aluminum sulfate	D	5,000 (2,270)
Ammonia	B	100 (45.4)
Ammonium acetate	D	5,000 (2,270)
Ammonium benzoate	D	5,000 (2,270)
Ammonium bicarbonate	D	5,000 (2,270)
Ammonium bichromate	C	1,000 (454)
Ammonium bifluoride	D	5,000 (2,270)
Ammonium bisulfite	C	5,000 (2,270)
Ammonium carbamate	D	5,000 (2,270)
Ammonium carbonate	D	5,000 (2,270)
Ammonium chloride	D	5,000 (2,270)
Ammonium chromate	C	1,000 (454)
Ammonium citrate	D	5,000 (2,270)
Ammonium fluoborate	D	5,000 (2,270)
Ammonium fluoride	D	5,000 (2,270)
Ammonium hydroxide	C	1,000 (454)
Ammonium oxalate	D	5,000 (2,270)
Ammonium silicofluoride	C	1,000 (454)
Ammonium sulfamate	D	5,000 (2,270)
Ammonium sulfide	D	5,000 (2,270)
Ammonium sulfite	D	5,000 (2,270)
Ammonium tartrate	D	5,000 (2,270)
Ammonium thiocyanate	D	5,000 (2,270)
Ammonium thiosulfate	D	5,000 (2,270)
Amyl acetate	C	1,000 (454)
Aniline	C	1,000 (454)
Antimony pentachloride	C	1,000 (454)
Antimony potassium tartrate	C	1,000 (454)
Antimony tribromide	C	1,000 (454)
Antimony trichloride	C	1,000 (454)
Antimony trifluoride	C	1,000 (454)
Antimony triiodide	D	5,000 (2,270)
Arsenic disulfide	D	5,000 (2,270)
Arsenic pentoxide	D	5,000 (2,270)
Arsenic trichloride	D	5,000 (2,270)
Arsenic trioxide	D	5,000 (2,270)
Arsenic trisulfide	D	5,000 (2,270)
Barium cyanide	A	10 (4.54)
Benzene	C	1,000 (454)
Benzoic acid	D	5,000 (2,270)
Benzonitrile	C	1,000 (454)
Benzoyl chloride	C	1,000 (454)
Benzyl chloride	B	100 (45.4)
Beryllium chloride	D	5,000 (2,270)
Beryllium fluoride	D	5,000 (2,270)
Beryllium nitrate	D	5,000 (2,270)
Butyl acetate	D	5,000 (2,270)
n-Butyl phthalate	B	100 (45.4)
Butylamine	C	1,000 (454)
Butyric acid	D	5,000 (2,270)
Cadmium acetate	B	100 (45.4)
Cadmium bromide	B	100 (45.4)
Cadmium chloride	B	100 (45.4)
Calcium arsenate	C	1,000 (454)
Calcium arsenite	C	1,000 (454)
Calcium carbide	D	5,000 (2,270)
Calcium chromate	C	1,000 (454)
Calcium cyanide	A	10 (4.54)
Calcium dodecylbenzenesulfonate	C	1,000 (454)
Calcium hypochlorite	B	100 (45.4)
Captan	A	10 (4.54)
Carbaryl	B	100 (45.4)
Carbofuran	A	10 (4.54)
Carbon disulfide	D	5,000 (2,270)
Carbon tetrachloride	D	5,000 (2,270)
Chlordane	X	1 (0.454)
Chlorine	A	10 (4.54)
Chlorobenzene	B	100 (45.4)
Chloroform	D	5,000 (2,270)
Chlorpyrifos	X	1 (0.454)
Chlorosulfonic acid	C	1,000 (454)
Chromic acetate	C	1,000 (454)
Chromic acid	C	1,000 (454)
Chromic sulfate	C	1,000 (454)
Chromous chloride	C	1,000 (454)
Cobaltous bromide	C	1,000 (454)
Cobaltous formate	C	1,000 (454)
Cobaltous sulfamate	C	1,000 (454)
Coumaphos	A	10 (4.54)
Cresol	C	1,000 (454)
Crotonal dehyde	B	100 (45.4)
Cupric acetate	B	100 (45.4)
Cupric acetoarsenite	B	100 (45.4)
Cupric chloride	A	10 (4.54)
Cupric nitrate	B	100 (45.4)
Cupric oxalate	B	100 (45.4)
Cupric sulfate	A	10 (4.54)
Cupric sulfate ammoniated	B	100 (45.4)
Cupric tartrate	B	100 (45.4)
Cyanogen chloride	A	10 (4.54)
Cyclohexane	C	1,000 (454)
2,4-D Acid	B	100 (45.4)
2,4-D Esters	B	100 (45.4)
DDT	X	1 (0.454)
Diazinon	X	1 (0.454)
Dicamba	C	1,000 (454)
Dichlobenil	C	1,000 (454)
Dichlone	X	1 (0.454)
Dichlorobenzene	B	100 (45.4)
Dichloropropane	D	5,000 (2,270)
Dichloropropene	D	5,000 (2,270)
Dichloropropene-Dichloropropane Mixture	D	5,000 (2,270)
2,2-Dichloropropionic acid	D	5,000 (2,270)
Dichlorvos	A	10 (4.54)
Dieldrin	X	1 (0.454)
Diethylamine		1,000 (454)
Dimethylamine		1,000 (454)
Dinitrobenzene	C	1,000 (454)
Dinitrophenol	C	1,000 (454)
Dinitrotoluene	C	1,000 (454)
Diquat	C	1,000 (454)
Disulfoton	X	1 (0.454)
Diuron	B	100 (45.4)
Dodecylbenzenesulfonic acid	C	1,000 (454)
Endosulfan	X	1 (0.454)
Endrin	X	1 (0.454)
Epichlorohydrin	C	1,000 (454)
Ethion	A	10 (4.54)
Ethylbenzene	C	1,000 (454)
Ethylenediamine	C	1,000 (454)
Ethylene dibromide	C	1,000 (454)
Ethylene dichloride	D	5,000 (2,270)
EDTA	D	5,000 (2,270)
Ferric ammonium citrate	C	1,000 (454)
Ferric ammonium oxalate	C	1,000 (454)
Ferric chloride	C	1,000 (454)
Ferric fluoride	B	100 (45.4)
Ferric nitrate	C	1,000 (454)
Ferric sulfate	C	1,000 (454)
Ferrous ammonium sulfate	C	1,000 (454)

*Source: 40 CFR Ch. 1, Subpart A, Table 117.3.

Material	Category	RQ in pounds (kilograms)
Ferrous chloride	B	100 (45.4)
Ferrous sulfate	C	1,000 (454)
Formaldehyde	C	1,000 (454)
Formic acid	D	5,000 (2,270)
Fumaric acid	D	5,000 (2,270)
Furfural	C	1,000 (454)
Guthion	X	1 (0.454)
Heptachlor	X	1 (0.454)
Hexachlorocyclopentadiene	X	1 (0.454)
Hydrochloric acid	D	5,000 (2,270)
Hydrofluoric acid	D	5,000 (2,270)
Hydrogen cyanide	A	10 (4.54)
Hydrogen sulfide	B	100 (45.4)
Isoprene	C	1,000 (454)
Isopropanolamine dodecylbenzenesulfonate	C	1,000 (454)
Kelthane	D	5,000 (2,270)
Kepone	X	1 (0.454)
Lead acetate	D	5,000 (2,270)
Lead arsenate	D	5,000 (2,270)
Lead chloride	D	5,000 (2,270)
Lead fluoborate	D	5,000 (2,270)
Lead fluoride	C	1,000 (454)
Lead iodide	D	5,000 (2,270)
Lead nitrate	D	5,000 (2,270)
Lead stearate	D	5,000 (2,270)
Lead sulfate	D	5,000 (2,270)
Lead sulfide	D	5,000 (2,270)
Lead thiocyanate	D	5,000 (2,270)
Lindane	X	1 (0.454)
Lithium chromate	C	1,000 (454)
Malathion	A	10 (4.54)
Maleic acid	D	5,000 (2,270)
Maleic anhydride	D	5,000 (2,270)
Mercaptodimethur	B	100 (45.4)
Mercuric cyanide	X	1 (0.454)
Mercuric nitrate	A	10 (4.54)
Mercuric sulfate	A	10 (4.54)
Mercuric thiocyanate	A	10 (4.54)
Mercurous nitrate	A	10 (4.54)
Methoxychlor	X	1 (0.454)
Methyl mercaptan	B	100 (45.4)
Methyl methacrylate	D	5,000 (2,270)
Methyl parathion	B	100 (45.4)
Mevinphos	X	1 (0.454)
Mexacarbate	C	1,000 (454)
Monoethylamine	C	1,000 (454)
Monomethylamine	C	1,000 (454)
Naled	A	10 (4.54)
Naphthalene	D	5,000 (2,270)
Naphthenic acid	B	100 (45.4)
Nickel ammonium sulfate	D	5,000 (2,270)
Nickel chloride	D	5,000 (2,270)
Nickel hydroxide	C	1,000 (454)
Nickel nitrate	D	5,000 (2,270)
Nickel sulfate	D	5,000 (2,270)
Nitric acid	C	1,000 (454)
Nitrobenzene	C	1,000 (454)
Nitrogen dioxide	C	1,000 (454)
Nitrophenol	C	1,000 (454)
Nitrotoluene	C	1,000 (454)
Paraformaldehyde	C	1,000 (454)
Parathion	X	1 (0.454)
Pentachlorophenol	A	10 (4.54)
Phenol	C	1,000 (454)
Phosgene	D	5,000 (2,270)
Phosphoric acid	D	5,000 (2,270)
Phosphorus	X	1 (0.454)
Phosphorus oxychloride	D	5,000 (2,270)
Phosphorus pentasulfide	B	100 (45.4)
Phosphorus trichloride	D	5,000 (2,270)
Polychlorinated biphenyls	A	10 (4.54)
Potassium arsenate	C	1,000 (454)
Potassium arsenite	C	1,000 (454)
Potassium bichromate	C	1,000 (454)
Potassium chromate	C	1,000 (454)
Potassium cyanide	A	10 (4.54)
Potassium hydroxide	C	1000 (454)
Potassium permanganate	B	100 (45.4)
Propargite	A	10 (4.54)
Propionic acid	D	5,000 (2,270)
Propionic anhydride	D	5,000 (2,270)
Propylene oxide	D	5,000 (2,270)
Pyrethrins	C	1,000 (454)
Quinoline	C	1,000 (454)
Resorcinol	C	1,000 (454)
Selenium oxide	C	1,000 (454)
Silver nitrate	X	1 (0.454)
Sodium	C	1,000 (454)
Sodium arsenate	C	1,000 (454)
Sodium arsenite	C	1,000 (454)
Sodium bichromate	C	1,000 (454)
Sodium bifluoride	D	5,000 (2,270)
Sodium bisulfite	D	5,000 (2,270)
Sodium chromate	C	1,000 (454)
Sodium cyanide	A	10 (4.54)
Sodium dodecylbenzenesulfonate	C	1,000 (454)
Sodium fluoride	D	5,000 (2,270)
Sodium hydrosulfide	D	5,000 (2,270)
Sodium hydroxide	C	1,000 (454)
Sodium hypochlorite	B	100 (45.4)
Sodium methylate	C	1,000 (454)
Sodium nitrite	B	100 (45.4)
Sodium phosphate, dibasic	D	5,000 (2,270)
Sodium phosphate, tribasic	D	5,000 (2,270)
Sodium selenite	C	1,000 (454)
Strontium chromate	C	1,000 (454)
Strychnine	A	10 (4.54)
Styrene	C	1,000 (454)
Sulfuric acid	C	1,000 (454)
Sulfur monochloride	C	1,000 (454)
2,4,5-T acid	B	100 (45.4)
2,4,5-T amines	B	100 (45.4)
2,4,5-T esters	B	100 (45.4)
2,4,5-T salts	B	100 (45.4)
2,4,5-TP acid	B	100 (45.4)
2,4,5-TP acid esters	B	100 (45.4)
TDE	X	1 (0.454)
Tetraethyl lead	B	100 (45.4)
Tetraethyl pyrophosphate	B	100 (45.4)
Thallium sulfate	C	1,000 (454)
Toluene	C	1,000 (454)
Toxaphene	X	1 (0.454)
Trichlorfon	C	1,000 (454)
Trichloroethylene	C	1,000 (454)
Trichlorophenol	A	10 (4.54)
Triethanolamine dodecylbenzenesulfonate	C	1,000 (454)
Triethylamine	D	5,000 (2,270)
Trimethylamine	C	1,000 (454)
Uranyl acetate	D	5,000 (2,270)
Uranyl nitrate	D	5,000 (2,270)
Vanadium pentoxide	C	1,000 (454)
Vanadyl sulfate	C	1,000 (454)
Vinyl acetate	C	1,000 (454)
Vinylidene chloride	D	5,000 (2,270)
Xylene	C	1,000 (454)
Xylenol	C	1,000 (454)
Zinc acetate	C	1,000 (454)
Zinc ammonium chloride	D	5,000 (2,270)
Zinc borate	C	1,000 (454)
Zinc bromide	D	5,000 (2,270)
Zinc carbonate	C	1,000 (454)
Zinc chloride	D	5,000 (2,270)
Zinc cyanide	A	10 (4.54)
Zinc fluoride	C	1,000 (454)
Zinc formate	C	1,000 (454)
Zinc hydrosulfite	C	1,000 (454)
Zinc nitrate	D	5,000 (2,270)
Zinc phenolsulfonate	D	5,000 (2,270)
Zinc phosphide	C	1,000 (454)
Zinc silicofluoride	D	5,000 (2,270)
Zinc sulfate	C	1,000 (454)
Zirconium nitrate	D	5,000 (2,270)
Zirconium potassium fluoride	D	5,000 (2,270)
Zirconium sulfate	D	5,000 (2,270)
Zirconium tetrachloride	D	5,000 (2,270)

Note: For convenience, the table contains a column headed "Category" which lists the code letters "X", "A", "B", "C", and "D" associated with reportable quantities of 1, 10, 100, 1000, and 5000 lb, respectively.

APPENDIX J:

AMC HAZARDOUS WASTE REPORTS

INSTALLATION HW BASELINE GENERATION DATA*

PROCESS, OPERATION OR CONDITION (according to App D)	HW TYPE (1-10 below)	HW GENERATED** (kg/yr)	(kg/yr/unit)
Process A (e.g. painting)	Type 1 (EPA D001)	# for 1	#/unit for 1
	Type 3 (EPA D003)	# for 3	#/unit for 3
	•	•	•
	•	•	•
	•	•	•
	etc.	etc.	etc.
	Total HW generated for Process A:	kg/yr	kg/yr/unit
Process B (e.g. electroplating)	Type 2 (EPA D002)	# for 2	#/unit for 1
	Type 6 (EPA K list)	# for 3	#/unit for 3
	•	•	•
	•	•	•
	•	•	•
	etc.	etc.	etc.
	Total HW generated for Process B:	kg/yr	kg/yr/unit

•
•
•
etc.

Installation HW is sum of all processes (e.g. A+B): kg/yr

HAZARDOUS WASTE TYPES***

1. ignitable (EPA D001 by test)
2. corrosive (EPA D002 by test)
3. reactive (EPA D003 by test)
4. EP toxic (EPA D004-17 by test)
5. non-specific HW (EPA F list)
6. specific HW (EPA K list)
7. acute hazardous (EPA P list)
8. toxic (EPA U list)
9. used oils (DESR report)
10. unclassified (to be verified)

*1985 HW generation quantitites from EPA Biennial Report or state equivalent.
**HW generation quantities must be given in kg/yr. Kg/yr/unit of output (kg/yr/unit) is optional. The unit of output must be defined for each process, operation, or condition except that conditions may have no output.
***EPA HW types defined in 40 CFR 261

SEMIANNUAL HW GENERATION REPORT

PROCESS, OPERATION OR CONDITION (according to app D)	BASELINE* GENERATION (#)(#/unit)	LAST PERIOD* GENERATION (#)(#/unit)	LAST PERIOD* GOAL (#)(#/unit)	CURRENT PERIOD* GENERATION (#)(#/unit)	CURRENT PERIOD* GOAL (#)(#/unit)
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
Total for installation**					

*HW generation quantities must be given in kg/yr (#). Kg/yr/unit of output (#/unit) is optional. The unit of output must be defined for each process, operation, or condition except that conditions may have no unit of output.

**Total in kg/yr only.

APPENDIX K:

TRADOC HAZARDOUS WASTE REPORTS

INSTRUCTIONS FOR PREPARING AND USING
THE HAZARDOUS WASTE MANAGEMENT PLAN FORM (TRADOC FORM 165-R)

1. Installations will prepare TRADOC Form 165-R using information from surveys performed by installation personnel.

2. An explanation for each column on TRADOC Form 165-R follows:

a. Column a. DESCRIPTION OF WASTE. For hazardous wastes (HW) that are "listed" under 40 CFR Part 261, Subpart D, enter the EPA listed name. For mixtures of listed wastes, enter the description which best describes the waste. For "unlisted" HW identified by characteristics under 40 CFR Part 261, Subpart C, include the following information: (a) the characteristic which makes it a HW (i.e., ignitability, corrosivity, reactivity, and EP toxicity), and (b) the chemical name of the waste, if known.

b. Column b. NSN or LSN. List the National Stock Number (NSN) or the locally assigned stock number (LSN).

c. Column c. EPA HAZARDOUS WASTE NUMBER. For "listed" wastes, enter the four character USEPA hazardous waste number from 40 CFR Part 261, Subpart D, which identifies the waste. For "unlisted" wastes which exhibit hazardous characteristics, enter the four character USEPA hazardous waste number from 40 CFR Part 261, Subpart C, which is most applicable to the waste. If the waste is a mixture, enter all relevant USEPA hazardous waste numbers.

d. Column d. QUANTITY GENERATED IN CY XX. Enter the total quantity of the HW or HW mixture described on this line that was generated at the installation during the specified CY.

e. Column e. UNIT. Enter the unit of measure code for the quantity of HW described on the line. Units of measure which must be used on this form are:

UNIT OF MEASURE	CODE
pounds	P
short tons (2000 lbs)	T
kilograms	K
metric tons (2200 lbs)	M
gallons	G
liters	L

f. Column f. STORAGE SITE (BLDG OR AREA). Refers to where the HW is actually stored on the installation prior to treatment or transporting off-post for disposal.

g. Columns g and h. GENERATOR. Identifies the activity and building number where the HW is generated.

h. Columns i, j, and k. DISPOSITION. Determine the quantity of the HW which was disposed of as category I, II, and III wastes, as described below. The amounts listed in categories I-III must equal the quantity in Column d. For HW which was generated during the CY, but still in storage, estimate how the HW will likely be disposed.

CATEGORY	DESCRIPTION
I	Refers to HW generated by the installation where no attempt was made to reduce the amount and/or toxicity of the waste. The waste required disposal as a HW.
II	Refers to HW generated by the installation where the waste was treated to reduce the amount and/or toxicity of the waste. The waste still required disposal as a HW.
III	Refers to HW generated by the installation where the waste was treated to reduce the amount and/or toxicity of the waste. The waste did not require disposal as a HW.

TRADOC Form 165-1-R is a continuation of page one of TRADOC Form 165-R.

Page 2. Questions 1-4. Self-explanatory.

HAZARDOUS WASTE MANAGEMENT PLAN

(FOR ATZN-EN, DOE TRADOC, FORT SAM)

DATE

INSTALLATION NAME

REQUIREMENT CONTROL SYMBOL
ATEN-30(R1)

DESCRIPTION OF WASTE a	NSN OR ITEM b	EPA HAZARDOUS WASTE NUMBER c	QUANTITY GENERATED PER CY d	U/M e	STORAGE SITE (Building or Area) f	GENERATOR		DISPOSITION		
						SCHEDULE g	REQ. NO h	I i	II j	III k

TRADOC FORM 165-R Previous editions obsolete.

HAZARDOUS WASTE MANAGEMENT PLAN (Continued)

1. Describe changes in the amount and toxicity of hazardous waste generated at the installation in the last FY.

2. Describe hazardous waste minimization projects which were initiated during the past FY.

3. Describe hazardous waste minimization projects which will be initated in the next FY.

4. Provide comments on lessons learned and problems encountered when initiating or implementing hazardous waste minimization projects.

TRADOC FORM 165-R, Aug 86

HAZARDOUS WASTE MANAGEMENT PLAN (Continuation) [illegible]			DATE / INSTALLATION					REQUIREMENTS CONTROL SYMBOL ATEN-30(R1)		
DESCRIPTION OF WASTE a	NSN OR LIN b	EPA HAZARDOUS WASTE NUMBER c	QUANTITY GENERATED IN CY d	UNIT e	STORAGE SITE (Bldg or Area) f	GENERATOR		DISPOSITION		
						ACTIVITY g	BLDG NO. h	I i	II j	III k

TRADOC FORM 165-1-R

INSTRUCTIONS FOR PREPARING AND USING
THE HAZARDOUS WASTE MINIMIZATION PLAN FORM
(TRADOC FORM 166-R)

1. The installation will use TRADOC Form 166-R to establish goals for its Hazardous Waste Minimization Plan.

2. An explanation for each column on TRADOC Form 166-R follows:

a. Column a. DESCRIPTION OF WASTE. For hazardous wastes (HW) that are "listed" under 40 CFR Part 261, Subpart D, enter the EPA listed name. For mixtures of listed wastes, enter the description which best describes the waste. For "unlisted" HW identified by characteristics under 40 CFR Part 261, Subpart C, include the following information: (a) the characteristic which makes it a HW (i.e., ignitability, corrosivity, reactivity, and EP toxicity), and (b) the chemical name of the waste, if known.

b. Column b. EPA HAZARDOUS WASTE NUMBER. For "listed" wastes, enter the four character USEPA hazardous waste number from 40 CFR Part 261, Subpart D, which identifies the waste. For "unlisted" wastes which exhibit hazardous characteristics, enter the four character USEPA hazardous waste number from 40 CFR Part 261, Subpart C, which is most applicable to the waste. If the waste is a mixture, enter all relevant USEPA hazardous waste numbers.

c. Column c. QUANTITY GENERATED IN CY XX. Enter the total quantity of the HW or HW mixture described on this line that was generated at the installation during the specified CY.

d. Column d. UNIT. Enter the unit of measure code for the quantity of HW described on the line. Units of measure which must be used on this form are:

UNIT OF MEASURE	CODE
pounds	P
short tons (2000 lbs)	T
kilograms	K
metric tons (2200 lbs)	M
gallons	G
liters	L

e. Columns e, f, and g. DISPOSITION. Determine the quantity of the HW which was disposed of as category I, II, and III wastes, as described below. The amounts listed in categories I - III must equal the quantity in Column c. For HW which was generated during the CY, but still in storage, estimate how the HW will likely be disposed.

CATEGORY	DESCRIPTION
I	Refers to HW generated by the installation where no attempt was made to reduce the amount and/or toxicity of the waste. The waste required disposal as a HW.
II	Refers to HW generated by the installation where the waste was treated to reduce the amount and/or toxicity of the waste. The waste still required disposal as a HW.
III	Refers to HW generated by the installation where the waste was treated to reduce the amount and/or toxicity of the waste. The waste did not require disposal as a HW.

f. Columns h, i, j, and k. PROJECTED ANNUAL GENERATION. These columns should project the amount of the HW the installation expects to generate annually in each of the next four CY.

HAZARDOUS WASTE MINIMIZATION PLAN

(LOI, ATEN-EN, HQ TRADOC, Unitd, SAB)

DATE

INSTALLATION

REQUIREMENTS CONTROL SYMBOL
ATEN-30(R1)

DESCRIPTION OF WASTE a	EPA HAZARDOUS WASTE NUMBER b	QUANTITY GENERATED IN CY ____ c	U/M d	DISPOSITION OF HAZARDOUS WASTE FROM COLUMN C			PROJECTED ANNUAL GENERATION			
				e	f	g	CY ____ h	CY ____ i	CY ____ j	CY ____ k

TRADOC FORM Aug 86 166-R

11 x 8½

HAZARDOUS WASTE MINIMIZATION PLAN (Continuation)

DESCRIPTION OF WASTE a	EPA HAZARDOUS WASTE NUMBER b	QUANTITY GENERATED IN CY ____ c	UNIT d	DISPOSITION OF HAZARDOUS WASTE FROM COLUMN C e	 f	 g	PROJECTED ANNUAL GENERATION CY ____ h	 CY ____ i	 CY ____ j	 CY ____ k

TRADOC FORM 166-R, Aug 86

APPENDIX L:

MACOM INSTALLATION TELEPHONE INTERVIEW

*GOALS

1. Determine how each report is being prepared
2. Identify any problems in meeting reporting/recordkeeping requirements
3. Identify major HW/HM management needs
4. Solicit input for optimal management scheme

*MACOMs

I. Introduction/Background

Introduce self; working with Dr. John Bandy of Environmental Division at CERL. CERL is performing a very important project for the Army Environmental Office which will have a major impact upon developing a long-term hazardous waste management strategy for the Army. As part of this effort, CERL is identifying information management needs of MACOM's and installations. Your help in answering a few questions would be greatly appreciated since your input is necessary to the success of our research effort and the longer term goal of developing a hazardous waste management strategy. Is this a convenient time for you to spend a few minutes on this topic or should I call back?

II. Questions

1. What reports (if any) do you require from your installations relating to hazardous waste/materials?

-please send us a copy
-how often do you require?
-what do you do with the report & the data it contains?

2. What reports (if any) are you required to submit relating to hazardous waste/materials?

-please send us a copy
-to whom do you submit?
-how often are you required to submit?

3. What problems, if any, do you have in meeting your hazardous waste reporting/recordkeeping requirements?

-Probe; ask why; get complete answers; identify all problems

4. Have you issued any supplements to AR 420-47 or AR 200-1?

-please send us a copy

5. What attributes or qualities should an Army hazardous waste/material management information system have to be useful to you in your tasks as they are currently performed?

6. What are your major data management needs relating to hazardous waste?

-probe, ask why

7. We would like also to solicit the input of 3 or 4 of your installations. Could you give us the names of POC's at what you consider to be a representative sample of your installations? By representative, we mean an installation which may be experiencing problems managing its waste, a couple of "typical" installations, and an installation known for its good hazardous waste management practices.

THANK YOU FOR YOUR HELP!

*INSTALLATIONS

I. Introduction/Background

Same as for MACOM, except add that the MACOM POC (Rudy Stein or Steve McCall) said to contact you as a POC regarding this research effort.

II. Questions

1. What reports are you required to submit relating to hazardous waste?

-please send us a copy
-how often do you submit?
-to whom do you submit?

2. Are you subject to any audits or inspections?

-how often?
-by whom?
-what information is required?

3. Have you prepared an Installation Spill Contingency Plan (ISCP) and Spill Prevention Control and Countermeasures Plan (SPCC)?

-please send copies

4. Do you have any SOP's governing performance of hazardous waste/material management?

-please send copies

5. How do you collect, analyze, and prepare the data necessary for the reporting/recordkeeping?

6. Do you have any problems in meeting your hazardous waste reporting/recordkeeping requirement?

-probe; ask why; anonymity; get complete answers and identify all problems

7. What attributes or qualities should an Army hazardous waste/material management information system have to be useful to you in performing this task as you currently do?

8. What are your major data management needs relating to hazardous waste?

THANK YOU FOR YOUR HELP!

APPENDIX M:

QUESTIONNAIRE

CONCEPTUAL BASIS FOR A HAZARDOUS
WASTES COMPONENT OF THE
ARMY ENVIRONMENTAL DATA SYSTEM
26 July 1987

USER INPUT

FROM:

_____

_____

_____

_____ Installation

_____ MACOM, Subordinate Command

_____ HQDA, National Guard Bureau

_____ Other (please explain): _____

_____

Please comment on the need for each item and its relative importance to you (e.g., CRITICAL NEED, WORTHWHILE, NICE TO HAVE, NOT NEEDED). Any additional comments or advice you might wish to offer would be appreciated.

Some information may be needed at some levels and not at others. Please indicate whether you feel an item which you consider valuable at the installation level should be rolled up and, if so, to what level.

1. Installations

The installation systems would include the following:

1) Detailed information on the generation of hazardous wastes (identified in the installation hazardous waste management plan and the Notification of Hazardous Waste Activity), the on-site storage of hazardous waste and the cost of hazardous waste treatment/disposal. The hazardous waste information must be reported by process and by waste in a consistent manner (process, wastes, fiscal year, manner of handling and accounting for transfers to DLA) across all installations to permit unambiguous roll-ups

to subordinate commands, MACOMs, the Army Environmental Office, and the OASA(I&L). This information must be reliably known if the Army is to effectively and efficiently manage its hazardous wastes. Multi-year data would be stored for trends generation.

Roll-up? ___ How far? ___ Comment _____

2) An installation hazardous waste audit database which creates a standard record of audit results which can be rolled-up to higher headquarters (with installation identities hidden if necessary). Audit results are the best overall indicator of hazardous waste management performance at the installations and, considered collectively, within the various higher commands on up to DA. To be most useful, these audits, internal and external, should have a common content across the entire Army. Yes/no type information (e.g., does the installation have emergency response plans as required in SARA) would be included here. Multi-year data would be stored for trends generation.

Roll-up? ___ How far? ___ Comment _____

3) A database including all transfers of hazardous wastes to DRMS and/or to third party transporters to include a description of the quantities and types of wastes transferred, the date, and required supporting information such as the transporter's EPA identification number.

Roll-up? ___ How far? ___ Comment _____

4) Summarized output from the comprehensive hazardous materials identification system(s) being developed by Ron Webster. This system will determine what hazardous materials are being brought onto the installation in what quantities by what units. Knowing what comes onto the installation and who is responsible for it is essential for

hazardous waste minimization as well as for proper hazardous materials management and spill contingency planning. Multi-year data would be stored for trends generation.

Roll-up? ___ How far? ___ Comment _____

5) A database which will contain all relevant information on hazardous waste minimization projects planned or underway at the installation to include summary economic analysis data.

Roll-up? ___ How far? ___ Comment _____

6) A database of hazardous wastes actually generated, associated levels of productive activity (e.g., number of engines overhauled), waste generation norms for the generating processes where available (Bernie Donahue's Accountability Project), and comparisons of expected versus actual generation of hazardous waste for each generating process. This information would be useful both in indentifying problems and in identifying opportunities (e.g., unexpectedly low generations might indicate wastes going down the drain or they might indicate housekeeping or process innovations which could be profitably copied elsewhere).

Roll-up? ___ How far? ___ Comment _____

7) Hazardous waste minimization database including FY85 baseline generation (total and in terms of the underlying level of production), hazardous waste minimization goals by year for each of the wastes included in the installation hazardous waste minimization plan (total and in terms of the underlying level of production), and variances from planned progress with notes where required. This would be useful in tracking minimization progress and wouldn't be very difficult to do since the hazardous wastes generation data will be available anyway.

Roll-up? ___ How far? ___ Comment _____

8) On-line tools which assist in evaluating the life cycle costs of hazardous waste minimization technologies and processes (Bernie Donahue's Economic Analysis Model).

Roll-up? ___ How far? ___ Comment _____

9) A violations database which documents and tracks the status of any violations identified by regulatory agencies (and, if desired, installation environment audits and AAA audits, if any).

Roll-up? ___ How far? ___ Comment _____

10) A permits database to inclue information on all permits required, applied for, and held. This information needs to be consistent across all installations to permit unambiguous roll-ups to higher commands.

Roll-up? ___ How far? ___ Comment _____

11) A training records database to document determinations of training requirements and training programmed against these requirements and to enable installations to prove that required training has been carried out.

Roll-up? ___ How far? ___ Comment _____

12) A database including all hazardous waste treatment facilities on the installation and summarizing their operations

Roll-up? ___ How far? ___ Comment _____

13) A database of storage facilities, storage facility managers, and a record of storage facility inspections (DRMS & DEG if practicable) to document required inspections as well as any shortfalls in facilities or in DRMS or contractor performance which may exist. A similar database of hazardous materials storage facilities as required for SARA.

Roll-up? ___ How far? ___ Comment _____

14) A database covering all hazardous waste analyses and determinations of a solid waste's status as a RCRA hazardous waste which will document the procedures followed and the findings of all such analyses.

Roll-up? ___ How far? ___ Comment _____

15) A database of accumulation points, accumulation point managers, and a record of accumulation point inspections which will prove that required inspections have been accomplished.

Roll-up? ___ How far? ___ Comment _____

In addition, the DA (and possibly MACOM) systems could include:

16) PPBES information relating to the hazardous waste storage and hazardous waste minimization programs of the Army.

All systems could share access to a central hazardous waste regulatory database which might be developed and maintained on a cost sharing basis in cooperation with the U.S. Air Force and Navy who are known to have similar interests. Some level of support for this database may already be provided for through HMTC. Is this desirable?

All systems could share access to other automated hazardous waste information systems such as HMIS, HMMS (through ETIS), and HazLine. Which, if any, of these systems would you like to have access to thru this new system?

In developing the recommendations which you just considered, CERL had the opportunity to talk to environmental personnel on a number of installations about current methods of managing these data. A number of installations reported the use of commercial and home-brew (e.g., based on DBase III) systems, many of which appeared to be quite effective. If you have such a system or know of one, please describe it briefly here and provide a POC. CERL would like to give the Army the benefit of your experience...

Much of the data required for the capabilities described above are readily available (e.g., some must be collected to satisfy reporting requirements for the Army, DOD, the States, or the Federal Government). However, some of the data is not currently collected and may be hard to get. If, in reading through the above list, you have noticed that a

subsystem assumed the availability of data which you feel will not be readily available (e.g., no access, too much labor involved), please bring this to our attention.

Please mail your response to the following address not later than 1 Sep 1988:

Commander and Director
U.S. Army CERL
ATTN: CECER-EN/J. Bandy
P.O. Box 4005
Champaign, IL 61820-1305

Direct any questions to Dr. John Bandy, USA-CERL, Comm (217) 373-7252.

LIST OF ABBREVIATIONS

AAA	Army Audit Agency
AEDMS	Army Environmental Data Management System
AMC	Army Materiel Command
AMEDD	Army Medical Department
AR	Army Regulation
ASTM	American Society of Testing and Materials
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
CY	calendar year
DA	Department of the Army
DAIG	Department of the Army Inspector General
DAISY	*Defense* Automated Information System
DCSENG	Deputy Chief of Staff, Engineering
DD	Defense Department
DEH	Directorate of Engineering and Housing
DEQPPM	Defense Environmental Quality Program Policy Memorandum
DERA	Defense Environmental Restoration Act
DESR	Defense Environmental Status Report
DLA	Defense Logistics Agency
DOD	Department of Defense
DOD IG	Department of Defense Inspector General
DOE	Department of Energy
DOL	Directorate of Logistics
DRMO	Defense Reutilization and Marketing Office
DRMS	Defense Reutilization and Marketing Service

ECAMP	Environmental Compliance and Management Program
EPA	Environmental Protection Agency
ERMA	Environmental Review for Management Action
ETIS	Environmental Technical Information System
GAO	General Accounting Office
GOCO	Government Owned Contractor Operated
HAZMIN	hazardous waste minimization
HMIS	hazardous management information system
HMMS	Hazardous Materials Management System
HMTC	Hazardous Materials Technical Center
HQ	Headquarters
HQDA	Headquarters, Department of the Army
HQ USAF	Headquarters, U.S. Air Force
HSWA	Hazardous and Solid Waste Amendments 1984
HW	hazardous waste
HWDMS	Hazardous Waste Data Management System
HW/HM	hazardous waste/hazardous material
IHWM	installation hazardous waste management
IG	Inspector General
IL	Installations and Logistics
IOSC	Installation On-Scene Coordinator
IPR	In Progress Review
IRP	Installation Restoration Program
ISCP	Installation Spill Contingency Plan
MACOM	major command
MILCON	Military Construction
MIS	management information system

MSDS	material safety data sheets
NGB	National Guard Bureau
NRC	National Response Center
NSN	national stock number
OASA	Office of the Assistant Secretary of the Army
OASD	Office of the Assistant Secretary of Defense
OHMIS	Occupational Health Management Information System
OMB	Office of Management and Budget
OTA	Office of Technology Assessment
PA/SI	Preliminary Assessment/Site Investigation
PC	personal computer
PCB	polychlorinated biphenyl
PMN	premanufacturing notification
PPBES	Planning, Programming, Budgeting, and Execution System
RCRA	Resource Conservation and Recovery Act 1976 Congress
SARA	Superfund Amendments and Reauthorization Act
SIC	Standard Industrial Classification
SPCC	Spill Prevention Control and Countermeasure
TNT	Trade Name Translator
TRADOC	Training and Doctrine Command
TSCA	Toxic Substance Control Act
TSD	treatment, storage, and disposal
USA-CERL	U.S. Army Construction Engineering Research Laboratory
USAEHA	U.S. Army Environmental Hygiene Agency
USE	Used Solvent Elimination

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