

**RESOURCE CONSERVATION AND RECOVERY ACT
(RCRA), PERMIT II**

**SPILL PREVENTION, CONTROL AND
COUNTERMEASURE (SPCC) PLAN
AND**

INSTALLATION SPILL CONTROL PLAN (ISCP)

**DEFENSE DISTRIBUTION DEPOT MEMPHIS
2163 AIRWAYS BOULEVARD
MEMPHIS, TENNESSEE 38114**

**CONTRACT NUMBER DACAG6-93-D-0135
DELIVERY ORDER NO. 0013
SUBMITTAL DATE: 5 AUGUST 1994**

**PREPARED FOR:
U.S. ARMY ENGINEER DISTRICT, MEMPHIS
B-202 CLIFFORD DAVIS FEDERAL BUILDING
167 NORTH MID-AMERICA MALL
MEMPHIS, TENNESSEE 38103-1894**

**PREPARED BY:
PICKERING FIRM, INCORPORATED
1750 MADISON AVENUE
MEMPHIS, TENNESSEE 38104**

PR PROJECT NUMBER 13211.02

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

AUG 06 1990

4WD-RCRA&FFB

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Commander
Defense Depot Memphis
ATTN: Mr. Danny Chumney
2163 Airways Blvd.
Memphis, Tennessee 38114-5000

RE: Draft Permit for 1984 RCRA Amendments
U.S. DOD Defense Depot Memphis
EPA I.D. No. TN4 210 020 570

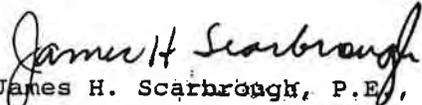
Dear Mr. Chumney:

Enclosed are the draft permit and fact sheet that EPA has prepared to cover those portions of the 1984 Hazardous and Solid Waste Amendments which affect your facility. This permit, in conjunction with the hazardous waste permit to be issued by the Tennessee Department of Health and Environment, constitutes the RCRA permit for your facility. A copy of the fact sheet, as required by 40 CFR §124.8, is also enclosed. Since EPA and the State will issue a joint public notice, a copy of the notice will be provided to you by Tennessee.

All persons, including applicants, who believe any condition of a draft permit is inappropriate, must raise all reasonably ascertainable issues and submit all reasonably available arguments and factual grounds supporting their position, including all supporting material, by the close of the public comment period (midnight, September 21, 1990). This requirement to raise issues is found in 40 CFR §124.13. EPA's procedures for decision-making are found in 40 CFR Part 124.

If you have any questions regarding the draft permit or EPA's permitting procedures, please feel free to contact Larry Fitchhorn of my staff at (404) 347-3433.

Sincerely yours,


James H. Scarborough, P.E., Chief
RCRA & Federal Facilities Branch
Waste Management Division

Enclosures

cc: Tom Tiesler, TDHE



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

SEP 27 1990

4WD-RCRA&FFB

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Commander
U.S. DOD Defense Depot Memphis
ATTN: Mr. Danny Chumney
2163 Airways Blvd.
Memphis, Tennessee 38114-5000

RE: U.S. DOD Defense Depot Memphis HSWA Permit
Memphis, Tennessee
EPA I. D. No. TN4 210 020 570

Dear Mr. Chumney:

Enclosed is the Resource Conservation and Recovery Act (RCRA) permit to cover those portions of the 1984 Hazardous and Solid Waste Amendments (HSWA) that affect your facility. This permit and the permit issued by the State of Tennessee together constitute the full RCRA permit.

Issuance of this permit is in accordance with 40 CFR §124.15. The permit became effective immediately upon signing because no comments were received during the public comment period (40 CFR §124.15(b)(3)). Pursuant to 40 CFR §124.19(a), the procedures for requesting an administrative review and an evidentiary hearing are enclosed.

The applicable RCRA regulations in effect at the time of the permit issuance and referenced in the permit shall be complied with throughout the life of the permit unless the Permittee requests a modification or unless the Regional Administrator modifies the permit for newly-promulgated regulations (such newly-promulgated regulations may be automatically applicable to all existing permits without the requirement for formal permit modification). A copy of the currently applicable regulations will be forwarded under separate cover in the near future.

If there are any questions concerning the permit or the appeals procedures, please contact James H. Scarbrough, P.E., of my staff at (404) 347-3016.

Sincerely yours,



Patrick M. Tobin, Director
Waste Management Division

Enclosures: Notice of Final Permit Decision
RCRA Permit (HWA portion only)
Procedures to Request an Administrative Review
Procedures to Request an Evidentiary Hearing

cc/enclosure: Mr. Tom Tiesler, Director
TNSWM



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

Notice of RCRA Final Permit Decision

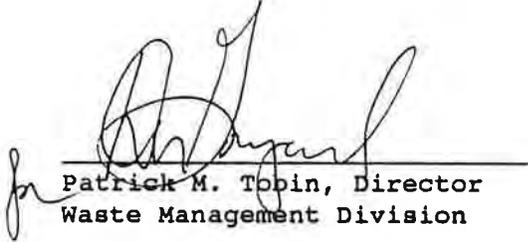
Facility Name: U.S. DOD Defense Depot Memphis

EPA I.D. Number: TN4 210 020 570

Location: 2163 Airways Boulevard
Memphis, Tennessee 38114-5000

After due consideration of the facts applicable to the above facility as they appear in the administrative record and of the requirements and policies expressed in the Resource Conservation and Recovery Act (RCRA) and appropriate regulations, I have determined that the permit should be issued unchanged from the tentative decision previously public noticed on August 9, 1990.

The administrative record is maintained at the Agency's offices at 345 Courtland Street, N. E., Atlanta, Georgia 30365, and is available for public review between the hours of 8:15 a.m. and 4:30 p.m., Monday through Friday. For further information on this permit action, contact Wayne Garfinkel at the above address.


Patrick M. Tobin, Director
Waste Management Division

Administrative Review (40 CFR §124.19)

1. Any person who filed comments on the tentative permit decision or participated in any public hearing on such decision may petition the Administrator to review any condition of the final permit decision.
2. Any person who failed to file comments or participate in any public hearing on the tentative permit decision may petition for administrative review only to the extent of the changes from the tentative to the final permit decision.
3. The petition must include a statement of the reasons supporting that review, including a demonstration that any issues being raised in the petition were previously raised during the public comment period or during any public hearing and, when appropriate, a showing that the condition in question is based on:
 - a) a finding of fact or conclusion of law which is clearly erroneous, or
 - b) an exercise of discretion or an important policy consideration which the Administrator should, in his or her discretion, review.
4. Such request must be made within 30 days of service of notice of the Regional Administrator's action.
5. Petitions must be sent to the Headquarters Hearing Clerk, with a copy to the Chief Judicial Officer, at the following address:

United States Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

A copy of the petition should also be sent to the Region IV Regional Administrator at the following address:

United States Environmental Protection Agency
Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

REQUIREMENTS FOR EVIDENTIARY/PANEL
HEARING REQUEST

Evidentiary Hearing (40 CFR §124.74)

1. Request must be made within 30 days following date of issuance of final permit.
2. Requests must contain:
 - (a) the name, mailing address, and telephone number of the person mailing the request,
 - (b) a clear and concise factual statement of the nature and scope of the interest of the requester,
 - (c) the names and addresses of all persons whom the requester represents,
 - (d) a statement by the requester that upon motion of any party, or upon request of the Presiding Officer and without cost or expense to any other party, the requester shall make available to appear and testify the following:
 - (i) the requester,
 - (ii) all persons represented by the requester, and
 - (iii) all officers, directors, employees, consultants and agents of the requester and the persons represented by the requester,
 - (e) a statement of each legal or factual questions alleged to be at issue and their relevance to the permit decision together with a designation of the specific factual areas to be adjudicated,
 - (f) an estimate of the hearing time necessary for the adjudication,
 - (g) specific references to the contested permit terms and conditions, as well as suggested revised or alternate permit terms and conditions, (not excluding permit denial) which, in the judgment of the requester, would be required to implement the purposes and policies of the Resource Conservation and Recovery Act.

Panel Hearing (40 CFR §124.111)

The form and content of a request for a panel hearing is the same as for an evidentiary hearing, except that the permittee may specifically include a request that the hearing be conducted under the non-adversary procedures of subpart I of the regulations.

HSWA PORTION OF THE RCRA PERMIT

OWNER:	OPERATOR:		
<u>U.S. Department of</u>	<u>Defense Reutilization</u>	Identification Number	TN4 210 020 570
<u>Defense</u>	<u>and Marketing Service</u>	Permit Number	TN4 210 020 570
<u>2163 Airways Blvd</u>	<u>Defense Depot Memphis</u>		
<u>Memphis, TN 38114-5000</u>	<u>Memphis, TN 38114-5000</u>		

Pursuant to the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 USC §6901 et seq., commonly known as RCRA) and regulations promulgated thereunder by the U.S. Environmental Protection Agency (EPA) (codified and to be codified in Title 40 of the Code of Federal Regulations), a permit is issued to U.S. Department of Defense (hereafter called the Permittee), who owns or operates a hazardous waste facility located at U.S. DOD Defense Depot Memphis, in Memphis, Tennessee latitude 35°05'23" North and longitude 90°00'00" West.

This Permit, in conjunction with the Hazardous Waste Management Permit issued by the State of Tennessee, constitutes the RCRA permit for this facility. The Permittee shall be required to investigate any releases of hazardous waste or hazardous constituents pursuant to this permit at the facility regardless of the time at which waste was placed in such unit and to take appropriate corrective action for any releases. The Permit also requires the Permittee to comply with all land disposal restrictions applicable to this facility and to certify annually that on-site generation of hazardous waste is minimized to the extent practicable.

The Permittee must comply with all terms and conditions of this permit. This permit consists of the conditions contained herein (including those in any attachments) and applicable regulations contained in 40 CFR Parts 260 through 264, 266, 268, 270, and 124 as specified in the permit and statutory requirements of RCRA, as amended by the Hazardous and Solid Waste Amendments (HSWA) of 1984, P.L. 98-616. Nothing in this permit shall preclude the Regional Administrator from reviewing and modifying the permit at any time during its term in accordance with 40 CFR §270.41 and Appendix E, as contained herein.

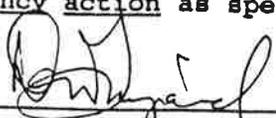
This Permit is based on the premise that the information and reports submitted by the Permittee, to date and subsequent to issuance of this permit to the Permittee, are accurate. Any inaccuracies found in this information may be grounds for termination or modification of this permit in accordance with 40 CFR §270.41, §270.42, and §270.43 and potential enforcement action. The Permittee must inform EPA of any deviation from or changes in the information in the application which would affect the Permittee's ability to comply with the applicable regulations or permit conditions.

The authority to perform all actions necessary to issue, modify, enforce, or revoke this permit has been delegated by the Regional Administrator to the Waste Management Division Director.

This Permit is effective as of September 28, 1990, and shall remain in effect until September 28, 2000, unless revoked and reissued, or terminated under 40 CFR §270.41 and §270.43 or continued in accordance with 40 CFR §270.51(a). All obligations for performance of Corrective Action are in effect until deemed complete by the Regional Administrator.

If any conditions of this permit are appealed in accordance with 40 CFR §124.19, the effective date of the conditions determined to be stayed in accordance with 40 CFR §124.16 shall be determined by final agency action as specified under 40 CFR §124.19.

September 28, 1990
Issued Date



Patrick M. Tobin
Director
Waste Management Division

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PART I - STANDARD CONDITIONS

I.A. EFFECT OF PERMIT

Compliance with this RCRA permit constitutes compliance, for purposes of enforcement, with Subtitle C of RCRA except for those requirements not included in the permit which become effective by statute, which are promulgated, or those which restrict placement of hazardous waste in or on the land. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local law or regulations. Compliance with the terms of this permit does not constitute a defense to any order issued or any action brought under Section 3008(a), 3008(h), 3004(v), 3008(c), 3007, 3013 or Section 7003 of RCRA, Sections 104, 106(a), 106(e), or 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601 et seq., commonly known as CERCLA), or any other law providing for protection of public health or the environment.

I.B. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated for cause as specified in 40 CFR §§270.41, 270.42, and 270.43 except for the Corrective Action schedule of compliance which shall be modified in accordance with Condition II.[] of this permit. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes or anticipated noncompliance on the part of the Permittee does not stay the applicability or enforceability of any permit condition.

I.C. SEVERABILITY

The provisions of this permit are severable, as specified in 40 CFR §124.16 and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

I.D. DUTIES AND REQUIREMENTS

I.D.1. Duty to Comply

The Permittee shall comply with all conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit. Any permit noncompliance, other than noncompliance authorized by an emergency permit, constitutes a violation of RCRA and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or denial of a permit renewal application.

I.D.2. Duty to Reapply

If the Permittee will continue an activity allowed or required by this permit after the expiration date of this permit, the Permittee shall submit a complete application for a new permit at least one hundred eighty (180) calendar days before this permit expires, unless permission for a later date has been granted by the Regional Administrator.

I.D.3 Obligation for Corrective Action

Owners and operators of hazardous waste management units must have permits during the active life (including the closure period) of the unit, and for any period necessary to comply with the corrective action requirements (HSWA Section) of this permit.

I.D.4. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

I.D.5. Duty to Mitigate

In the event of noncompliance with the permit, the Permittee shall take all reasonable steps to minimize releases of hazardous waste or hazardous constituents to the environment, and shall carry out such measures as are reasonable to prevent significant adverse effects on human health or the environment.

I.D.6. Proper Operations and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

I.D.7. Duty to Provide Information

The Permittee shall furnish to the Regional Administrator (RA), within a reasonable time, any relevant information which the RA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the RA, upon request, copies of records required to be kept by this permit.

I.D.8. Inspection and Entry

The Permittee shall allow the Regional Administrator, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:

- I.D.8.a. Enter a reasonable times upon the Permittee's premises where a regulated activity is located or conducted, or where records must be kept under the conditions of this permit;
- I.D.8.b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- I.D.8.c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated, or required under this permit; and
- I.D.8.d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by RCRA, any substances or parameters at any location.

I.D.9. Monitoring and Records

I.D.9.a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample to be analyzed must be the appropriate method from Appendix I of 40 CFR Part 261 or an equivalent method approved by the Regional Administrator (RA). Laboratory methods must be those specified in the most recent edition of Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, or an equivalent method approved by the RA.

I.D.9.b. The Permittee shall retain at the facility, or other appropriate location as provided for under 40 CFR Part 264, records of all monitoring information required under the terms of this permit, including all calibration and maintenance records, records of all data used to prepare documents required by this permit, copies of all reports and records required by this permit, the certification required by 40 CFR §264.73(b)(9), and records of all data used to complete the application for this permit for a period of at least three years from the date of the sample, measurement, report, certification or application, or until corrective action is completed, whichever date is later. As a generator of hazardous waste, the Permittee shall retain on-site a copy of all notices, certifications, demonstrations, waste analysis data, and other documentation produced pursuant to 40 CFR Part 268 for at least five years from the date that the waste which is the subject of such documentation was last sent to on-site or off-site treatment, storage, or disposal, or until corrective action is completed, whichever date is later. At a facility permitted to operate an incinerator, the permittee shall retain on-site all records for a period of five years. These periods may be extended by request of the Regional Administrator at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility.

I.D.9.c. Records of monitoring information shall specify:

- i. The dates, exact place, and times of sampling or measurements;
- ii. The individuals who performed the sampling or measurements;
- iii. The dates analyses were performed;
- iv. The individuals who performed the analyses;
- v. The analytical techniques or methods used; and
- vi. The results of such analyses.

I.D.10. Reporting Planned Changes

The Permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions to the permitted facility as defined in 40 CFR §270.2. This would apply to all contiguous land, structures, other appurtenances and improvements on the land, used for the treatment, storage or disposal of hazardous waste.

I.D.11. Anticipated Noncompliance

The Permittee shall give advance notice to the Regional Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with the requirements of this permit.

I.D.12. Transfer of Permits

This permit may be transferred to a new owner or operator only after notice to the Regional Administrator and only if it is modified or revoked and reissued pursuant to 40 CFR §270.40(b) or §270.41(b) (2) to identify the new permittee and incorporate such other requirements as may be necessary under the appropriate Act. Before transferring ownership or operation of the facility during its operating life, or of a disposal facility during the post-closure care period, the Permittee shall notify the new owner or operator in writing of the requirements of 40 CFR Parts 264 and 270, HSWA and this permit.

I.D.13. Compliance Schedules

Written notification of compliance or noncompliance with any item identified in the compliance schedule of this permit shall be submitted according to each schedule date. If the Permittee does not notify the Regional Administrator within fourteen (14) calendar days of its compliance or noncompliance with the schedule, the Permittee shall be subject to an enforcement action. Submittal of a required item according to the schedule constitutes notification of compliance.

I.D.14. Twenty-four Hour Reporting

I.D.14.a. The Permittee shall report any noncompliance which may endanger human health or the environment. Any such information shall be reported orally to the Regional Administrator within 24 hours from the time the Permittee becomes aware of the circumstances. This report shall include:

- i. Information concerning the release of any hazardous waste or hazardous constituents which may endanger public drinking water supplies.
- ii. Information concerning the release or discharge of any hazardous waste or hazardous constituents, or of a fire or explosion at the facility, which could threaten the environment or human health outside the facility.

I.D.14.b. The description of the occurrence and its cause shall include:

- i. Name, address, and telephone number of the owner or operator;
- ii. Name, address, and telephone number of the facility;
- iii. Date, time, and type of incident;
- iv. Name and quantity of materials involved;
- v. The extent of injuries, if any;
- vi. An assessment of actual or potential hazard to the environment and human health outside the facility; and
- vii. Estimated quantity and disposition of recovered material that resulted from the incident.

I.D.14.c. A written report shall also be provided to the Regional Administrator within fifteen (15) calendar days of the time the Permittee becomes aware of the circumstances. The written report shall contain the information specified under Conditions I.D.14.a., and b.; a description of the noncompliance and its cause; the periods of noncompliance (including exact dates and times); whether the noncompliance has been corrected and, if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

I.D.15. Other Noncompliance

The Permittee shall report all other instances of noncompliance not otherwise required to be reported above, at the time written reports as required by this permit are submitted. The report shall contain the information listed in Condition I.D.14. as appropriate.

I.D.16 Other Information

Whenever the Permittee becomes aware that it failed to submit any relevant facts or submitted incorrect information in any document(s) submitted to the Regional Administrator, the Permittee shall promptly submit such facts or information.

I.E. SIGNATORY REQUIREMENT

All applications, reports, or information submitted to the Regional Administrator shall be signed and certified in accordance with 40 CFR §270.11.

I.F. CONFIDENTIAL INFORMATION

The Permittee may claim confidential any information required to be submitted by this permit in accordance with 40 CFR §270.12.

I.G. DEFINITIONS

For purposes of this permit, terms used herein shall have the same meaning as those in RCRA and 40 CFR Parts 124, 260, 261, 264, and 270, unless this permit specifically provides otherwise. Where terms are not defined in the regulation, the permit, or EPA guidelines or publications, the meaning associated with such terms shall be defined by a standard dictionary references or the generally accepted scientific or industrial meaning of the term.

I.G.1. The term "solid waste" means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved material in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Federal Water Pollution Control Act, as amended (86 Stat. 880), or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923).

I.G.2. A "hazardous constituent" for purposes of this permit are those substances listed in 40 CFR Part 261 Appendix VIII.

- I.G.3. A "solid waste management unit" (SWMU) for the purposes of this permit includes any unit which has been used for the treatment, storage, or disposal of solid waste at any time, irrespective of whether the unit is or ever was intended for the management of solid waste. RCRA regulated hazardous waste management units are also solid waste management units. SWMUs include areas that have been contaminated by routine and systematic releases of hazardous waste or hazardous constituents, excluding one-time accidental spills that are immediately remediate and cannot be linked to solid waste management activities (e.g. product or process spills).
- I.G.4. A "unit" for the purposes of this permit includes, but is not limited to, any landfill, surface impoundment, waste pile, land treatment unit, incinerator, injection well, tank, container storage area, septic tank, drain field, wastewater treatment unit, elementary neutralization unit, transfer station, or recycling unit.
- I.G.5. A "release" for purposes of this permit includes any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of any hazardous waste or hazardous constituents.
- I.G.6. "Corrective measures" for purposes of this permit, include all corrective action necessary to protect human health and the environment for all releases of hazardous waste or hazardous constituents from any solid waste management unit at the facility, regardless of the time at which waste was placed in the unit, as required under 40 CFR §264.101. Corrective measures may address releases to air, soils, surface water or groundwater.
- I.G.7. "Area of concern" (AOC) for purposes of this permit includes any area having a probable release of a hazardous waste or hazardous constituent which is not from a solid waste management unit and is determined by the Regional Administrator to pose a current or potential threat to human health or the environment. Such areas of concern may require investigations and remedial action as required under Section 3005(c) (3) of the Resource Conservation and Recovery Act and 40 CFR §270.32(b) (2) in order to ensure adequate protection of human health and the environment.

- I.G.8. "Facility" for purposes of this permit includes any contiguous property and structures, other appurtenances, and improvements on the property under the control of the owner or operator seeking a permit under Subtitle C of RCRA.
- I.G.9. "Land Disposal" for purposes of this permit and 40 CFR Part 268 means placement in or on the land and includes, but is not limited to, placement in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, underground mine or cave, or concrete vault or bunker intended for disposal purposes.

PART II - CORRECTIVE ACTION

II.A. APPLICABILITY

The Conditions of this Part apply to:

- II.A.1. The solid waste management units (SWMUs) and areas of concern (AOCs) identified in Appendix A-1, which require further investigation.
- II.A.2. The SWMUs and AOCs identified in Appendix A-2, which require no further investigation at this time.
- II.A.3. The SWMUs and AOCs identified in Appendix A-4, which require confirmatory sampling.
- II.A.4. Any additional SWMUs or AOCs discovered during the course of groundwater monitoring, field investigations, environmental audits, or other means.

II.B. NOTIFICATION AND ASSESSMENT REQUIREMENTS FOR NEWLY IDENTIFIED SWMUs AND AOCs

- II.B.1. The Permittee shall notify the Regional Administrator in writing, within fifteen (15) calendar days of discovery, of any additional SWMUs as discovered under Condition II.A.4.
- II.B.2. The Permittee shall notify the Regional Administrator (RA) in writing, within fifteen (15) calendar days of discovery, of any additional AOCs as discovered under Condition II.A.4. The notification shall include, at a minimum, the location of the AOC and all available information pertaining to the nature of the release (e.g., media affected, hazardous constituents released, magnitude of release, etc.). If the RA determines that further investigation of an AOC is required, the permit will be modified in accordance with 40 CFR §270.41.

II.B.3. The Permittee shall prepare and submit to the Regional Administrator, within ninety (90) calendar days of notification, a SWMU Assessment Report (SAR) for each SWMU identified under Condition II.B.1 and II.C.1. At a minimum, the SAR shall provide the following information:

- a. Location of unit(s) on a topographic map of appropriate scale such as required under 40 CFR §270.14(b)(19).
- b. Designation of type and function of unit(s).
- c. General dimensions, capacities and structural description of unit(s) (supply any available plans/drawings).
- d. Dates that the unit(s) was operated.
- e. Specification of all wastes that have been managed at/in the unit(s) to the extent available. Include any available data on 40 CFR Part 261, Appendix VIII, constituents in the wastes.
- f. All available information pertaining to any release of hazardous waste or hazardous constituents from such unit(s) (to include groundwater data, soil analyses, air, and/or surface water data).

II.B.4. Based on the results of the SAR, the Regional Administrator (RA) shall determine the need for further investigations at the SWMUs covered in the SAR. If the RA determines that such investigations are needed, the Permittee shall be required to prepare a plan for such investigations as outlined in Condition II.E.1.b.

II.C. NOTIFICATION REQUIREMENTS FOR NEWLY DISCOVERED RELEASES AT PREVIOUSLY IDENTIFIED SWMUs or AOCs

II.C.1. The Permittee shall notify the Regional Administrator in writing of any newly discovered release(s) of hazardous waste or hazardous constituents discovered during the course of groundwater monitoring, field investigations, environmental audits, or other means, within fifteen (15) calendar days of discovery. Such newly discovered releases may be from SWMUs or AOCs identified in Condition II.A.2. or SWMUs or AOCs identified in Condition II.A.4. for which further investigation under Condition II.B.4. was not required.

II.C.2. If the Regional Administrator determines that further investigation of the SWMUs or AOCs is needed, the Permittee shall be required to prepare a plan for such investigations as outlined in Condition II.B.3.

II.D. CONFIRMATORY SAMPLING (CS)

II.D.1. The Permittee shall prepare and submit to the Regional Administrator, within ninety (90) calendar days of the effective date of this permit, a Confirmatory Sampling (CS) Workplan to determine any release from SWMUs and AOCs identified in Condition II.A.3. and Appendix A-4. The CS Workplan shall include schedules of implementation and completion of specific actions necessary to determine a release. It should also address applicable requirements and affected media. Completion of all Confirmatory Sampling shall not exceed ninety (90) days.

II.D.2. The CS Workplan must be approved by the Regional Administrator (RA), in writing, prior to implementation. The RA shall specify the start date of the CS Workplan schedule in the letter approving the CS Workplan. If the RA disapproves the CS Workplan, the RA shall either (1) notify the Permittee in writing of the CS Workplan's deficiencies and specify a due date for submission of a revised CS Workplan, or (2) revise the CS Workplan and notify the Permittee of the revisions.

II.D.3. The Permittee shall implement the confirmatory sampling in accordance with approved CS Workplan.

II.D.4. The Permittee shall prepare and submit to the Regional Administrator in accordance with the schedule indicated in the approved CS Workplan, a Confirmatory Sampling (CS) Report identifying those SWMUs and AOCs listed in Condition II.A.3. that have released hazardous waste or hazardous constituents into the environment. The CS Report shall include all data, including raw data, and a summary and analysis of the data, that supports the above determination.

II.D.5. Based on the results of the CS Report, the Regional Administrator (RA) shall determine the need for further investigations at the SWMUs and AOCs covered in the CS Report. If the RA determines that such investigations are needed, the Permittee shall be required to prepare a plan for such investigations as outlined in Condition II.E.1.b. The RA will notify the Permittee of any no further action decision.

II.E. RCRA FACILITY INVESTIGATION (RFI)

II.E.1. RFI Workplan(s)

- II.E.1.a. The Permittee shall prepare and submit to the Regional Administrator, within two hundred seventy (270) calendar days of the effective date of this permit, a RCRA Facility Investigation (RFI) Workplan(s) for those units identified in Condition II.A.1. This Workplan shall be developed to meet the requirements of Condition II.E.1.c.
- II.E.1.b. The Permittee shall prepare and submit to the Regional Administrator, within ninety (90) calendar days of notification by the RA, an RFI Workplan for those units identified under Condition II.B.4., Condition II.C.2., or Condition II.D.5. The RFI Workplan(s) shall be developed to meet the requirements of Condition II.E.1.c.
- II.E.1.c. The RFI Workplan(s) shall meet the requirements of Appendix B. The RFI Workplan(s) shall include schedules of implementation and completion of specific actions necessary to determine the nature and extent of releases and the potential pathways of contaminant releases to the air, land, surface water, and groundwater. The Permittee must provide sufficient justification and/or documentation that a release is not probable if a unit or a media/pathway associated with a unit (groundwater, surface water, soil, subsurface gas, or air) is not included in the RFI Workplan(s). Such deletions of a unit, media or pathway from the RFI(s) are subject to the approval of the Regional Administrator. The Permittee shall provide sufficient written justification for any omissions or deviations from the minimum requirements of Appendix B. Such omissions or deviations are subject to the approval of the RA. In addition, the scope of the RFI Workplan(s) shall include all investigations necessary to ensure compliance with 40 CFR §264.101(c).
- II.E.1.d. The RFI Workplan(s) must be approved by the Regional Administrator (RA), in writing, prior to implementation. The RA shall specify the start date of the RFI Workplan schedule in the letter approving the RFI Workplan(s). If the RA disapproves the RFI Workplan(s), the RA shall either (1) notify the Permittee in writing of the RFI Workplan's deficiencies and specify a due date for submission of a revised RFI Workplan, or (2) revise the RFI Workplan and notify the Permittee of the revisions and the start date of the schedule within the approved RFI Workplan.

II.E.2. RFI Implementation

The Permittee shall implement the RFI(s) in accordance with the approved RFI Workplan(s) and Appendix B. The Permittee shall notify the RA within twenty (20) days of any sampling activity.

II.E.3. RFI Reports

II.E.3.a. If the time required to conduct the RFI(s) is greater than one hundred eighty (180) calendar days, the Permittee shall provide the Regional Administrator with quarterly RFI Progress Reports (90 day intervals) beginning ninety (90) calendar days from the start date specified by the Regional Administrator in the RFI Workplan approval letter. The Progress Reports shall contain the following information at a minimum:

- i. A description of the portion of the RFI completed;
- ii. Summaries of findings;
- iii. Summaries of all deviations from the approved RFI Workplan during the reporting period;
- iv. Summaries of all problems or potential problems encountered during the reporting period;
- v. Projected work for the next reporting period; and
- vi. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

II.E.3.b. The Permittee shall prepare and submit to the Regional Administrator (RA) Draft and Final RCRA Facility Investigation Report(s) for the investigations conducted pursuant to the RFI Workplan(s) submitted under Condition II.E.1. The Draft RFI Report(s) shall be submitted to the RA for review in accordance with the schedule in the approved RFI Workplan(s). The Final RFI Report(s) shall be submitted to the RA within thirty (30) calendar days of receipt of the RA's comments on the Draft RFI Report. The RFI Report(s) shall include an analysis and summary of all required investigations of SWMUs and AOCs and their results. The summary shall describe the type and extent of contamination at the facility, including sources and migration pathways, and a description of actual or potential receptors. The RFI Report(s) shall also describe the extent of contamination (qualitative/quantitative) in relation to background levels indicative of the area. The objective of this task shall be to ensure that the investigation data are sufficient in quality (e.g., quality

assurance procedures have been followed) and quantity to describe the nature and extent of contamination, potential threat to human health and/or the environment, and to support a Corrective Measures Study, if necessary.

- II.E.3.c. The Regional Administrator (RA) will review the Final RFI Report(s) and notify the Permittee of the need for further investigative action and/or the need for a Corrective Measures Study to meet the requirements of II.G and 40 CFR §264.101. The RA will notify the Permittee of any no further action decision.

- II.F. INTERIM MEASURES (IM)

- II.F.1. IM Workplan

- II.F.1.a. Upon notification by the Regional Administrator (RA), the Permittee shall prepare and submit an Interim Measures (IM) Workplan for any SWMU or AOC which the RA determines poses a current or potential threat to human health or the environment. The IM Workplan shall be submitted within thirty (30) calendar days of such notification and shall include the elements listed in II.F.1.b. Such interim measures may be conducted concurrently with investigations required under the terms of this permit.

- II.F.1.b. The IM Workplan shall ensure that the interim measures are designed to mitigate any current or potential threat(s) to human health or the environment and are consistent with and integrated into any long-term solution at the facility. The IM Workplan shall include: the interim measures objectives, procedures for implementation (including any designs, plans, or specifications), and schedules for implementation.

- II.F.1.c. The IM Workplan must be approved by the Regional Administrator (RA), in writing, prior to implementation. The RA shall specify the start date of the IM Workplan schedule in the letter approving the IM Workplan. If the RA disapproves the IM Workplan, the RA shall either (1) notify the Permittee in writing to the IM Workplan's deficiencies and specify a due date for submission of a revised IM Workplan, or (2) revise the IM Workplan and notify the Permittee of the revisions and the start date of the schedule within the approved IM Workplan.

II.F.2. IM Implementation

- II.F.2.a The Permittee shall implement the interim measures in the accordance with the approved IM Workplan.
- II.F.2.b. The Permittee shall give notice to the Regional Administrator as soon as possible of any planned changes, reductions, or additions to the IM Workplan.
- II.F.2.c. Final approval of corrective action required under 40 CFR §264.101 which is achieved through interim measures shall be in accordance with 40 CFR §270.41 and Condition II.H. as a permit modification.

II.F.3. IM Reports

- II.F.3.a. If the time required for completion of interim measures is greater than one year, the Permittee shall provide the Regional Administrator (RA) with quarterly progress reports ninety (90) day intervals beginning ninety (90) calendar days from the start date specified by the RA in the Workplan approval letter. The Progress Reports shall contain the following information at a minimum:
- i. A description of the portion of the interim measures completed;
 - ii. Summaries of all deviations from the IM Workplan during the reporting period;
 - iii. Summaries of all problems or potential problems encountered during the reporting period;
 - iv. Projected work for the next reporting period; and
 - v. Copies of laboratory/monitoring data.

- II.F.3.b. The Permittee shall prepare and submit to the Regional Administrator, within ninety (90) calendar days of completion of interim measures conducted under Condition II.F., an Interim Measures (IM) Report. The IM Report shall contain the following information at a minimum:
- i. A description of interim measures implemented;
 - ii. Summaries of results;
 - iii. Summaries of all problems encountered;
 - iv. Summaries of accomplishments and/or effectiveness of interim measures; and
 - v. Copies of all relevant laboratory/monitoring data, etc. in accordance with Condition I.D.9.

II.G. CORRECTIVE MEASURES STUDY

II.G.1. Corrective Measures Study (CMS) Plan

II.G.1.a. The Permittee shall prepare and submit a CMS Plan for those units requiring a CMS within ninety (90) calendar days of notification by the Regional Administrator that a CMS is required. This CMS Plan shall be developed to meet the requirements of Condition II.G.1.b.

II.G.1.b. The CMS Plan shall meet the requirements of Appendix C. The CMS Plan shall include schedules of implementation and completion of specific actions necessary to complete a CMS. The Permittee must provide sufficient justification and/or documentation for any unit deleted from the CMS Plan. Such deletion of a unit is subject to the approval of the Regional Administrator (RA). The CMS shall be conducted in accordance with the approved CMS Plan. The Permittee shall provide sufficient written justification for any omissions or deviations from the minimum requirements of Appendix C. Such omissions or deviations are subject to the approval of the RA. The scope of the CMS Plan shall include all investigations necessary to ensure compliance with 3005(c)(3), 40 CFR §264.191m and §270.32(b)(3). The Permittee shall implement corrective actions beyond the facility boundary, where necessary to protect human health and the environment, unless the Permittee demonstrates to the satisfaction of the RA that, despite the Permittee's best efforts, as determined by the RA, the Permittee was unable to obtain the necessary permission to undertake such actions. The Permittee is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where off-site

access is denied. On-site measures to address such releases will be determined on a case by case basis.

II.G.1.c. The Regional Administrator (RA) shall either approve or disapprove, in writing, the CMS Plan. If the RA disapproves the CMS Plan, the RA shall either (1) notify the Permittee in writing to the CMS Plan's deficiencies and specify a due date for submittal of a revised CMS Plan, or (2) revise the CMS Plan and notify the Permittee of the revisions. This modified CMS Plan becomes the approved CMS Plan.

II.G.2. Corrective Measures Study Implementation

The Permittee shall begin to implement the Corrective Measures Study according to the schedules specified in the CMS Plan, no later than fifteen (15) calendar days after the Permittee has received written approval from the Regional Administrator for the CMS Plan. Pursuant to Permit Condition II.G.1.b. the CMS shall be conducted in accordance with the approved CMS Plan.

II.G.3. CMS Report

II.G.3.a. The Permittee shall prepare and submit to the Regional Administrator (RA) a draft and final CMS Report for the study conducted pursuant to the approved CMS Plan. The draft CMS Report shall be submitted to the RA within ninety (90) calendar days from the RA's approval of the CMS Plan. The final CMS Report shall be submitted to the RA within thirty (30) days of receipt of the RA's comments on the draft CMS Report. The CMS Report shall summarize any bench-scale or pilot tests conducted. The CMS Report must include an evaluation of each remedial alternative. The CMS Report shall present all information gathered under the approved CMS Plan. The CMS Final Report must contain adequate information to support the RA's decision on the recommended remedy, described under Permit Condition II.H.

II.G.3.b. If the Regional Administrator (RA) determines that the CMS Final Report does not fully satisfy the information requirements specified under Permit Condition II.G.3.a., the RA may disapprove the CMS Final Report. If the RA disapproves the CMS Final Report, the RA shall notify the Permittee in writing of deficiencies in the CMS Final Report and specify a due date of submittal of a revised CMS Final Report. The RA will notify the Permittee of any no further action decision.

II.G.3.c. As specified under Permit Condition II.G.3.b., based on preliminary results and the CMS Final Report, the Regional Administrator may require the Permittee to evaluate additional remedies or particular elements of one or more proposed remedies.

II.H. REMEDY APPROVAL AND PERMIT MODIFICATION

II.H.1. A remedy shall be selected from the remedial alternatives evaluated in the CMS. It will be based at a minimum on protection of human health and the environment, as per specific site conditions, existing regulations, and guidance.

II.H.2. Pursuant to 40 CFR §270.41, a permit modification will be initiated by the Regional Administrator after recommendation of a remedy under Condition II.H.1. This modification will serve to incorporate a final remedy into this permit.

II.I. MODIFICATION OF THE CORRECTIVE ACTION SCHEDULE OF COMPLIANCE

II.I.1. If at any time the Regional Administrator (RA) determines that modification of the Corrective Action Schedule of Compliance is necessary, the RA may initiate a modification to the Schedule of Compliance (Appendix D).

II.I.2. Modifications that are initiated and finalized by the Regional Administrator according to proper procedure, as outlined in Appendix E, shall not be subject to administrative appeal.

II.I.3. Modifications to the Schedule of Compliance do not constitute a reissuance of the Permit.

II.J. IMMINENT HAZARDS

II.J.1. The Permittee shall report to the Regional Administrator any imminent or existing hazard to public health or the environment from any release of hazardous waste or hazardous constituents. Such information shall be reported orally within 24 hours from such time the Permittee becomes aware of the circumstances. This report shall include the information specified under Conditions I.D.14.a. and b.

II.J.2. A written report shall also be provided to the Regional Administrator within fifteen (15) calendar days of the time the Permittee becomes aware of the circumstances. The written report shall contain the information specified under Conditions I.D.14.a. and b.; a description of the release and its cause; the period of the release; whether the release has been stopped and, if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the release.

II.K. PLAN AND REPORT REQUIREMENTS

II.K.1. All plans and schedules shall be subject to approval by the Regional Administrator (RA) prior to implementation. The Permittee shall revise all submittals and schedules as specified by the RA. Upon approval the Permittee shall implement all plans and schedules as written.

II.K.2. The results of all plans and reports shall be submitted in accordance with the approved schedule. Extensions of the due date for submittals may be granted by the Regional Administrator based on the Permittee's demonstration that sufficient justification for the extension exists.

II.K.3. If the Permittee at any time determines that the SAR information required under Condition II.B., the CS Workplan under II.D., or RFI Workplan(s) required under Condition II.E. no longer satisfy the requirements of 40 CFR §264.101 or this permit for prior or continuing releases of hazardous waste or hazardous constituents from solid waste management units and/or AOCs areas of concern, the Permittee shall submit an amended RFI Workplan(s) to the Regional Administrator within ninety (90) calendar days of such determination.

II.K.4. All reports shall be signed and certified in accordance with 40 CFR §270.11.

II.K.5. Two (2) copies of all reports and plans shall be provided by the Permittee to the Regional Administrator in care of Mr. James H. Scarbrough at the following address:

Mr. James H. Scarbrough, P.E.
Chief, RCRA and Federal Facilities Branch
Waste Management Division
Environmental Protection Agency
Regional IV
345 Courtland Street
Atlanta, Georgia 30365

PART III - WASTE MINIMIZATION

- III.A. Pursuant to 40 CFR §264.73(b)(9), and section 3005(h) of RCRA, 42 U.S.C. 6925(h), the Permittee must certify, no less often than annually, that:
 - III.A.1. The Permittee has a program in place to reduce the volume and toxicity of hazardous waste generated to the degree determined by the Permittee to be economically practicable; and
 - III.A.2. The proposed method of treatment, storage or disposal is the most practicable method available to the Permittee which minimizes the present and future threat to human health and the environment.
- III.B. The Permittee shall maintain copies of this certification in the facility operating record as required by 40 CFR §264.73(b)(9).
- III.C. The Waste Minimization program required under III.A. above should address the objectives listed in Appendix F.

PART IV - LAND DISPOSAL RESTRICTIONS

IV.A. GENERAL RESTRICTIONS

- IV.A.1. 40 CFR Part 268 identifies hazardous wastes that are restricted from land disposal and defines those limited circumstances under which an otherwise prohibited waste may continue to be placed on or in a land treatment, storage or disposal unit. The Permittee shall maintain compliance with the requirements of 40 CFR Part 268. Where the Permittee has applied for an extension, waiver or variance under 40 CFR Part 268, the Permittee shall comply with all restrictions on land disposal under this Part once the effective date for the waste has been reached pending final approval of such application.

IV.B. LAND DISPOSAL PROHIBITIONS AND TREATMENT STANDARDS

- IV.B.1. A restricted waste identified in 40 CFR Part 268 Subpart C may not be placed in a land disposal unit without further treatment unless the requirements of 40 CFR Part 268 Subparts C and/or D are met.
- IV.B.2. The storage of hazardous wastes restricted from land disposal under 40 CFR Part 268 is prohibited unless the requirements of 40 CFR Part 268 Subpart E are met.

APPENDIX A
SOLID WASTE MANAGEMENT UNIT SUMMARY

APPENDIX A-1

List of Solid Waste Management Units and Areas of Concern requiring an RFI:

<u>SWMU/AOC No.</u>	<u>Description</u>	<u>Investigation Requirements</u>
25	Golf Course Pond	Soil, Surface Water, Pond Sediment, Ground Water
26	Lake Danielson	Soil, Surface Water, Pond Sediment, Ground Water
27	Former Recoup Area	Soil, Surface Water, Ground Water
32	Sandblasting Waste Accumulation Area	Soil, Surface Water, Ground Water
AOC H	Building 629 Spill Area	Soil Surface Water, Ground Water

APPENDIX A-2

List of Solid Waste Management Units or Areas of Concern that require no further action at this time.

<u>SWMU/AOC No.</u>	<u>Description</u>
18	Plane Crash Residue
22	Hardware Burial Site
23	Construction Debris and Foods Burial Site
28	Recoup Area Building
30	Paint Spray Booths (3)
33	Sandblasting Waste Drum Storage Area
40	Safety-Kleen Units (9)
41	Satellite Drum Accumulation Area (5)
44	Former Wastewater Treatment Unit Area
45	Former Contaminated Soil Staging Area
47	Former Contaminated Soil Drum Storage Area
49	Medical Waste Storage Area
AOC D	X-25 Flammable Solvents Storage Area
AOC E	DRMO Drainage Ditch
AOC F	North Run-Off Area
AOC G	West Run-Off Area

APPENDIX A-3

List of Solid Waste Management Units Regulated by the State's Portion of the RCRA Permit:

<u>SWMU/AOC No.</u>	<u>Description</u>
35	DRMO Building T-308 Hazardous Waste Storage Building
36	DRMO Hazardous Waste Concrete Storage Pad
37	DRMO Hazardous Waste Gravel Storage Pad
38	DRMO Damaged and Empty Hazardous Materials Drum Area
39	DRMO Damaged and Empty Lubricant Container Area

APPENDIX A-4

List of Solid Waste Management Units and Areas of Concern requiring an RFI:

<u>SWMU/AOC No.</u>	<u>Description</u>	<u>Investigation Requirements</u>
1	Mustard Gas Burial Site	Soil, Ground Water
2	Ammonia Hydroxide Burial Site	Soil, Ground Water
3	Mixed Chemical Burial Site A	Soil, Ground Water
4	POL Burial Sites	Soil, Ground Water
5	Methyl Bromide Burial Site A	Soil, Ground Water
6	Eye Ointment Burial Site	Soil, Ground Water
7	_____ Metric Acid Burial Site	Soil, Ground Water
8	Methyl Bromide Burial Site B	Soil, Ground Water
9	Ashes and Metal Burial Site	Soil, Ground Water
10	Solid Waste Burial Site	Soil, Ground Water
11	Trichloroacetic Acid Burial Site	Soil, Ground Water
12	Sulfuric and Hydrochloric Acid Burial Site	Soil, Ground Water
13	Mixed Chemical Burial Site B	Soil, Ground Water
14	Municipal Waste Burial Site	Soil, Ground Water
15	Sodium Burial Sites	Soil, Ground Water
16	Unknown Acid Burial Site	Soil, Ground Water
17	Mixed Chemical Burial Site C	Soil, Ground Water
19	Former Tear Gas Canister Burn Site	Soil, Ground Water, Surface Water
20	Probable Asphalt Burial Site	Soil, Ground Water
21	xxxx-3 Probable Burial Site	Soil, Ground Water
24	Former Miscellaneous Burn Site	Soil, Ground Water
29	Former Underground Waste Oil Storage Tank	Soil, Ground Water
31	Former Paint Spray Booth	Soil, Ground Water, Surface Water
34	Building 770 Underground Water Oil Storage Tanks (2)	Soil, Ground Water
42	Former PCP Dip Vat Area	Soil
43	Former Underground PCP Tank Area	Soil
46	Former PCP Drying Area	Soil
48	Former PCP Transformer Storage Area	Soil, Ground Water
AOC A	Drum Field Drainage Ditch	Soil, Ground Water
AOC B	Lake Danielson Outlet Ditch	Soil, Ground Water
AOC C	Golf Course Pond Outlet Ditch	Soil, Ground Water

* Additional investigations may be required based upon sampling/analysis results.

APPENDIX B

**RCRA Facility Investigation (RFI)
Workplan Outline**

APPENDIX B

RCRA FACILITY INVESTIGATION (RFI) WORKPLAN OUTLINE

I. RFI WORKPLAN REQUIREMENTS

The Permittee shall prepare a RCRA Facility Investigation (RFI) Workplan that meets the requirements of Part II of this document and the RFI Guidance, EPA-530/SW-89-031. This Workplan shall also include the development of the following plans, which shall be prepared concurrently:

A. Project Management Plan

Permittee shall prepare a Project Management Plan which will include a discussion of the technical approach, schedules and personnel. The Project Management Plan will also include a description of qualifications of personnel performing or directing the RFI, including contractor personnel. This plan shall also document the overall management approach to the RCRA Facility Investigation.

B. Sampling and Analysis Plan(s)

The Permittee shall prepare a plan to document all monitoring procedures: field sampling, sampling procedures and sample analysis performed during the investigation to characterize the environmental setting, source, and releases of hazardous constituents, so as to ensure that all information and data are valid and properly documented. The Sampling Strategy and Procedures shall be in accordance with Characterization of Hazardous Waste Sites a Method Manual: Volume II., Available Sampling Methods, EPA-600/4-84-076, or EPA Region IV Engineering Support Branch's Standard Operating Procedure and Quality Assurance Manual (SOP). Any deviations from these references must be requested by the applicant and approved by EPA. The Sampling and Analysis Plan must specifically discuss the following unless the EPA-600/4-84-076 or SOP procedures are specifically referenced.

1. Sampling Strategy

- a. Selecting appropriate sampling locations, depths, etc.;
- b. Obtaining all necessary ancillary data;
- c. Determining conditions under which sampling should be conducted;
- d. Determining which media are to be sampled (e.g., groundwater, air, soil, sediment, subsurface gas);

- e. Determining which parameters are to be measured and where;
- f. Selecting the frequency of sampling and length of sampling period;
- g. Selecting the types of samples (e.g., composites vs. grabs) and number of samples to be collected.

2. Sampling Procedures

- a. Documenting field sampling operations and procedures, including;
 - i. Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters, preservatives, and absorbing reagents);
 - ii. Procedures and forms for recording the exact location and specific considerations associated with sample acquisition;
 - iii. Documentation of specific sample preservation method;
 - iv. Calibration of field instruments;
 - v. Submission of field-biased blanks, where appropriate;
 - vi. Potential interferences present at the facility;
 - vii. Construction materials and techniques, associated with monitoring wells and piezometers;
 - viii. Field equipment listing and sampling containers;
 - ix. Sampling order; and
 - x. Decontamination procedures.
- b. Selecting appropriate sample containers;
- c. Sampling preservation; and
- d. Chain-of-custody, including:
 - i. Standardized field tracking reporting forms to establish sample custody in the field prior to shipment; and
 - ii. Pre-prepared sample labels containing all information necessary for effective sample tracking.

3. Sample Analysis

Sample analysis shall be conducted in accordance with SW-846: "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods" (third edition). The sample analysis section of the Sampling and Analysis Plan shall specify the following:

- a. Chain-of-custody procedures, including:
 - i. Identification of a responsible party to act as sampling custodian at the laboratory facility authorized to sign for incoming field samples, obtained documents of shipment, and verify the data entered onto the sample custody records;
 - ii. Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracking report sheets; and
 - iii. Specification of laboratory sample custody procedures for sample handling, storage, and dispersment for analysis.
- b. Sample storage;
- c. Sample preparation methods;
- d. Analytical Procedures, including:
 - i. Scope and application of the procedure;
 - ii. Sample matrix;
 - iii. Potential interferences;
 - iv. Precision and accuracy of the methodology; and
 - v. Method detection limits.
- e. Calibration procedures and frequency;
- f. Data reduction, validation and reporting;
- g. Internal quality control checks, laboratory performance and systems audits and frequency, including:
 - i. Method blank(s);
 - ii. Laboratory control sample(s);

- iii. Calibration check sample(s);
 - iv. Replicate sample(s);
 - v. Matrix-spiked sample(s);
 - vi. Control charts;
 - vii. Surrogate samples;
 - viii. Zero and span gases; and
 - ix. Reagent quality control checks.
- h. Preventive maintenance procedures and schedules;
 - i. Corrective action (for laboratory problems); and
 - j. Turnaround time.

C. Data Management Plan

The Permittee shall develop and initiate a Data Management Plan to document and track investigation data and results. This plan shall identify and set up data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The plan shall also provide the format to be used to present the raw data and conclusions of the investigation.

1. Data Record

The data record shall include the following:

- a. Unique sample or field measurement code;
- b. Sampling or field measurement location and sample or measurement type;
- c. Sampling or field measurement raw data;
- d. Laboratory analysis ID number;
- e. Property or component measures; and
- f. Result of analysis (e.g. concentration).

2. Tabular Displays

The following data shall be presented in tabular displays:

- a. Unsorted (raw) data;
- b. Results for each medium, or for each constituent monitored;
- c. Data reduction for statistical analysis, as appropriate;
- d. Sorting of data by potential stratification factors (e.g., location, soil layer, topography); and
- e. Summary data

3. Graphical Displays

The following data shall be presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transits, three dimensional graphs, etc.):

- a. Display sampling location and sampling grid;
- b. Indicate boundaries of sampling area, and area where more data are required;
- c. Display geographical extent of contamination;
- d. Illustrate changes in concentration in relation to distances from the source, time, depth or other parameters; and
- e. Indicate features affecting inter-media transport and show potential receptors.

II. RCRA Facility Investigation (RFI) Requirements

RCRA Facility Investigation:

The Permittee shall conduct those investigations necessary to: characterize the facility (Environmental Setting); define the source (Source Characterization); define the degree and extent of release of hazardous constituents (Contamination Characterization); and identify actual or potential receptors.

The investigations should result in data of adequate technical content and quality to support the development and evaluation of the corrective action plan if necessary. The information contained in a RCRA Part B permit application and/or RCRA Section 3019 Exposure Information Report may be referenced as appropriate.

All sampling and analyses shall be conducted in accordance with the Sampling and Analysis Plan. All sampling locations shall be documented in a log and identified on a detailed site map.

A. Environmental Setting

The Permittee shall collect information to supplement and/or verify Part B information on the environmental setting at the facility. The Permittee shall characterize the following as they relate to identified sources, pathways and areas of releases of hazardous constituents from Solid Waste Management Units.

1. Hydrogeology

The Permittee shall conduct a program to evaluate hydrogeologic conditions at the facility. This program shall provide the following information:

- a. A description of the regional and facility specific geologic and hydrogeologic characteristics affecting ground-water flow beneath the facility, including:
 - i. Regional and facility specific stratigraphy: description of strata including strike and dip, identification of stratigraphic contacts;
 - ii. Structural geology: description of local and regional structural features (e.g., folding, faulting, tilting, jointing, etc.);
 - iii. Depositional history;
 - iv. Regional and facility specific ground-water flow patterns; and
 - v. Identification and characterization of areas and amounts of recharge and discharge.
- b. An analysis of any topographic features that might influence the ground-water flow system.
- c. Based on field data, tests, and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the facility (i.e., the aquifers and any intervening saturated and unsaturated units), including:
 - i. Hydraulic conductivity and porosity (total and effective);
 - ii. Lithology, grain size, sorting, degree of cementation;
 - iii. An interpretation of hydraulic interconnections between saturated zones; and

- iv. The attenuation capacity and mechanisms of the natural earth materials (e.g., ion exchange capacity, organic carbon content, mineral content etc.).
- d. Based on data obtained from groundwater monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring including:
 - i. Water-level contour and/or potentiometric maps;
 - ii. Hydrologic cross sections showing vertical gradients;
 - iii. The flow system, including the vertical and horizontal components of flow; and
 - iv. Any temporal changes in hydraulic gradients, for example, due to tidal or seasonal influences.
- e. A description of man-made influences that may affect the hydrology of the site, identifying:
 - i. Local water-supply and production wells with an approximate schedule of pumping; and
 - ii. Man-made hydraulic structures (pipelines, french drains, ditches, etc.).

2. Soils

The Permittee shall conduct a program to characterize the soil and rock units above the water table in the vicinity of contaminant release(s). Such characterization may include, but not be limited to, the following types of information as appropriate:

- a. Surface soil distribution;
- b. Soil profile, including ASTM classification of soils;
- c. Transects of soil stratigraphy;
- d. Hydraulic conductivity (saturated and unsaturated);
- e. Relative permeability;
- f. Bulk density;
- g. Porosity;
- h. Soil sorption capacity;
- i. Cation exchange capacity (CEC);
- j. Soil organic content;
- k. Soil pH;
- l. Particle size distribution;
- m. Depth of water table;

- n. Moisture content;
- o. Effect of stratification on unsaturated flow;
- p. Infiltration;
- q. Evapotranspiration;
- r. Storage capacity;
- s. Vertical flow rate; and
- t. Mineral content.

3. Surface Water and Sediment

The Permittee shall conduct a program to characterize the surface water bodies in the vicinity of the facility. Such characterization may include, but not be limited to, the following activities and information:

- a. Description of the temporal and permanent surface water bodies including:
 - i. For lakes and estuaries: location, elevation, surface area, inflow, outflow, depth, temperature stratification, and volume;
 - ii. For impoundments: location, elevation, surface area, depth, volume, freeboard, and construction and purpose;
 - iii. For streams, ditches and channels: location, elevation, flow, velocity, depth, width, seasonal fluctuations, flooding tendencies (i.e., 100 year event), discharge point(s), and general contents.
 - iv. Drainage patterns, and
 - v. Evapotranspiration.
- b. Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients, chemical oxygen demand, total organic carbon, specific contaminant concentrations, etc.
- c. Description of sediment characteristics including:
 - i. Deposition area;
 - ii. Thickness profile; and
 - iii. Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.)

4. Air

The Permittee shall provide information characterizing the climate in the vicinity of the facility. Such information may include, but not be limited to:

- a. A description of the following parameters:
 - i. Annual and monthly rainfall averages;
 - ii. Monthly temperature averages and extremes;
 - iii. Wind speed and direction;
 - iv. Relative humidity/dew point;
 - v. Atmospheric pressure;
 - vi. Evaporation data;
 - vii. Development of inversions; and
 - viii. Climate extremes that have been known to occur in the vicinity of the facility, including frequency of occurrence. (i.e. Hurricanes)
- b. A description of topographic and man-made features which affect air flow and emission patterns, including:
 - i. Ridges, hills or mountain areas;
 - ii. Canyons or valleys;
 - iii. Surface water bodies (e.g. rivers, lakes, bays, etc.); and
 - iv. Buildings.

B. Source Characterization

For those sources from which releases of hazardous constituents have been detected the Permittee shall collect analytical data to completely characterize the wastes and the areas where wastes have been placed, to the degree that is possible without undue safety risks, including: type, quantity; physical form; disposition (containment or nature of deposits); and facility characteristics affecting release (e.g., facility security, and engineering barriers). This shall include quantification of the following specific characteristics, at each source area:

1. Unit/Disposal Area Characteristics:

- a. Location of unit/disposal area;
- b. Type of unit/disposal area;
- c. Design features;
- d. Operating practices (past and present);
- e. Period of operation;
- f. Age of unit/disposal area;
- g. General physical conditions; and
- h. Method used to close the unit/disposal area.

2. Waste Characteristics:

- a. Type of wastes placed in the unit;
 - i. Hazardous classification (e.g., flammable, reactive, corrosive, oxidizing or reducing agent);
 - ii. Quantity; and
 - iii. Chemical composition.
- b. Physical and chemical characteristics such as;
 - i. Physical form (solid, liquid, gas);
 - ii. Physical description (e.g., powder, oily sludge);
 - iii. Temperature;
 - iv. pH;
 - v. General chemical class (e.g., acid, base, solvent);
 - vi. Molecular weight;
 - vii. Density;
 - viii. Boiling point;
 - ix. Viscosity;
 - x. Solubility in water;
 - xi. Cohesiveness of the waste; and
 - xii. Vapor pressure.

- c. Migration and dispersal characteristics of the waste such as:
- i) Sorption capability;
 - ii) Biodegradability, bioconcentration, biotransformation;
 - iii) Photodegradation rates;
 - iv) Hydrolysis rates; and
 - v) Chemical transformations.

The Permittee shall document the procedures used in the making the above determinations.

C. Characterization of Releases of Hazardous Constituents

The Permittee shall collect analytical data on groundwater, soils, surface water, sediment, and subsurface gas contamination in the vicinity of the facility in accordance with the sampling and analysis plan as required above. These data shall be sufficient to define the extent, origin, direction, and rate of movement of contamination. Data shall include time and location of sampling, media sampled, concentrations found, conditions during sampling, and the identity of the individuals performing the sampling and analysis. The Permittee shall address the following types of contamination at the facility:

1. Groundwater Contamination

The Permittee shall conduct a groundwater investigation to characterize any plumes of contamination detected at the facility. This investigation shall at a minimum provide the following information:

- a. A description of the horizontal and vertical extent of any plume(s) of hazardous constituents originating from or within the facility;
- b. The horizontal and vertical direction of contamination movement;
- c. The velocity of contaminant movement;
- d. The horizontal and vertical concentration profiles of hazardous constituents in the plume(s);
- e. An evaluation of factors influencing the plume movement; and
- f. An extrapolation of future contaminant movement.

The Permittee shall document the procedures used in making the above determinations (e.g., well design, well construction, geophysics, modeling, etc.).

2. Soil Contamination

The Permittee shall conduct an investigation to characterize the contamination of the soil and rock units above the saturated zone in the vicinity of any contaminant release. The investigation may include the following information:

- a. A description of the vertical and horizontal extent of contamination;
- b. A description of appropriate contaminant and soil chemical properties within the contaminant source area and plume. This may include contaminant solubility, speciation, absorption, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation and other factors that might affect contaminant migration and transformation;
- c. Specific contaminant concentrations;
- d. The velocity and direction of contaminant movement; and
- e. An extrapolation of future contaminant movement.

The Permittee shall document the procedures used in making the above determinations.

3. Surface Water and Sediment Contamination

The Permittee shall conduct a surface water investigation to characterize contamination in surface water bodies resulting from releases of hazardous constituents at the facility.

The investigation may include, but not be limited to, the following information:

- a. A description of the horizontal and vertical extent of any plume(s) originating from the facility, and the extent of contamination in underlying sediments;
- b. The horizontal and vertical direction of contaminant movement;
- c. The contaminant velocity;
- d. An evaluation of the physical, biological and chemical factors influencing contaminant movement;

- e. An extrapolation of future contaminant movement; and
- f. A description of the chemistry of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.

4. Air Contamination

The Permittee shall conduct an investigation to characterize gaseous releases of hazardous constituents into the atmosphere or any structures or buildings. This investigation may provide the following information:

- a. A description of the horizontal and vertical direction and velocity of contaminant movement;
- b. The rate and amount of the release; and
- c. The chemical and physical composition of the contaminant(s) released, including horizontal and vertical concentration profiles.

The Permittee shall document the procedures used in making the above determinations.

D. Potential Receptors

The Permittee shall collect data describing the human populations and environmental systems that are susceptible to contaminant exposure from the facility. Chemical analysis of biological samples and/or data on observable effects in ecosystems may also be obtained as appropriate. The following characteristics shall be identified:

- 1. Current local uses and planned future uses of groundwater:
 - a. Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial); and
 - b. Location of ground water users, to include withdrawal and discharge wells, within one mile of the impacted area.

The above information should also indicate the aquifer or hydrogeologic unit used and/or impacted for each item.

- 2. Current local uses and planned future uses of surface waters directly impacted by the facility:
 - a. Domestic and municipal (e.g., potable and lawn/gardening watering);
 - b. Recreational (e.g., swimming, fishing);

- c. Agricultural;
 - d. Industrial; and
 - e. Environmental (e.g., fish and wildlife propagation).
3. Human use of or access to the facility and adjacent lands, including but not limited to:
- a. Recreation;
 - b. Hunting;
 - c. Residential;
 - d. Commercial; and
 - e. Relationship between population locations and prevailing wind direction.
4. A general description of the biota in surface water bodies on, adjacent to, or affected by the facility.
5. A general description of the ecology within area the area adjacent to the facility.
6. A general demographic profile of the people who use or have access to the facility and adjacent land, including, but not limited to: age; sex; and sensitive subgroups.
7. A description of any known or documented endangered or threatened species near the facility.

DEFENSE DEPOT - MEMPHIS

1. **Comment:** Owing to a congressional mandate DRMS validated the size requirement of the facility needed to DRMO Memphis located at DDMT. The finding indicated that the facility was sized to large. Thus Attachment 9 will not be built. The new size is 9600 sq. ft. DDMT will be submitted the revised drawings as soon as they are complete, approved, and issued by DRMS.

Response: Schedule of compliance has been added.

2. **Comment:** Delete "For off-site units... or manifest or shipping paper." and replace with "When the inspection (General Condition B.1(c) of off-site generated wastes indicates that the waste received at the unit(s) does not match the waste's identity designation on the accompanying manifest or shipping paper."

Response: Standard language.

3. **Comment:** The DRMO stores hazardous property (HP) off the floor on pallet racks in each module. The pallet racks are placed against the walls on each side of the room. This allows fastening the racks to the wall to prevent tipping. The pallets are stored up to three high depending on the classification of the HP. By storing the property off the floor, leaks can easily be identified and the floor seal, which is part of the spill protection, can be protected. If leaks are found, the pallet rack can easily be emptied to facilitate the clean-up operation. The aisle space between racks is 10 feet plus. See figure 8.1 of the pallet rack placement. The aisle space allows room for inspections, fire fighting, material handling equipment, spill clean-up, etc. There is no space between the HP and the wall for inspections. However, HP is stored in such a manner that facilitates easy identification of a leak or spill. Delete "Aisle space shall be provided between containers and the limits (e.g., walls) of the container storage areas."

Response: The deletion has been made as requested.

4. **Comment:** Correct spelling is spilt.

Response: The word was corrected to "spilled".

5. **Comment:** Delete (2) Occupational Health Guidelines for Chemical Hazards.

Response: This deletion was made.

6. **Comment:** Insert before "Group II" "Off-site".

Response: Change made.
7. **Comment:** The table submitted in the permit application is at enclosure 1. Please revise table 1-1 to that in our permit application.

Response: The table will be left as found in the draft.
8. **Comment:** The table submitted in the permit application is at enclosure 2. Please revise table 1-2 to that in our permit application.

Response: This table will be left as found in the draft.
9. **Comment:** Change to read "... Table 1-1 are summarized in table 1-2...".

Response: Change made.
10. **Comment:** Delete "10% of the containers will be sampled and analyzed." This is covered in page 1-4.

Response: This deletion was not made.
11. **Comment:** Change Table 2 to Table 1-2.

Response: Change made.
12. **Comment:** Delete the text in its entirety and replace with "Monthly, the DRMO staff review the turn-in documents for the hazardous waste received from each generator to determine the number of samples to be taken. The number of hazardous waste containers (whatever size) received from a generator (each generator has a separate EPA I.D. number) during that time forms a lot. Schedule A of Table 1-4 will be used to determine the number of samples to be taken from each lot."

Response: Language in the permit will stay as is.
13. **Comment:** Item 5 fire blankets delete entry. Replace tables 3-2 and 3-3 with enclosure 3.

Response: Change made.
14. **Comment:** There has been minor modifications to the DRMS training see enclosure 4.

Response: Modifications added to permit.
15. **Comment:** Change "Attachment 5" to "below or page ?".

16. Comment: Delete these are a repeat.

Response: These have been deleted.

17. Comment: Delete "per the Waste Analysis Plan, Attachment 2."

Response: Reference to the Waste Analysis Plan is appropriate.

18. Comment: Delete "The HWSF will be ... square feet in size." This information will be replaced as soon as new designs are available for the revised storage requirement.

Response: Changed to "Building plans for the proposed facility will be forthcoming".

19. Comment: Training plan is in Attachment 4.

Response: Noted.

20. Comment: Rewrite this paragraph as follows: "The publication DRMS-M 4160.5, Storage Operations (Warehousing) at the Defense Reutilization and Marketing Offices is available at the DRMO to assist personnel in determining the compatibility of wastes. Appendix 10-1, (enclosure 5) which is from this publication, presents storage compatibility procedures and a list of chemical substance and their hazardous characteristics."

Response: This has been done.

21. Comment: Delete in its entirety and replace with enclosure 5.

Response: Deletion and replacement made.

U.S. DOD DEFENSE DEPOT MEMPHIS
EPA I.D. NO. TN 4 210 020 570

COMMENT SECTION

1. **Comment:** Page 26. In Condition IV.C.2., the reference to Condition E.1.b. should be changed to Condition B.3.

Response: Change made.

2. **Comment:** Page 26 and Appendix D, page D-1. In the State permit, a Confirmatory Sampling (CS) Report must be submitted within sixty (60) days of the CS start date specified in the approval letter. We question whether it is realistic to expect confirmatory sampling to be conducted and a report written within this timeframe. Condition IV.D.4. and Appendix D should be amended to require submittal of a CS Report in accordance with the schedule indicated in the approved CS Workplan.

Response: Changed to "In accordance with the schedule in the approved as workplan".

3. **Comment:** Page 132 and Appendix D, page D-2. As U.S. DOD Defense Depot Memphis is a Federal facility, there is no requirement to demonstrate financial assurance. Therefore, Condition IV.H.3. and the schedule in Appendix D for demonstrating financial assurance should be deleted from the State permit.

Response: Deletion made.

RESPONSE TO COMMENTS

This document has been prepared in accordance with Tennessee Rule 1200-1-11-.07(7)(j). It has resulted from the Tennessee Division of Solid Waste Management's issuance of a draft hazardous waste storage permit to U.S. Department of Defense, DRMO-Defense Depot, Memphis, Tennessee, Installation I.D. Number TN4 21 002 0570. The draft permit proposed to allow the operation and maintenance of a storage unit at DRMO-Defense Depot for the storage of hazardous waste received from authorized on-site hazardous waste generation, accumulation and storage units. Part A of this document describes the efforts made by the Tennessee Division of Solid Waste Management (DSWM) to obtain public input. Part B summarizes and responds to all significant public comments received. Part C summarizes the changes made to the draft permit in preparing the final permit action.

A. Public Involvement Opportunities

DSWM issued a public notice of the issuance of the draft permit in the August 9, 1990 edition of The Commercial Appeal. Several (30-second) announcements of the action, referencing the notice published in the newspapers, were also provided over two local radio stations (WEZI-FM, Memphis and WNWZ-AM, Memphis). The Public Notice advised the public that copies of the draft permit and associated materials were available for review at DSWM's Memphis Field Office and Memphis/Shelby County Main Library, Memphis, TN. The Notice also established a 45-day public comment period (ending September 24, 1990) and described how interested persons could comment in writing on the proposed action. It further described a public hearing that was held at the Francis E. Coe Administrative Auditorium at the Board of Education Building, at 2597 Avery Avenue in Memphis on September 11, 1990 to also receive comments from the public. That hearing was held, and included a lengthy question-and-answer session during which DSWM staff and officials and representatives of U.S. Department of Defense, DRMO-Defense Depot attempted to answer the many questions of the attending public.

B. Public Comment/Response Summary

The public hearing was held on September 11, 1990 at the Francis E. Coe Administrative Auditorium at the Board of Education Building at 2597 Avery Avenue, In Memphis. No comments were received from this meeting.

State of Tennessee
Department of Health and Environment
Division of Solid Waste Management

Hazardous Waste Management Program
4th Floor, Customs House
701 Broadway
Nashville, TN 37247-3530
(615) 741-3424

PERMIT

Permittee: U.S. Department of Defense and Defense Logistics Agency, Defense Depot
Memphis

Installation Identification Number: TN4 21-002-0570
Facility: DRMO Defense Depot Memphis
Owner: U.S. Department of Defense
Operator: U.S. Department of Defense - Defense Logistics Agency
Permit Number: TNHW-053

Pursuant to the Tennessee Hazardous Waste Management Act, as amended (Tennessee Code Annotated 68-46-101 et seq.) and regulations (Chapter 1200-1-11) promulgated thereunder by the Tennessee Solid Waste Disposal Control Board, a permit is issued to United Solid Waste Disposal Control Board, a permit is issued to United States Department of Defense (hereinafter called the Permittee), to operate a hazardous waste storage unit for the management of hazardous waste, located in Memphis, Tennessee, Shelby County at latitude 35° 05' 15" N and longitude 90° 00' 00" W. The Permittee will be allowed to store hazardous waste subject to the terms of this permit.

The Permittee must comply with all terms and conditions of this permit. This permit consists of the conditions contained herein (including those in any attachments) and the applicable regulations contained in Rule Chapter 1200-1-11, as specified in the permit. Applicable regulations are those which are in effect on the date of issuance of the permit, except for the requirements of the annual permit maintenance fees of Rule 1200-1-11-.08 in which case the applicable regulations are those in effect on the date the appropriate fee is due.

Continuation, Transfer, Modification, Revocation and Reissuance, and Termination of this permit must comply with and conform to Rule 1200-1-11-.07(9).

This permit is based on the assumption that the information submitted in the original permit application and subsequent modifications thereto (hereinafter referred to as the application) is accurate and that the unit(s) will be constructed, operated, maintained, and closed as specified in the application. The Permittee's failure in the application to disclose fully all relevant facts or the Permittee's misrepresentation of any relevant facts at any time may be grounds for termination of this permit and potential enforcement action. The Commissioner may modify this permit if information is received which was not available at the time of permit issuance and which justifies the application of different permit conditions at the time of issuance. The Permittee must inform the Tennessee

Department of Health and Environment, Division of Solid Waste Management, of any deviation from or changes in the information in the application which would affect the Permittee's ability to comply with the applicable regulations or permit conditions.

This permit is effective as of September 28, 1990, and shall remain in effect until September 28, 2000, unless revoked and reissued, or terminated, or continued.

Tom Tiesler, Director
Division of Solid Waste Management
Tennessee Department of Health and Environment

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Permittee: U.S. Department of Defense and Defense Logistics Agency, Defense Depot
Memphis

Installation Identification Number: TN4 21-002-0570

Facility: DRMO Defense Depot Memphis

Owner: U.S. Department of Defense

Operator: U.S. Department of Defense - Defense Logistics Agency

I. STANDARD CONDITIONS

A. EFFECT OF PERMIT

The Permittee is allowed to store hazardous waste in accordance with the conditions of this permit. Any management of hazardous waste not authorized in this permit is prohibited, unless such management is not subject to a permit [as set forth at Rule 1200-1-11-.07(1)(b)] or qualifies for interim status [as set forth in Rule 1200-1-11-.07(3)(a)] subsequent to issuance of this permit. Compliance with this permit constitutes compliance, for the purposes of enforcement, with the Tennessee Hazardous Waste Management Act of 1977, as amended, as it applies to the permitted activities. However, this permit may be modified, revoked and reissued, or terminated during its term for cause as set forth in this permit and paragraph (9) of Rule 1200-1-11-.07. Issuance of this permit does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of other State or local laws or regulations. This permit does not convey any property rights of any sort or any exclusive privilege. Compliance with the terms of this permit does not constitute a defense to any order issued or any action brought under Section 3013 or Section 7003 of the Federal Resource Conservation and Recovery Act of 1976 as amended (42 U.S.C. 6901 et seq., commonly referred to as RCRA), Sections 104, 106(a) and 107 of the Federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601 et seq., commonly known as CERCLA), Sections 68-46-206(a), 207, and 215(c) of the Tennessee Hazardous Waste Management Act of 1983, as amended, or any other law providing for protection of public health or the environment.

B. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

C. DEFINITIONS

For the purpose of this permit, terms used herein shall have the same meaning as those in Rules 1200-1-11-.01, .02 and .06, unless this permit specifically provides otherwise. Where terms are not otherwise defined, the meaning associated with such

terms shall be as defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

1. "Registered engineer" or "registered professional engineer" shall mean a person authorized to perform engineering in Tennessee pursuant to Tennessee Code Annotated, Title 62, Chapter 2.
2. "Hazardous constituent(s)" are those substances listed in Appendix .02/E of Rule 1200-1-11-.02 and include hazardous constituents released from any waste and hazardous constituents that are reaction by-products.
3. "Release" includes any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, dumping, or disposing into the environment of any hazardous constituents.
4. "Contamination" refers to the presence of any hazardous constituent in a concentration which exceeds the naturally occurring concentration of that constituent in the immediate vicinity of the unit(s) (in areas not affected by the unit(s)).
5. The term "solid waste" means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flow or industrial discharges which are point sources subject to permits under section 402 of the Federal Water Pollution Control Act, as amended (86 Stat. 880), or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923).
6. A "solid waste management unit" for the purposes of this permit includes any unit which has been used for the treatment, storage, or disposal of solid waste at any time, irrespective of whether the unit is or ever was intended for the management of solid waste. RCRA regulated hazardous waste management units are also solid waste management units.
7. A "unit" for the purposes of this permit includes, but is not limited to, any landfill, surface impoundment, waste pile, land treatment unit, incinerator, injection well, tank, container storage area, septic tank, drain field, wastewater treatment unit, elementary neutralization unit, transfer station, or recycling unit.

8. "Corrective action," for purposes of this permit, may include all corrective measures necessary to protect human health and the environment for all releases of hazardous waste or hazardous constituents from any solid waste management unit at the facility, regardless of the time at which waste placed in the unit, as required 1200-1-11-.06(6)(1). Corrective measures may address releases to air, soils, surface water or groundwater.
9. "Land Disposal," for the purposes of 40 CFR Part 268, Tennessee Rule 1200-1-11-.10, means placement in or on the land and includes, but is not limited to, placement in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, underground mine or cave, or concrete vault or bunker intended for disposal purposes.
10. "Area of concern" (AOC) for purposes of this permit includes any area having a probable release of a hazardous waste or hazardous constituent which is not from a solid waste management unit and is determined by the Commissioner to pose a current or potential threat to human health or the environment. Such areas of concern may require investigations and remedial action as required under the Resource Conservation and Recovery Act under the Resource Conservation and Recovery Act and Rule 1200-1-11-.07(8)(b)2 in order to ensure adequate protection of human health and the environment.

D. GENERAL DUTIES AND REQUIREMENTS

1. **Duty to Comply:** The Permittee shall comply with all conditions of this permit, except that the Permittee need not comply with the conditions of the permit to the extent and for the duration that such noncompliance is authorized in an emergency permit. Any permit noncompliance, except under the terms of an emergency permit, constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.
2. **Duty of Reapply:** If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee shall apply for and obtain a new permit. In accordance with Rule 1200-1-11-.07(2)(e), the Permittee shall submit a new application at least 180 days before the expiration date of the effective permit.
3. **Need to Halt or Reduce Activity Not a Defense:** It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
4. **Duty to Mitigate:** In the event of noncompliance with the permit the Permittee shall take all reasonable steps to minimize releases to the environment and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment.

5. **Proper Operation and Maintenance:** The Permittee shall at all time properly operate and maintain all unit(s) and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary unit(s) or similar systems only when necessary to achieve compliance with the conditions of the permit.
6. **Permit Actions:** This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any existing permit condition.
7. **Duty to Provide Information:** The Permittee shall furnish to the Commissioner, within a reasonable time, any relevant information which the Commissioner may request to determine whether cause exists for modifying, revoking and reissuing, terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Commissioner, upon request, copies of records required to be kept by this permit.
8. **Access by Commissioner:** The Permittee shall allow the Commissioner, or any authorized representative, upon presentation of credentials and other documents as may be required by law, and subject to security provisions of the Atomic Energy Act of 1954 to:
 - (a) Enter, at reasonable times, upon the Permittee's premises where a regulated unit(s) or activity is located or conducted, or where records must be kept under the conditions of this permit;
 - (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
 - (c) Inspect, at reasonable times, any unit(s), equipment (including monitoring and control equipment), practices, or operations regulated or required under the conditions of this permit;
 - (d) Sample or monitor, at reasonable times, for the purposes of compliance with this permit or as otherwise authorized by the Act, any substances or parameters at any location; and
 - (e) Make photographs for the purpose of documenting items of compliance or noncompliance at waste management units or, where appropriate to protect legitimate proprietary interest, make such photographs for him.

"At reasonable times" shall mean, for the purposes of this permit condition, at least but not limited to, any time the unit(s) is in operation.

9. Signatory Requirement: All applications, reports, or information submitted to the Commissioner shall be signed and certified in accordance with the requirements of Rule 1200-1-11-.07(2)(a)7 through 10.

E. CONFIDENTIAL INFORMATION

In accordance with Rule 1200-1-11-.01(7), the Permittee may claim for confidential handling and proprietary information required to be submitted by this permit.

F. DOCUMENTS TO BE MAINTAINED AT UNIT(S) OR FACILITY SITE

The Permittee shall maintain at the unit(s) or facility, until closure is completed and certified by an independent registered professional engineer, the following documents and amendments, revisions and modifications to these documents:

1. Waste analysis plan(s) required by this permit and in accordance with Rule 1200-1-11-.06(2)(d)2;
2. Personnel training documents and records required by this permit and in accordance with Rule 1200-1-11-.06(2)(g)4 and 5, except that training records on former employees are not required to be kept for more than three years from the date the employee last worked at the unit(s) (Personnel training records may accompany personnel transferred within the same company.);
3. Contingency plan required by this permit and in accordance with Rule 1200-1-11-.06(4)(d);
4. Closure plan(s) required by this permit and in accordance with Rule 1200-1-11-.06(7)(c);
5. Operating record(s) required by this permit and in accordance with Rule 1200-1-11-.06(5)(d); and
6. Inspection schedule(s) and records required by this permit and in accordance with Rule 1200-1-11-.06(2)(f)2 and 4, except that inspection records need only be kept for three years after the inspection.

G. ANNUAL PERMIT MAINTENANCE FEE

The Permittee shall submit to the Commissioner an annual permit maintenance fee as provided in Rule 1200-1-11-.08(3)(b).

H. REQUIRED NOTICES

1. Anticipated Waste Receipt: The Permittee shall receive hazardous waste from a foreign source.
2. [Reserved]
3. Planned Changes: The Permittee shall give notice to the Commissioner as soon as possible of any planned physical alterations or additions to the permitted unit(s).
4. Anticipated Noncompliance: The Permittee shall give advance notice to the Commissioner of any planned changes in the permitted unit(s) or activity which may result in noncompliance with permit requirements.
5. Transfers: This permit is not transferable to any person except after notice to the Commissioner. Before transferring ownership or operation of the unit(s) during its operating life, the Permittee shall notify the prospective new owner or operator in writing of the requirements of Rules 1200-1-11-.06, 1200-1-11-.07, 1200-1-11-.08 and this permit. The Commissioner may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements may be necessary under the Act.

II. GENERAL FACILITY CONDITIONS

A. CONSTRUCTION OR MAINTENANCE OF THE UNIT(S)

1. The Permittee shall construct or maintain the unit(s) to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste constituent to air, soil, or surface water which could threaten human health or the environment. Specifically, the Permittee shall construct or maintain the unit(s) as described in Attachments 8 and 9.
2. For newly constructed unit(s), the Permittee may not commence storage of hazardous waste until:
 - (a) The Permittee has submitted to the Commissioner by certified mail or hand delivery a letter signed by the Permittee and a registered professional engineer stating that the unit(s) has been constructed in compliance with the permit; and
 - (b) (i) The Commissioner has inspected the modified or newly constructed unit(s) and finds it is in compliance with the conditions of the permit; or
 - (ii) After 15 days of the date of submission of the letter mentioned above, the Permittee has not received notice from the Commissioner of his or her intent to inspect, prior inspection is waived and the Permittee may commence management of hazardous waste.
3. It is recognized that minor deviations from exact design specifications may occur during construction. These must be noted in the engineer's statement accompanied with an evaluation of the impact of the deviation on unit(s) performance. The Commissioner may modify the permit accordingly, without following the procedures of Rule 1200-1-11-.07(7), if he determines that the deviations are indeed minor and will not adversely impact the Permittee's ability to comply with regulatory requirements.

B. SAMPLING, ANALYSIS, AND MONITORING

1. General Waste Analysis: In accordance with Rule 1200-1-11-.06(2)(d)1, before the Permittee stores any hazardous waste, he shall obtain a detailed chemical and physical analysis of a representative sample of the waste unless this requirement has been waived by the Commissioner. At a minimum, this analysis shall contain all the information which must be known to store the waste in accordance with this permit.
 - (a) The Permittee shall follow the procedures described in the Waste Analysis Plan(s) found in Attachment 1. However, use of the exact forms included in Attachment 1 is not mandatory. The Permittee may change the format and

content of those forms as deemed necessary to provide the information he needs to properly manage the unit(s).

Any deletion of information from such forms, however, must be approved in advance in writing by the Commissioner as a minor modification to this permit.

- (b) The analysis shall be repeated as necessary to ensure that it is accurate and up to date. At a minimum, the analysis shall be repeated no less frequently than the frequency specified in the waste analysis plan(s) (Attachment 1) and shall be repeated:
 - (i) When the Permittee is notified or has reason to believe that the process or operation generating the hazardous waste has changed; and
 - (ii) For off-site units or facilities (the other facilities located on the DOD, Defense Depot Memphis), when the results of the inspection required in General Unit(s) Condition B.1(c) indicate that the hazardous waste received at the unit(s) does not match the waste designated on the accompanying manifest or shipping paper.
 - (c) The Permittee shall inspect and, if necessary, analyze each hazardous waste shipment received at the unit(s) to determine whether it matches the identity of the waste specified in the accompanying manifest or shipping paper. The procedure which shall be followed is described in the Waste Analysis Plan(s), Attachment 1.
 - (d) The Permittee shall inspect and, if necessary, analyze all standing liquid in the secondary containment system(s) prior to its release from the storage unit(s). Sampling and analysis shall be performed as necessary to determine whether the liquid is a hazardous waste and how to properly manage it.
2. Sampling and Monitoring: Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the waste to be analyzed must be the appropriate method from Appendix .02/A of Rule 1200-1-11-.02 or equivalent method. Laboratory methods must be those specified in Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846) or Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), or the methods as specified in the attached Waste Analysis Plan(s), Attachment 1.

C. SECURITY

The Permittee shall provide security in accordance with Rule 1200-1-11-.06(2)(e) which at a minimum shall prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of the unit(s). The Permittee shall maintain its unit(s) in the manner described in Attachment 2.

D. GENERAL INSPECTION REQUIREMENTS

1. Schedule: The Permittee shall, in accordance with Rule 1200-1-11-.06(2)(f), inspect the unit(s) for malfunctions and deterioration, operator errors, and discharges which may be causing or may lead to (1) release of hazardous constituents to the environment or (2) a threat to human health. The Permittee shall inspect the items listed in the inspection schedule in Attachment 3. The inspection type and frequency shall be in accordance with the inspection schedule in Attachment 3.
2. Remedies: In accordance with Rule 1200-1-11-.06(2)(f)3, the Permittee shall remedy any deterioration or malfunction of equipment or structures which the inspection reveals, on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action shall be taken immediately.
3. Inspection Records: In accordance with Rule 1200-1-11-.06(2)(f)4, the Permittee shall record inspections in an inspection log or summary. The Permittee shall keep these records for at least three years from the date of inspection. At a minimum, these records shall include the date and time of the inspection, the name of the inspector, and a notation of the observation made, and the date and nature of any repairs or other remedial actions.

E. PERSONNEL TRAINING

In accordance with Rule 1200-1-11-.06(2)(g)1, the Permittee shall ensure that unit(s) personnel successfully complete a program of classroom instruction and/or on the job training that teaches them to perform their duties in a way that ensures the unit's compliance with this permit. The Permittee shall ensure that the training program is directed by a person trained in hazardous waste management procedures.

1. Training Program: The training program shall at least conform to the personnel training outline included in Attachment 4.
2. Training Documents and Records: In accordance with Rule 1200-1-11-.06(2)(g)4, the Permittee shall maintain the following documents and records at the unit(s) or at a central location at the facility:
 - (a) The name of the employee(s) filling each position which corresponds to the job titles and their descriptions in Attachment 4;
 - (b) A written description of the type and amount of both introductory and continuing training that has been given to each person as required by this permit; and
 - (c) Records that document that the training or job experience required by this permit has been given to, and completed by, unit(s) personnel.

3. Timing: In accordance with Rule 1200-1-11-.06(2)(g)2, unit(s) personnel shall successfully complete the program within six months after the date of their employment or assignment to the unit(s), or to a new position at the unit(s). Untrained unit(s) personnel shall not work in unsupervised positions until they have completed the training requirements of this permit.
4. Annual Review: In accordance with Rule 1200-1-11-.06(2)(g)3, unit(s) personnel shall take part in an annual review of the initial training required by this permit.

F. GENERAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE AT ALL APPLICABLE UNIT(S)

In accordance with Rule 1200-1-11-.06(2)(h)1, the Permittee shall take precautions to prevent accidental ignition or reaction of ignitable or reactive waste. This waste shall be separated and protected from sources of ignition or reaction including but not limited to: open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, or mechanical), spontaneous ignition (e.g., from heat producing chemical reactions), and radiant heat. While ignitable or reactive waste is being handled, the Permittee shall confine smoking and open flame to specially designated locations. "No Smoking" signs shall be conspicuously placed wherever there is a hazard from ignitable or reactive waste.

G. PREPAREDNESS AND PREVENTION

1. Operation/Maintenance of the Unit(s): In accordance with Rule 1200-1-11-.06(3)(b), the facility must be operated and maintained to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste or hazardous constituents to air, soil, or surface water which could threaten human health or the environment.
2. Required Equipment: At a minimum, the Permittee shall equip the unit(s) with the equipment listed in the contingency plan, Attachment 5, and in accordance with Rule 1200-1-11-.06(3)(c), with personnel;
 - (a) An internal communications or alarm system capable of providing immediate emergency instruction (voice or signal) to unit(s) personnel;
 - (b) A device, such as a telephone (immediately available at the scene of operations) or a hand-held two-way radio, capable of summoning emergency assistance from local police departments, fire departments, or State or local emergency response teams;
 - (c) Portable fire extinguishers, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control equipment, and decontamination equipment; and

- (d) Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems.
3. Testing and Maintenance of Equipment: In accordance with Rule 1200-1-11-.06(3)(d), the Permittee shall test and maintain all unit(s) communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, as necessary to assure its proper operation in time of emergency.
4. Access to Communications or Alarm System: In accordance with Rule 1200-1-11-.06(3)(e), the Permittee shall ensure that:
- (a) Whenever hazardous waste is being handled, all personnel involved in the operation shall have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee.
- (b) If there is ever just one employee on the premises while the unit(s) is operating, he shall have immediate access to a device, such as a telephone (immediately available at the scene of operation) or a hand-held two-way radio, capable of summoning external emergency assistance.
5. Required Aisle Space: In accordance with Rule 1200-1-11-.06(3)(f), the Permittee shall maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of unit(s) operation in an emergency. Aisle space in the containers storage areas shall consist of a minimum of 5 feet for primary aisles and 3 feet for secondary aisles.
6. Arrangements with Local Authorities: In accordance with Rule 1200-1-11-.06(3)(g), the Permittee shall attempt to make arrangements with State and local authorities, as appropriate for the type(s) of waste authorized to be managed by this permit and the potential need for the services of local authorities. If State or local officials refuse to enter into preparedness and prevention arrangements with the Permittee, the Permittee shall document this refusal in the operating record. Specifically, the Permittee shall attempt to:
- (a) Make arrangements to familiarize police, fire departments, and emergency response teams with the layout of the unit(s), properties of hazardous waste handled at the unit(s) and associated hazards, places where the unit(s) personnel would normally be working, entrances to and roads inside the facility, and possible evacuation routes.
- (b) Where more than one police or fire department might respond to an emergency, make agreements designating primary emergency authority to a specific police and a specific fire department, and make agreements with any others to provide support to the primary emergency authority.

- (c) Make arrangements with State emergency response teams, emergency response contractors, and equipment suppliers.
- (d) Make arrangements to familiarize local hospitals with the properties of hazardous wastes handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the unit(s).

H. CONTINGENCY PLAN(S)

1. Implementation of Plan(s): In accordance with Rule 1200-1-11-.06(4)(b)2, the Permittee shall immediately carry out the provisions of the Contingency Plan(s) found in Attachment 5 whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which threatens or could threaten human health or the environment.
2. Copies of Plan: In accordance with Rule 1200-1-11-.06(4)(d), the Permittee shall maintain at the unit(s) or at a central location within the facility a copy of the contingency plan(s), Attachment 5, and its subsequent revisions. In addition, the contingency plan shall be submitted to all local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.
3. Amendments to Plan(s): In accordance with Rule 1200-1-11-.06(4)(e), the Permittee shall review and immediately amend the contingency plan(s) whenever one or more of the following occur:
 - (a) This permit is revised;
 - (b) The contingency plan(s) fails in an emergency;
 - (c) The unit(s) changes (in its design, construction, operation, maintenance, or other circumstances) in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;
 - (d) The list of emergency coordinators changes; or
 - (e) The list of emergency equipment changes.

In addition, the Permittee must amend the contingency plan(s) upon being notified by the Commissioner that the existing plan(s) has been deemed inadequate in comparison to guidance subsequently issued by the Commissioner. In such case, the Permittee shall be provided at least 60 days to make such amendments.

NOTE: The Permittee shall provide the list of emergency coordinators required in Attachment 5 to the Division Director, and all persons to which the Contingency Plan(s) must be submitted, before any hazardous waste management unit(s) authorized by this permit is placed in operation.

4. Emergency Coordinator: In accordance with Rule 1200-1-11-.06(4)(f), there shall be, at all times, at least one employee either on the facility premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordinating all emergency response measures. This emergency coordinator shall be thoroughly familiar with all aspects of the facility and units' contingency plan(s), all operations and activities at the unit(s) and the facility, the location and characteristics of waste(s) handled, the location of all records within the unit(s) and the facility, and the unit(s) and the facility layout. In addition, this person shall have the authority to commit the resources needed to carry out the contingency plan(s).

I. MANIFEST SYSTEM

1. Use of the Manifest System: In accordance with Rule 1200-1-11-.06(5)(b)1, when the unit(s) receives hazardous waste accompanied by a manifest the Permittee or his agent shall:
 - (a) Sign and date each copy of the manifest to certify that the hazardous waste covered by the manifest was received;
 - (b) Note any significant discrepancies in the manifest (as defined in Section I.3 of these General Unit(s) Conditions) on each copy of the manifest;
 - (c) Immediately give the transporter at least one copy of the signed manifest;
 - (d) Within 30 days after the delivery, send a copy of the manifest to the generator; and
 - (e) Retain at the facility a copy of each manifest for at least three years from the date of delivery.
2. Manifest Discrepancies: In accordance with Rule 1200-1-11-.06(5)(c)1, manifest discrepancies are differences between the quantity or type of hazardous waste designated on the manifest or shipping paper and the quantity or type of hazardous waste the facility actually receives. Significant discrepancies in quantity are: (1) for bulk waste, variations greater than 10 percent in weight, and (2) for batch waste, any variation in piece count, such as a discrepancy of one drum in a truckload. Significant discrepancies in type are obvious differences which can be discovered by inspection or waste analysis, such as waste solvent substituted for waste acid, or toxic constituents not reported on the manifest or shipping paper. Upon discovery of a significant discrepancy, the Permittee must attempt to reconcile the discrepancy with the waste generator or transporter (e.g.,

with telephone conversations). If the discrepancy is not resolved within 15 days after receiving the waste, the Permittee must report as set forth in General Unit(s) Condition J.5.

3. Handling Manifested Shipments of Waste: In accordance with Rule 1200-1-11-.06(5)(c)3, it shall be the responsibility of the Permittee to handle as a hazardous waste any material generated and shipped to him by another person which is identified on the manifest or shipping paper as hazardous waste. The Permittee shall not make the determination that such a waste is nonhazardous, regardless of the results of his analysis, since that is the responsibility of the generator. If a manifest discrepancy occurs such that the Permittee believes that the material shipped is indeed not a hazardous waste, then the Permittee may not manage that material shipped is indeed not a hazardous waste, then the Permittee may not manage that material other than as a hazardous waste unless and until he obtains written certification from the generator that the material is not a hazardous waste. Such a written certification must be kept with the manifest as part of the operating record required under General Unit(s) Condition J.1 of this permit.

J. RECORDKEEPING AND REPORTING

1. Operating Record: In accordance with Rule 1200-1-11-.06(5)(d)2, the following information shall be recorded by the Permittee as it becomes available, and maintained in the operating record until closure of the unit(s):
 - (a) A description and the quantity of each hazardous waste received and the method(s) and date(s) of its storage at the unit(s) as required by Appendix .06/A of Rule 1200-1-11-.06;
 - (b) the location of each hazardous waste within the unit(s) and the quantity at each location. This information shall include cross-references to specific manifest document numbers if the waste was accompanied by a manifest;
 - (c) Records and results of waste analysis performed as required by this permit;
 - (d) Summary reports and details of all incidents that require implementing the contingency plan required by this permit;
 - (e) Records and results of inspections required by this permit (except these data need to be kept only three years);
 - (f) Monitoring, testing, or analytical data required by this permit;
 - (g) [Reserved]

2. Monitoring Record:

- (a) The Permittee shall retain records of monitoring information, including: all calibration and maintenance records and all original strip chart recording for continuous monitoring instrumentation; copies of all reports required by this permit; and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by the Commissioner at any time.**
- (b) Records of monitoring information shall include:**
 - (i) The date, exact place, and time of sampling or measurements;**
 - (ii) The individual(s) who performed the sampling or measurements;**
 - (iii) The date(s) analyses were performed;**
 - (iv) The individual(s) who performed the analyses;**
 - (v) The analytical techniques or methods used; and**
 - (vi) The results of such analyses.**
- (c) Monitoring results shall be reported at the intervals specified elsewhere in this permit.**

3. Twenty-Four Hour Reporting:

- (a) The Permittee shall orally report any noncompliance which may endanger health or the environment within 24 hours from the time the Permittee becomes aware of the circumstances including:**
 - (i) Information concerning release of any hazardous waste that may cause an endangerment to public drinking water supplies.**
 - (ii) Any information of a release or discharge of hazardous waste, or of a fire or explosion, from a hazardous waste management unit(s) which could threaten the environment or human health outside the unit(s).**
- (b) The description of the occurrence and its cause shall include:**
 - (i) Name, address, and telephone number of the owner or operator;**
 - (ii) Name, address, and telephone number of the facility;**
 - (iii) Date, time, and type of incident;**

- (iv) Name and quantity of material(s) involved;
 - (v) The extent of injuries, if any;
 - (vi) An assessment of actual or potential hazard to the environment and human health outside of the unit(s), where this is applicable; and
 - (vii) Estimated quantity and disposition of recovered material that resulted from the incident.
- (c) A written submission shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance, including the exact dates and times; and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Commissioner may waive the five-day written notice requirement in favor of a written report within 15 days.
4. Other Noncompliance: The Permittee shall report all instances of noncompliance not required to be reported in General Unit(s) Conditions I.2 and I.3 at the time monitoring reports are submitted. The reports shall contain the information listed in General Unit(s) Condition J.3 above.
5. Manifest Discrepancy Report: If a significant discrepancy in a manifest is discovered and not resolved within fifteen days, the Permittee shall submit a report (including a copy of the manifest) to the Commissioner. The Permittee shall submit the report no later than five days after the end of the fifteen-day investigation period.
6. Unmanifested Waste Report: Such report shall be submitted to the Commissioner within 15 days of receipt of unmanifested waste.
7. Availability, Retention and Disposition of Records:
- (a) In accordance with Rule 1200-1-11-.06(5)(e)1, all records, including plans, required by this permit shall be furnished upon request and made available at all reasonable times for inspection by any officer, employee, or representative of the Department who is duly designated by the Commissioner.
 - (b) In accordance with Rule 1200-1-11-.06(5)(e)2, the retention period for all records required by this permit is extended automatically during the course of any unresolved enforcement action regarding the unit(s) or as requested by the Commissioner or Board.

8. **Annual Report**: In accordance with Rule 1200-1-11-.06(5)(f), the Permittee shall prepare and submit a single copy of an annual report to the Commissioner by March 1 of each year. The annual report shall cover facility activities during the previous calendar year. Such reports shall be submitted on forms provided by the Department and in accordance with the instructions accompanying the form. If the facility is being totally closed (all units) or otherwise closed such that the annual reporting requirement will no longer apply, within 120 days after receiving the final volume of hazardous waste (or within 30 days after the end of a longer period alternatively approved by the Commissioner) the Permittee shall submit to the Commissioner the annual report. This report shall cover the calendar year during which the final volume of hazardous waste was received. Annual reports shall include the following information:
- (a) The installation identification number, name, and address of the facility;
 - (b) The calendar year covered by the report;
 - (c) The installation identification number of each hazardous waste generator from which the unit(s) received a hazardous waste during the year; for imported shipments, the report shall give the name and address of the foreign generator;
 - (d) A description and the quantity of each hazardous waste the unit(s) received during the year. For off-site facilities (other DOE-ORR facilities), this information shall be listed by installation identification number of each generator;
 - (e) The method of treatment, storage, or disposal for each hazardous waste;
 - (f) The certification signed by the Permittee or his authorized representative.
9. **Additional Reports**: In addition to submitting unmanifested waste reports and the annual report described in General Unit(s) Conditions J.6 and J.8, the Permittee shall also report to the Commissioner:
- (a) Releases, fires, and explosions as specified in the Contingency Plan found in Attachment 5;
 - (b) Unit(s) closures as required under General Unit(s) Condition K of this permit; and
 - (c) As otherwise required by this permit.
10. **Other Information**: Where the Permittee becomes aware that it failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Commissioner, it shall promptly submit such facts or information. In addition, upon request, the Permittee shall

furnish to the Commissioner any information related to compliance with this permit.

K. CLOSURE

1. Performance Standard:

(a) In accordance with Rule 1200-1-11-.06(7)(b), the Permittee shall close the unit(s) in a manner that (i) minimizes the need for further maintenance, and (ii) controls, minimizes or eliminates, to the extent necessary to prevent threats to human health or the environment, post closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the ground or surface waters or to the atmosphere.

(b) In accordance with Rule 1200-1-11-.06(7)(d)2, the Permittee shall close the unit(s) in accordance with the Closure Plan(s), Attachment 6.

2. Amendment to Closure Plan(s): In accordance with Rule 1200-1-11-.06(7)(c)3, the Permittee must submit a written request for a permit modification to authorize a change in operating plans, unit(s) design, or the approved closure plan(s) in accordance with the procedures in Rule 1200-1-11-.07(9). The written request must include a copy of the amended closure plan(s) for approval by the Commissioner.

(a) The Permittee may submit a written request to the Commissioner for a permit modification to amend the closure plan(s) at any time prior to the notification of partial or final closure of the unit(s).

(b) The Permittee must submit a written request for a permit modification to authorize a change in the approved closure plan(s) whenever;

(i) Changes in operating plans for unit(s) design affect the closure plan(s), or

(ii) There is a change in the expected year of closure, if applicable, or

(iii) In conducted partial or final closure activities, unexpected events require a modification of the approved closure plan(s).

(c) The Permittee must submit a written request for a permit modification including a copy of the amended closure plan(s) for approval at least 60 days prior to the proposed change in unit(s) design or operation, or no later than 60 days after an unexpected event has occurred which has affected the closure plan(s). If an unexpected event occurs during the partial or final closure period(s), the Permittee must request a permit modification no later than 30 days after the unexpected event.

- (d) The Commissioner may request modifications to the plan(s) under the conditions described in General Unit(s) Condition K.2.(b). The Permittee must submit the modified plan within 60 days of the Commissioner's request, or within 30 days if the change in unit(s) conditions occurs during partial or final closure. Any modifications requested by the Commissioner will be approved in accordance with the procedures in Rule 1200-1-11-.07.
3. Notification of Closure: In accordance with Rule 1200-1-11-.06(7)(c)4, the Permittee shall notify the Commissioner in writing at least 45 days prior to the date on which he expects to begin final closure of the unit(s). The date when he "expects to begin closure" must be either no later than 30 days after the date on which any hazardous waste management unit(s) receives the known final volume of hazardous wastes or, if there is a reasonable possibility that the hazardous waste management will receive additional hazardous waste, no later than one year after the date on which the unit received the most recent volume of hazardous waste. Notification of closure is not required, if the permit is terminated or the unit(s) is otherwise ordered, by judicial decree on final order under the Act, to cease receiving hazardous wastes or to close.
 4. Time Allowed For Closure: In accordance with Rule 1200-1-11-.06(7)(d)1, after receiving the final volume of hazardous waste the Permittee shall treat or remove from the site all hazardous waste in accordance with the schedule specified in the closure plan(s), Attachment 6. In accordance with Rule 1200-1-11-.06(7)(d)2, the Permittee shall complete closure activities in accordance with the schedule specified in the closure plan(s), Attachment 6.
 5. Disposal or Decontamination of Equipment, Structures, and Soils: In accordance with Rule 1200-1-11-.06(7)(e), the Permittee shall decontaminate the unit(s) equipment and structures contaminated with hazardous waste or hazardous waste residues and properly manage any contaminated residues, or soil. Such decontamination and management of contaminated materials shall be performed as specified in the Closure Plan(s), Attachment 6.
 6. Certification of Closure: In accordance with Rule 1200-1-11-.06(7)(f), and the Closure Plan(s), Attachment 6, the Permittee shall within 60 days of the completion of final closure submit to the Commissioner by registered mail, a certification that the hazardous waste management unit(s) or facility, as applicable, has been closed in accordance with the specifications in the approved Closure Plan(s) (Attachment 6 as subsequently amended), the certification must be signed by the Permittee and by an independent registered professional engineer. Documentation supporting the independent registered professional engineer's certification must be furnished to the Commissioner upon request.

L. [Reserved]

M. [Reserved]

N. [Reserved]

O. [Reserved]

P. CO-MANAGEMENT OF OTHER MATERIALS

1. In accordance with Rule 1200-1-11-.06(2)(j), the Permittee shall not treat, store, or dispose of other wastes or other materials along with hazardous wastes in hazardous waste management units covered by this permit unless:
 - (a) The other waste or other material is labeled, marked, or otherwise clearly identifiable as to what it is;
 - (b) The Permittee is able to demonstrate that the other waste or other material is not a hazardous waste; and
 - (c) The other waste or other material is managed in a manner that does not adversely impact compliance with the conditions of this permit.
2. Non-hazardous wastes or other materials must not be received for such co-management unless and until the Permittee has requested and received written approval to do so from the Department.
3. Non-hazardous wastes and other materials to be co-managed with hazardous wastes at the unit(s) shall be screened for acceptance and managed after acceptance as set forth in any subsequent written approval issued pursuant to General Unit(s) Condition P.2 above.

Q. [Reserved]

R. WASTE MINIMIZATION CERTIFICATION:

In accordance with Rule 1200-1-11-.06(5)(d)2(ix), the Permittee must include, in the operating record maintained in accordance with General Unit(s) Condition J.1 of this permit, a certification by the Permittee no less often than annually, that the Permittee has a program in place to reduce the volume and toxicity of hazardous waste that he generates to the degree determined by the Permittee to be economically practicable, and that the proposed method of treatment, storage, or disposal is that practicable method currently available to the Permittee which minimizes the present and future threat to human health and the environment.

S. LAND DISPOSAL RESTRICTIONS:

Part 268 of Title 40 of the Code of Federal Regulations (40 CFR Part 268) and Tennessee Rule 1200-1-11-.10 identify hazardous wastes that are prohibited from land disposal and defines those limited circumstances under which an otherwise prohibited waste may continue to be placed in a land treatment, storage or disposal

unit. The Permittee shall comply with all applicable requirements of 40 CFR Part 268 and Tennessee Rule 1200-1-11-.10. Where the Permittee has applied for an extension, waiver or variance under Part 268 and Tennessee Rule 1200-1-11-.10, the Permittee shall comply with all applicable restrictions of those regulations pending final approval of such application.

III. SPECIFIC CONDITIONS FOR STORAGE IN CONTAINERS

Unit: Defense Distribution Depot Memphis
Permit Number: TNHW -

A. WASTE IDENTIFICATION

The Permittee may store at the unit the following wastes in DOT-approved containers, subject to the terms of this permit:

1. Wastes as listed in Attachment 1.
2. A maximum quantity of 154,440 gallons (approximately 2,800 55-gallon drums).

B. CONDITION OF CONTAINERS

In accordance with Rule 1200-1-11-.06(9)(b), if a container holding hazardous waste is not in good condition (e.g., severe rusting, apparent structural defects) or if it begins to leak, the Permittee shall transfer the hazardous waste from such container to a container that is in good condition or otherwise manage the waste in compliance with the conditions of this permit.

C. COMPATIBILITY OF WASTE WITH CONTAINERS

In accordance with Rule 1200-1-11-.06(9)(c), the Permittee shall use a container made of or lined with materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired.

D. MANAGEMENT OF CONTAINERS

Containers of hazardous wastes shall be managed as described in Attachment 8. In accordance with Rule 1200-1-11-.06(9)(d), the Permittee shall assure that containers holding hazardous waste are always closed during storage, except when necessary to add or remove waste, and assure that a container holding hazardous waste shall not be opened, handled or stored in a manner which may rupture the container or cause it to leak. All containers shall be placed on pallets and aisle space shall be maintained as required by General Unit(s) Condition G.5. The Permittee shall arrange the pallets holding waste in rows one pallet wide such that each row is accessible from a primary aisle.

E. INSPECTION OF THE UNIT

In accordance with Rule 1200-1-11-.06(9)(e), the Permittee must inspect areas at least weekly where containers are stored, looking for leaking containers and for deterioration of containers and the containment system caused by corrosion or other factors.

F. CONTAINMENT, DETECTION, AND MANAGEMENT OF LEAKS OR SPILLS

1. In accordance with Rule 1200-1-11-.06(9)(f), the Permittee shall ensure that the area(s) where containers of hazardous waste are stored at the unit have a containment system that is constructed and maintained as specified in the plans and specifications found in Attachments 8 and 9.
2. The Permittee shall inspect the containment system each operating day for the presence of any release of hazardous or accumulated liquid, as described in Inspection Checklist for this Unit in Attachments 3 and 8.
3. Spilled or leaked waste and accumulated precipitation and wash waters must be removed from the containment system within 24 hours of discovery, or in as timely a manner as is possible to prevent harm to human health and the environment if the Permittee can demonstrate that removal of the released waste or accumulated waters could not be accomplished within 24 hours.
 - (a) The Permittee shall have available at all times at least two portable pumps and necessary appurtenances (e.g., hoses) for use in removing liquids from the containment systems. For TSD units where ignitable wastes are stored, these pumps shall be of a type that will not generate heat or sparks that might result in ignition of ignitable vapors, and shall be maintained in proper working order.
 - (b) Prior to or after removal from the containment systems, the Permittee must determine if the collected materials are a hazardous waste in accordance with Rule 1200-1-11-.03(1)(b). If they are, the Permittee must manage them as set forth in Rule 1200-1-11-.03 and this permit. Whether a hazardous waste or not, the Permittee must manage the collected materials in full compliance with this permit and applicable Federal, state and local regulations.

G. SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

In accordance with Rule 1200-1-11-.06(9)(g), the Permittee shall not locate containers holding ignitable or reactive waste within 15 meters (50 feet) of the facility's property line.

H. SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

1. In accordance with Rule 1200-1-11-.06(9)(h)1 and 2, the Permittee must ensure that:
 - (a) Incompatible wastes, or incompatible wastes and materials, are not placed into the same container.
 - (b) Hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material.

2. In accordance with Rule 1200-1-11-.06(9)(h)3 and (3)(b), no container of hazardous waste shall be placed in the container storage area if that waste is incompatible with any other waste or material stored in that storage area.

I. CLOSURE OF THE UNIT

In accordance with Rule 1200-1-11-.06(9)(i), the Permittee must remove all hazardous waste and hazardous waste residues from the containment system at closure. Remaining containers, liners, bases, and soil containing or contaminated with hazardous waste or hazardous waste residues must be decontaminated or removed.

IV. SOLID WASTE MANAGEMENT UNITS

A. APPLICABILITY

The conditions of this part apply to:

1. The solid waste management units (SWMUs) and areas of concern (AOCs) identified in Attachment 11, Appendix A-1, which require further investigation.
2. The SWMUs and AOCs identified in Attachment 11, Appendix A-2, which require no further investigation at this time.
3. The SWMUs and AOCs identified in Attachment 11, Appendix A-4, which require confirmatory sampling.
4. Any additional SWMUs or AOCs discovered during the course of groundwater monitoring, field investigations, environmental audits, or other means.

B. NOTIFICATION AND ASSESSMENT REQUIREMENTS FOR NEWLY IDENTIFIED SWMUs AND AOCs

1. The Permittee shall notify the Commissioner in writing, within fifteen (15) calendar days of discovery, of any additional SWMUs as discovered under condition A.4.
2. The Permittee shall notify the Commissioner, in writing, within fifteen (15) calendar days of discovery, of any additional AOCs as discovered under Condition A.4. The notification shall include, at a minimum, the location of the AOC and all available information pertaining to the nature of the release (e.g., media affected, hazardous constituents released, magnitude of release, etc.). If the Commissioner determines that further investigation of an AOC is required, the permit will be modified in accordance with Tennessee Rule 1200-1-11-.07(9)(c).
3. The Permittee shall prepare and submit to the Commissioner, within ninety (90) calendar days of notification, a SWMU Assessment Report (SAR) for each SWMU identified under Condition B.1. At a minimum, the SAR shall provide the following information:
 - (a) Location of unit(s) on a topographic map of appropriate scale such as required under Rule 1200-1-11-.07(5)(a)17.
 - (b) Designation of type and function of unit(s).
 - (c) General dimensions, capacities and structural description of unit(s) (supply any available plans/drawings).
 - (d) Dates that the unit(s) was operated.

- (e) Specification of all wastes that have been managed at/in the unit(s) to the extent available. Include any available data on Rule 1200-1-11-.02, Appendix .02/E, constituents in the wastes.
 - (f) All available information pertaining to any release of hazardous waste or hazardous constituents from such unit(s) (to include groundwater data, soil analyses, air, and/or surface water data).
4. Based on the results of the SAR, the Commissioner shall determine the need for further investigations at the SWMUs covered in the SAR. If the Commissioner determines that such investigations are needed, the Permittee shall be required to prepare a plan for such investigations as outlined in Condition E.1.(b).

C. NOTIFICATION REQUIREMENTS FOR NEWLY DISCOVERED RELEASES AT PREVIOUSLY IDENTIFIED SWMUs [or AOCs]

- 1. The Permittee shall notify the Commissioner, in writing, of any newly discovered release(s) of hazardous waste or hazardous constituents discovered during the course of groundwater monitoring, field investigations, environmental audits, or other means, within fifteen (15) calendar days of discovery. Such newly discovered releases may be from SWMUs or AOCs identified in Condition A.2. or SWMUs identified in Condition A.4. for which further investigation under Condition B.4. was not required.
- 2. If the Commissioner determines that further investigation of the SWMUs or AOCs is needed, the Permittee shall be required to prepare a plan for such investigations as outlined in Condition B.3.

D. CONFIRMATORY SAMPLING(S)

- 1. The Permittee shall prepare and submit to the Commissioner, within two hundred seventy (270) calendar days of the effective date of this permit, a Confirmatory Sampling (CS) Workplan to determine any release from SWMUs and AOCs identified in Condition A.3. and Attachment 11, Appendix A-4. The CS Workplan shall include schedules of implementation and completion of specific actions necessary to determine a release. It should also address applicable requirements and affected media. Completion of all Confirmatory Sampling shall not exceed ninety (90) days.
- 2. The CS Workplan must be approved by the Commissioner, in writing, prior to implementation. The Commissioner shall specify the start date of the CS Workplan schedule in the letter approving the CS Workplan. If the Commissioner disapproves the CS Workplan, the Commissioner shall either (1) notify the Permittee, in writing, of the CS Workplan's deficiencies and specify a due date for submission of a revised CS Workplan, or (2) revise the CS Workplan and notify the Permittee of the revisions.

3. The Permittee shall implement the confirmatory sampling in accordance with the approved CS Workplan.
4. The Permittee shall prepare and submit to the Commissioner, in accordance with the schedule indicated in the approved CS workplan, a Confirmatory Sampling (CS) Report identifying those SWMUs and AOCs listed in Condition A.3. that have released hazardous waste or hazardous constituents into the environment. The CS Report shall include all data, including raw data, and a summary and analysis of the data, that supports the above determination.
5. Based on the results of the CS Report, the Commissioner shall determine the need for further investigations at the SWMUs and AOCs covered in the CS Report. If the Commissioner determines that such investigations are needed, the Permittee shall be required to prepare a plan for such investigations as outlined in Condition E.1(b). The Commissioner will notify the Permittee of any no further action decision.

E. RCRA FACILITY INVESTIGATION (RFI)

1. RFI Workplan(s)

- (a) The Permittee shall prepare and submit to the Commissioner, within two (2) years) calendar years of the effective date of this permit, a RCRA Facility Investigation (RFI) Workplan(s) for those units identified in Condition A.1. This Workplan shall be developed to meet the requirements of Condition E.1.(c).
- (b) The Permittee shall prepare and submit to the Commissioner within ninety (90) calendar days of notification by the Commissioner, an RFI Workplan for those units identified under Condition B.4, Condition C.2, or Condition D.5. The RFI Workplan(s) shall be developed to meet the requirements of Condition E.1.(c).
- (c) The RFI Workplan(s) shall meet the requirements of Attachment 11, Appendix B. The RFI Workplan(s) shall include schedules of implementation and completion of specific actions necessary to determine the nature and extent of releases and the potential pathways of contaminant releases to the air, land, surface water, and groundwater. The Permittee must provide sufficient justification and/or documentation that a release is not probable if a unit or a media/pathway associated with a unit (groundwater, surface water, soil, subsurface gas, or air) is not included in the RFI Workplan(s). Such deletions of a unit, media or pathway from the RFI(s) are subject to the approval of the Commissioner. The Permittee shall provide sufficient written justification for any omissions or deviations from the minimum requirements of Attachment 11 of Appendix B. Such omissions or deviations are subject to the approval of the Commissioner. In addition, the scope of the RFI Workplan(s) shall include all investigations necessary to ensure compliance with Rule 1200-1-11-.06(6).

- (d) The RFI Workplan(s) must be approved by the Commissioner, in writing, prior to implementation. The Commissioner shall specify the start date of the RFI Workplan schedule in the letter approving the RFI Workplan(s). If the Commissioner disapproves the RFI Workplan(s), the Commissioner shall either (1) notify the Permittee, in writing, of the RFI Workplan(s) deficiencies and specify a due date for submission of a revised RFI Workplan, or (2) revise the Permittee of the revisions and the start date of the schedule within the approved RFI Workplan.

2. RFI Implementation

The Permittee shall implement the RFI(s) in accordance with the approved RFI Workplan(s) and Attachment 11, Appendix B. The Permittee shall notify the Commissioner within twenty (20) days of any sampling activity.

3. RFI Reports

- (a) If the time required to conduct the RFI(s) is greater than one hundred eighty (180) calendar days, the Permittee shall provide the Commissioner with quarterly RFI Progress Reports (90 day intervals) beginning ninety (90) calendar days from the start date specified by the Commissioner in the RFI Workplan approval letter. The Progress Reports shall contain the following information at a minimum:
- (i) A description of the portion of the RFI completed;
 - (ii) Summaries of findings;
 - (iii) Summaries of all deviations from the approved RFI Workplan during the reporting period;
 - (iv) Summaries of all problems or potential problems encountered during the reporting period;
 - (v) Projected work for the next reporting period; and
 - (vi) Copies of daily reports, inspection reports, laboratory/monitoring data, etc.
- (b) The Permittee shall prepare and submit to the Commissioner, Draft and Final RCRA Facility Investigation Report(s) for the investigations conducted pursuant to the RFI Workplan(s) submitted under Condition E.1. The Draft RFI Report(s) shall be submitted to the Commissioner for review in accordance with the schedule in the approved RFI Workplan(s). The final RFI Report(s) shall be submitted to the Commissioner within thirty (30) calendar days of receipt of the Commissioner's comments on the Draft RFI Report. The RFI Report(s) shall include analysis and summary of all required

investigations of SWMUs and AOCs and their results. The summary shall describe the type and extent of contamination at the facility, including sources and migration pathways, and a description of actual or potential receptors. The RFI Report(s) shall also describe the extent of contamination (qualitative/quantitative) in relation to background levels indicative of the area. The objective of this task shall be to ensure that the investigation data are sufficient in quality (e.g., quality assurance procedures have been followed) and quantity to describe the nature and extent of contamination, potential threat to human health and/or the environment, and to support a Corrective Measures Study, if necessary.

- (c) The Commissioner will review the Final RFI Report (s) and notify the Permittee of the need for further investigative action and/or the need for a Corrective Measures Study to meet the requirements of Condition G. and Rule 1200-1-11-.06(6). The Commissioner will notify the Permittee of any no further action decision.

F. INTERIM MEASURES (IM)

1. IM Workplan

- (a) Upon notification by the Commissioner, the Permittee shall prepare and submit an Interim Measures (IM) Workplan for any SWMU or AOC which the Commissioner determines poses a current or potential threat to human health or the environment. The IM Workplan shall be submitted within thirty (30) calendar days of such notification and shall include the elements listed in F.1.(b). Such interim measures may be conducted concurrently with investigations required under the terms of this permit.
- (b) The IM Workplan shall ensure that the interim measures are designed to mitigate any current or potential threat(s) to human health or the environment and is consistent with and integrated into any long-term solution at the facility. The IM Workplan shall include: the interim measures objectives, procedures for implementation (including any designs, plans, or specifications), and schedules for implementation.
- (c) The IM Workplan must be approved by the Commissioner, in writing, prior to implementation. The Commissioner shall specify the start date of the IM Workplan schedule in the letter approving the IM Workplan. If the Commissioner disapproves the IM Workplan, the Commissioner shall either (1) notify the Permittee, in writing, of the IM Workplan's deficiencies and specify a due date for submission of a revised IM Workplan, or (2) revise the IM workplan and notify the Permittee of the revisions and the start date of the schedule within the approved IM Workplan.

2. IM Implementation

- (a) The Permittee shall implement the interim measures in accordance with the approved IM Workplan.
- (b) The Permittee shall give notice to the Commissioner as soon as possible of any planned changes, reductions or additions to the IM Workplan.
- (c) Final approval of corrective action required under Rule 1200-1-11-.06(6) which is achieved through interim measures shall be in accordance with Rule 1200-1-1-11-.07(9)(c) and Condition H as a permit modification.

3. IM Reports

- (a) If the time required for completion of interim measures is greater than one year, the Permittee shall provide the Commissioner with quarterly progress reports (90 day intervals) beginning ninety (90) calendar days from the start date specified by the Commissioner in the Workplan approval letter. The Progress Reports shall contain the following information at a minimum:
 - (i) A description of the portion of the interim measures completed;
 - (ii) Summaries of all deviations from the IM Workplan during the reporting period;
 - (iii) Summaries of all problems or potential problems encountered during the reporting period;
 - (iv) Projected work for the next reporting period; and
 - (v) Copies of laboratory/monitoring data, etc.
- (b) The Permittee shall prepare and submit to the Commissioner, within ninety (90) calendar days of completion of interim measures conducted under Condition F, an Interim Measures (IM) Report. The IM Report shall contain the following information at a minimum:
 - (i) A description of interim measures implemented;
 - (ii) Summaries of results;
 - (iii) Summaries of all problems encountered;
 - (iv) Summaries of accomplishments and/or effectiveness of interim measures; and

- (v) Copies of all relevant laboratory/monitoring data, etc., in accordance with Condition II.J.1 and II.J.2.

G. CORRECTIVE MEASURES STUDY

1. Corrective Measures Study (CMS) Plan

- (a) The Permittee shall prepare and submit a CMS Plan for those units requiring a CMS within ninety (90) calendar days of notification by the Commissioner that a CMS is required. This CMS Plan shall be developed to meet the requirements of Condition G.1(b).
- (b) The CMS Plan shall meet the requirements of Attachment 11, Appendix C. The CMS Plan shall include schedules of implementation and completion of specific actions necessary to complete a CMS. The Permittee must provide sufficient justification and/or documentation for any unit deleted from the CMS Plan. Such deletion of a unit is subject to the approval of the Commissioner. The CMS shall be conducted in accordance with the approved CMS Plan. The Permittee shall provide sufficient written justification for any omissions or deviations from the minimum requirements of Attachment 11, Appendix C. Such omissions or deviations are subject to the approval of the Commissioner. The scope of the CMS Plan shall include all investigations necessary to ensure compliance with Rule 1200-1-11-.06(6) and Rule 1200-1-11-.07(8)(b)3. The Permittee shall implement corrective actions beyond the facility boundary, where necessary to protect human health and the environment, unless the Permittee demonstrates to the satisfaction of the Commissioner that, despite the Permittee's best efforts, as determined by the Commissioner, the Permittee was unable to obtain the necessary permission to undertake such actions. The Permittee is not relieved of all responsibility to clean-up a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address such releases will be determined on a case by case basis.
- (c) The Commissioner shall either approve or disapprove, in writing, the CMS Plan. If the Commissioner disapproves the CMS Plan, the Commissioner shall either (1) notify the Permittee in writing, of the CMS Plan's deficiencies and specify a due date for submittal of a revised CMS Plan, or (2) revise the CMS Plan and notify the Permittee of the revisions. This modified CMS Plan becomes the approved CMS Plan.

2. Corrective Measures Study Implementation

The Permittee shall begin to implement the Corrective Measures Study according to the schedules specified in the CMS Plan, no later than fifteen (15) calendar days after the Permittee has received written approval from the Commissioner for the CMS Plan. Pursuant to permit Condition G.1.(b), the CMS shall be conducted in accordance with the approved CMS Plan.

3. CMS Report

- (a) The Permittee shall prepare and submit to the Commissioner a draft and final CMS Report for the study conducted pursuant to the approved CMS Plan. The draft CMS Report shall be submitted to the Commissioner within ninety (90) calendar days from the Commissioner's approval of the CMS Plan. The final CMS Report shall be submitted to the Commissioner within thirty (30) days of receipt of the Commissioner's comments on the draft CMS Report. The CMS Report shall summarize any bench-scale or pilot tests conducted. The CMS Report must include an evaluation of each remedial alternative. The CMS Report shall present all information gathered under the approved CMS Plan. The CMS Final Report must contain adequate information to support the Commissioner's decision on the recommended remedy, described under Permit Condition H.
- (b) If the Commissioner determines that the CMS Final Report does not fully satisfy the information requirements specified under Permit Condition G.3(a), the Commissioner may disapprove the CMS Final Report. If the Commissioner disapproves the CMS Final Report, the Commissioner shall notify the Permittee, in writing, of deficiencies in the CMS Final Report and specify a due date for submittal of a revised CMS Final Report. The Commissioner will notify the Permittee of any no further action decision.
- (c) As specified under Permit Condition G.3.(b), based on preliminary results and the CMS Final Report, the Commissioner may require the Permittee to evaluate additional remedies or particular elements of one or more proposed remedies.

H. REMEDY APPROVAL AND PERMIT MODIFICATION

1. A remedy shall be selected from the remedial alternatives evaluated in the CMS. It will be based at a minimum on protection of human health and the environment, as per specific site conditions, existing regulations, and guidance.
2. Pursuant to Rule 1200-1-11-.07(9)(c), a permit modification will be initiated by the Commissioner after recommendation of a remedy under Condition H.1. This modification will serve to incorporate a final remedy into this permit.

I. MODIFICATION OF THE CORRECTIVE ACTION SCHEDULE OF COMPLIANCE

1. If at any time the Commissioner determines that modification of the Corrective Action Schedule of Compliance is necessary, the Commissioner may initiate a modification to the Schedule of Compliance (Attachment 11, Appendix D).
2. Modifications that are initiated and finalized by the Commissioner, according to proper procedure, as outlined in Attachment 11, Appendix E, shall not be subject to administrative appeal.

3. Modifications to the Schedule of Compliance do not constitute a reissuance of the permit.

J. IMMINENT HAZARDS

1. The Permittee shall report to the Commissioner any imminent or existing hazard to public health or the environment from any release of hazardous waste or hazardous constituents. Such information shall be reported orally within 24 hours from such time the Permittee becomes aware of the circumstances. This report shall include the information specified under Permit Condition II.J.3.
2. A written report shall also be provided to the Commissioner within fifteen (15) calendar days of the time the Permittee becomes aware of the circumstances. The written report shall contain the information specified under Permit Condition II.J.3; a description of the release and its cause; the period of the release; whether the release has been stopped; and if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the release.

K. PLAN AND REPORT REQUIREMENTS

1. All plans and schedules shall be subject to approval by the Commissioner prior to implementation. The Permittee shall revise all submittals and schedules as specified by the Commissioner. Upon approval, the Permittee shall implement all plans and schedules as written.
2. The results of all plans and reports shall be submitted in accordance with the approved schedule. Extensions of the due date for submittals may be granted by the Commissioner based on the Permittee's demonstration that sufficient justification for the extension exists.
3. If the Permittee at any time determines that the SAR information required under Condition B, the CS Workplan under Condition D, the RFI Workplan(s) required under Condition E, no longer satisfy the requirements of Rule 1200-1-11-.06(6) or this permit for prior to continuing releases of hazardous waste or hazardous constituents from solid waste management units and/or areas of concern, the Permittee shall submit an amended Workplan(s) to the Commissioner within ninety (90) calendar days of such determination.
4. All reports shall be signed and certified in accordance with Rule 1200-1-11-.07(2)(a).

5. Four (4) copies of all reports and plans shall be provided by the Permittee to the Commissioner in care of Mr. Tom Tiesler at the following address:

Mr. Tom Tiesler, Director
Division of Solid Waste Management
4th Floor, Customs House
701 Broadway
Tennessee Department of Health and Environment
Nashville, Tennessee 37247-3530

V. SCHEDULE OF COMPLIANCE

- A. Prior to initiation of any phase of construction of the facility, the Permittee shall submit to the Division Director the detailed construction drawings and other information as set forth in General Facility Condition II.A. of this permit.
- B. Prior to treating or storing hazardous waste in any hazardous store management unit covered by this permit, the Permittee shall:
 - 1. Certify to the Commissioner construction of the facility or unit as set forth in General Facility Condition II.A. of this permit.
- C. After construction, the Permittee must submit "as-built" construction details to the Division Director as set forth in General Facility Condition II.A. of this permit.
- D. The Permittee must submit a construction schedule for the construction of the unit within 30 days of issuance of the permit.



STATE OF TENNESSEE
CUSTOMS HOUSE
DEPARTMENT OF HEALTH AND ENVIRONMENT
NASHVILLE, TENNESSEE 37247

October 2, 1990

Commander
ATTN: Mr. Danny Chumney
Defense Depot-Memphis, TN
2163 Airways Blvd.
Memphis, TN 38114-5000

RE: Final Permit Issuance
Defense Depot-Memphis
(Permit Number: THNW-053)
EPA I.D. Number: TN4 210020570

Dear Mr. Chumney:

Enclosed is a copy of the final permit authorizing the storage of hazardous waste at the Defense Depot-Memphis facility in Memphis, Tennessee. Issuance of this permit is in accordance with Rule 1200-1-11-.07(7)(i) of the Rules Governing Hazardous Waste Management in Tennessee, and it is effective as of the signature date: September 28, 1990.

Please note that Rule 1200-1-11-.07(7)(k) outlines the process for appeals to a final permit decision.

If you have any questions, please contact Ms. Jacqueline Okoreeh-Baah of my staff at (615) 741-3424.

Sincerely,

Tom Tiesler, Director
Division of Solid Waste Management

TT/EC/F2010274 SW-102

Enclosure

cc: Mr. James Scarbrough, EPA, Region IV
Mr. Paul Patterson, Memphis Field Office
Mr. Dale Ozier, DSWM, Nashville



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Tom Tiesler, Director
Division of Solid Waste Management

TT/EC/F2010274 SW-102

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cc: Mr. James Scarbrough, EPA, Region IV
Mr. Paul Patterson, Memphis Field Office
Mr. Dale Ozier, DSWM, Nashville

ATTACHMENT 1
WASTE ANALYSIS PLAN

WASTE CHARACTERISTICS

The hazardous wastes which may be stored at DRMO-Memphis and which are described in this section are categorized into two groups. The first group (Group I) includes wastes in unopened, original, labeled manufacturers' containers. The second group (Group II) includes all other wastes. Normally Group II wastes received DDMT will consist of spill residue and clean-up materials resulting from spills of Group I chemicals.

The chemical and physical nature of these two groups of hazardous wastes and the Waste Analysis Plan for sampling, testing, and evaluating these wastes are described in the following sections. All of the following information is submitted in accordance with the requirements of 40 CFR 270.14(b)(2) and .07(b)(a)2 and 3.

Chemical and Physical Analyses

Appendix 1-1 lists the Group I wastes which may be stored at the facility, their respective hazards, and their hazard designation. In most cases, the hazardous designations are based upon the known characteristics of the waste, such as ignitability, reactivity, corrosivity, or EP toxicity. For listed wastes, the hazardous designation is based upon the EPA listing.

Containers

Containers will be managed as if they contained free liquids. No wastes, regardless of whether they are solid or liquid, will be stored in an area that is not equipped with secondary containment systems as described in Attachment 8; therefore, no documentation or information is necessary to show that the wastes do not contain free liquids.

Waste Analysis Plan

DRMO-Memphis will receive hazardous wastes from DOD activities and other Federal agencies that have a Memorandum of Understanding with DLA/DRMS. DRMO-Memphis will only accept hazardous wastes for which it is permitted. Annually, DRMO-Memphis will inform each generating activity of the hazardous wastes it is permitted to receive and store. DOD has issued specific regulations which govern the transfer of hazardous wastes and are applicable to all generators of hazardous wastes that transfer such wastes to DRMOs. These regulations required that activities transferring hazardous wastes to a DRMO must properly identify the property so that the hazardous characteristics of the waste are immediately apparent to the receiving personnel. Each different waste must be accompanied by a completed Disposal Turn-In Document (DD Form 1348-1, Figure 1-1) that includes a proper item identification. The DOD regulations state that proper identification of a hazardous waste identified by a National Stock Number (NSN), a unique 13-digit code assigned to each item in the Federal Supply System, will include the following:

- (i) Noun name, as catalogued in the Federal Supply System.
- (ii) Chemical name of the hazardous contaminants and the noun name of nonhazardous contaminants.
- (iii) Amounts of hazardous and nonhazardous contaminants, based on user's knowledge or testing of the items, expressed in a range of content by percentage or ppm, as appropriate.

Proper identification of hazardous waste without an NSN will include:

- (i) Chemical name of the hazardous components.
- (ii) Chemical names of hazardous contaminants and noun name of nonhazardous contaminants.
- (iii) Amounts of hazardous and nonhazardous contaminants, based on user's knowledge or testing of the items, expressed in a range of content by percentage or ppm, as appropriate.

This information will allow DRMO-Memphis personnel to utilize standard references in order to determine the chemical characteristics and proper storage procedures for the hazardous wastes. Additionally, many Group I waste containers will have the original manufacturer's label affixed. Often information supplied on the label can assist in determining hazardous characteristics and proper storage for the item.

For items with an NSN, DRMO-Memphis will then determine the hazardous characteristics by accessing DOD's Hazardous Materials Information System (HMIS). The HMIS is a computerized source of information which can cross-reference many NSNs to their particular chemical characteristics such as flash point, specific gravity, special handling precautions, and the hazardous ingredients contained within the NSN item.

Additionally, DRMO personnel have the following references to determine the hazardous characteristics.

- (i) NFPA Book (Fire Protection Guide on Hazardous Materials).
- (ii) Chemical Dictionary.
- (iii) DOD Guide (Emergency Response Guide No. DOT P. 5800.2).
- (iv) NIOSH/OSHA: Pocket Guide to Chemical Hazards.
- (v) Industrial Chart for Toxic and Hazardous Chemicals in Industry.
- (vi) Environmental Considerations in the DPDS Disposal Process, DPDS-M 6050.1.

(vii) U.S. Coast Guard CHRIS Manual.

(viii) DRMR-Memphis Environmental Specialist (who has more reference documents on hand).

Figure 1-2 is an example of the data output obtained from the HMIS for acetone. It provides an example of the detailed information which can be obtained through HMIS, without requiring a sample of the item to undergo laboratory analysis. The NSN for this item is 6810-00-184-4796, and it consists of 100 percent acetone. DRMO-Memphis can identify this compound as ignitable. The handling and storage information indicates that acetone should be stored in an area away from heat, sparks, and open flames, and separated from strong oxidizers, nitric-sulfuric acid mixtures, and chloroform. To fight fires involving this chemical, a type of dry chemical extinguisher should be used. Small spills can be removed with sorbent materials, while large spills should be contained and pumped into appropriate containers.

This discussion of acetone is intended to meet the requirements of paragraph 40 CFR 264.13(a)(2), which indicates that existing published or documented data on the hazardous waste may be used to meet the general waste analysis requirements.

Group II hazardous waste generated on-site (on DDMT) are spill residues, battery acid, solvent waste from the print plant and waste paint related material.

Spill residue hazards will be considered the same as the hazardous material that was spilled and will not be tested.

The used battery acids, print shop wastes and waste paint related materials, will be analyzed yearly or more often if there is a process change. Table 3 identifies the sampling methods that will be used. Table 5 identifies tests to be performed and the rationale for these tests.

Additional Requirements for Wastes Generated Offbase

Generator-Supplied Information

The DRMO is required by DOD regulations to accept wastes from offbase DOD activities and from other Federal activities that have a Memorandum of Understanding with DLA.

DOD Hazardous Materials Information System
DoD 6050.5-LR
AS OF November 1993
Proprietary Version - For U.S. Government Use Only

FSC: 6810
N : 001844796
Manufacturer's CAGE: 1B464
Part No. Indicator: A
Part Number/Trade Name: ACETONE

=====
General Information
=====

Item Name: ACETONE, TECHNICAL
Manufacturer's Name: FISHER SCIENTIFIC CO CHEMICAL DIV.
Manufacturer's Street: 1 REAGENT LANE
Manufacturer's P. O. Box:
Manufacturer's City: FAIR LAWN
Manufacturer's State: NJ
Manufacturer's Country: US
Manufacturer's Zip Code: 07410
Manufacturer's Emerg Ph #: 201-796-7100 OR 201-796-7523
Manufacturer's Info Ph #: 201-796-7100
Distributor/Vendor # 1: HOME OIL CO.
Distributor/Vendor # 1 Cage: 0A9L8
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
Distributor/Vendor # 4 Cage:
Safety Data Action Code:
Supply Focal Point: D
Record No. For Safety Entry: 002
Tot Safety Entries This Stk#: 018
Status: SEU
Date MSDS Prepared: 04JUN91
Safety Data Review Date: 21APR92
Supply Item Manager: CX
MSDS Preparer's Name:
Preparer's Company:
Preparer's St Or P. O. Box:
Preparer's City:
Preparer's State:
Preparer's Zip Code:
Other MSDS Number:
MSDS Serial Number: BJJDJL
Specification Number: O-A-51G
Spec Type, Grade, Class: NONE
Hazard Characteristic Code: F3
Unit Of Issue: CN
Unit Of Issue Container Qty: 5 GALLONS
Type Of Container: PPP-P-704
Net Unit Weight: 33 POUNDS
NRC/State License Number: N/R
Net Explosive Weight:
Net Propellant Weight-Ammo: N/R
Net Guard Ammunition Code:

=====
Ingredients/Identity Information
=====

Proprietary: NO
Ingredient: ACETONE (SARA III)
Ingredient Sequence Number: 01
Percent: 100
Ingredient Action Code:
Ingredient Focal Point: D
NIOSH (RTECS) Number: AL3150000
CAS Number: 67-64-1
OSHA PEL: 1000PPM *
ACGIH TLV: 750PPM/1000STEL;9293 *
Other Recommended Limit: NONE SPECIFIED
=====

Physical/Chemical Characteristics
=====

Appearance And Odor: CLEAR COLORLESS LIQUID, SWEET, FRAGRANT, MINT-LIKE ODOR
Boiling Point: 133F, 56C
Melting Point: -139F, -95C
Vapor Pressure (MM Hg/70 F): 180 MM
Vapor Density (Air=1): 2.0
Specific Gravity: 0.7899
Decomposition Temperature: UNKNOWN
Evaporation Rate And Ref: 6 (N-BUTYL ACETATE=1)
Solubility In Water: VERY SOLUBLE
Percent Volatiles By Volume: 100
Viscosity:
pH: N/K
Radioactivity:
(Radioactive Matl):
Magnetism (Milligauss):
Corrosion Rate (IPY): UNKNOWN
Autoignition Temperature: 869F
=====

Fire and Explosion Hazard Data
=====

Flash Point: -4F, -20C
Flash Point Method: CC
Lower Explosive Limit: 2.5
Upper Explosive Limit: 13
Extinguishing Media: USE WATER FOG, CARBON DIOXIDE, FOAM, OR DRY CHEMICAL.
Special Fire Fighting Proc: FIRE FIGHTERS SHOULD USE NIOSH APPROVED SCBA &
FULL PROTECTIVE EQUIPMENT WHEN FIGHTING CHEMICAL FIRE. USE WATER SPRAY TO
COOL NEARBY CONTAINERS EXPOSED TO FIRE.
Unusual Fire And Expl Hazrds: PER NFPA, WATER MAY BE INEFFECTIVE IN SOME
CASES. FIRE OR EXCESSIVE HEAT MAY CAUSE PRODUCTION OF HAZARDOUS
DECOMPOSITION PRODUCTS.
=====

Reactivity Data
=====

Stability: YES
Cond To Avoid (Stability): HIGH TEMPERATURES, SPARKS, AND OPEN FLAMES
Materials To Avoid: EXPLOSIVE WITH STRONG OXIDIZING AGENTS, DISSOLVES SOME
PLASTICS,
Hazardous Decomp Products: CARBON DIOXIDE, CARBON MONOXIDE
Hazardous Poly Occur: NO
=====

Conditions To Avoid (Poly): NOT RELEVANT

Health Hazard Data

LC50 Mixture: ORAL RAT LD50 IS 5800 MG/KG

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: YES

Route Of Entry - Ingestion: YES

Health Haz Acute And Chronic: PRODUCT IS IRRITATING TO THE EYES, MUCOUS MEMBRANES, AND WITH PROLONGED/REPEATED CONTACT, THE SKIN. IT HAS A NARCOTIC EFFECT IF INHALED, CHRONIC OVEREXPOSURE MAY LEAD TO LIVER/KIDNEY DAMAGE. IT HAS A LOW ORDER OF ORAL TOXICITY.

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: PRODUCT IS NOT LISTED AS A CARCINOGEN BY IARC, NTP, OR OSHA.

Signs/Symptoms Of Overexp: EYE:SEVERE IRRITATION, POSSIBLE PERMINENT DAMAGE. SKIN:POSSIBLE DERMATITIS WITH PROLONGED/REPEATED CONTACT. INHALED:ANESTHETIC REACTIONS OF HEADACHE,DIZZINESS,AND CENTRAL NERVOUS SYSTEM EFFECTS. INGESTED:LOW ORDER TOXICITY, MFR STATES THAT PRIME HAZARD WITH INGESTION IS ASPIRATION INTO LUNGS CAUSING PULMONARY EDEMA.

Med Cond Aggravated By Exp: PEOPLE WITH CHRONIC RESPIRATORY OR SKIN DISEASES MAY BE AT INCREASED RISK WHEN EXPOSED TO THIS CHEMICAL.

Emergency/First Aid Proc: EYE:FLUSH W/WATER 15 MIN, HOLD LIDS OPEN. SKIN:WASH WITH SOAP & WATER. REMOVE CONTAMINATED CLOTHING AND LAUNDRER BEFORE REUSE. INHALED:REMOVE TO FRESH AIR. RESTORE BREATHING IF NECESSARY. INGESTED:DO NOT INDUCE VOMITING. GIVE 2 LARGE GLASSES OF MILK OR WATER AND GET IMMEDIATE MEDICAL CARE. GIVE NOTHING BY MOUTH IF UNCONSCIOUS. IF IRRITATION PERSISTS OR IS SEVERE,SEE A DOCTOR.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: ELIMINATE SOURCES OF IGNITION. RECOVER AS LIQUID IF POSSIBLE AND MOP UP OR ADSORB WITH INERT MATERIAL. PLACE IN CLOSED CONTAINERS FOR DISPOSAL.

Neutralizing Agent: NONE

Waste Disposal Method: DISPOSE I/A/W ALL FEDERAL, STATE AND LOCAL REGULATIONS. DGSC-SSH SUGGESTS THAT DISPOSAL MAY BE DONE BY INCINERATION

Precautions-Handling/Storing: STORE IN A COOL, LOW FIRE RISK AREA.

Other Precautions: 'EMPTY' CONTAINERS MAY CONTAIN RESIDUE OR VAPOR. TREAT THEM WITH THE RESPECT DUE FULL ONES. DO NOT CUT,WELD,ETC. ON THEM. **USE PROPER GROUNDING PROCEDURES WHEN TRANSFERRING PRODUCT**.

Control Measures

Respiratory Protection: RESPIRATOR WILL NOT NORMALLY BE NECESSARY. USE NIOSH/MSHA APPROVED AIR SUPPLIED RESPIRATOR (RECOMMENDED) OR RESPIRATOR FOR ORGANIC VAPOR IF EXPOSURE IS ABOVE THE TLV/PEL. SEE 29 CFR 1910.134 FOR REGULATIONS PERTAINING TO RESPIRATOR USE.

Ventilation: NORMAL ROOM VENTILATION IS SUFFICIENT. SUPPLEMENT WITH LOCAL EXHAUST IF PEL/TLV IS EXCEEDED. USE E.P. ELECTRICAL EQPT.

Protective Gloves: RUBBER, VINYL OR OTHER IMPERVIOUS

Eye Protection: SAFETY GLASSES OR SPLASH GOGGLES

Other Protective Equipment: SAFETY SHOWER AND EYE WASH STATION, WORK CLOTHING TO PROTECT FROM PROLONGED/REPEATED CONTACT.

Hygienic Practices: USE GOOD CHEMICAL HYGIENE PRACTICE. AVOID

All offbase generators must provide the information required by DOD standard turn-in procedures, which are described in the previous section. This information will be based on analytical testing provided on a waste profile sheet. One time generations are tested as they occur to obtain the data to fill out the waste profile sheet. For continuous waste streams to product questionnaire is updated annually or when the waste streams change. In addition, the DRMO has a sampling program for all offbased Group II wastes, with the purpose of verifying the generator's waste analyses. This program is described in following sections.

Inspection of Hazardous Wastes

The DRMO inspects all waste shipments received at the facility to ensure proper identification by the generator. DRMO personnel match container markings with accompanying documents (DTIDs and manifests). Shipments are inspected to ensure that they are packaged in nonleaking, structurally sound containers and safe to handle.

Inspection of Group I wastes is limited to a visual inspection to determine whether the containers have their original labels and markings and are as received from the manufacturer. Any waste not meeting criteria of a Group I waste will be considered a Group II waste.

Off-site Group II wastes will have another check performed periodically that is a waste verification testing.

If, at any time during the receiving process, a waste turn-in is determined to be misidentified or unidentified, it will be returned to the generator.

If DRMO-Memphis should accept waste from off-site, off-site generators will provide all information mandated by DOD's standard turn-in requirements (see previous sections). These generators provide a profile of their waste. These profiles are updated when waste streams change.

DRMO Verification Testing Program for Offbase Group II Wastes

Information concerning the verification testing program and results of this program are recorded in the DRMO operating records.

Currently, DRMO obtains its testing results from an independent civilian testing laboratory. The contract with the laboratory calls for the laboratory to provide results to the DRMO within 5 days after samples are taken. While awaiting the results, the wastes are either put in a storage location or in a hold area, then upon verification of the waste's identity the waste is placed in its storage location.

Parameters and Rationale

Offbase turn-in activities must provide all information required by DOD's standard turn-in requirements. This includes the waste identification data developed to comply with Rule 1200-1-11-.02 and 1200-1-11-.03.

This information provides the DRMO with sufficient information to comply with Part 1 of 1200-1-11-.06(2)(d) and enables proper handling and storage of hazardous wastes. Thus, DRMO uses the parameters identified in Table 1-1 for analyzing Group II wastes manifested to them. The rationale for the use of these parameters is for verifying the identification off-site generators provide and for ensuring proper storage. That is, ensuring if it is flammable, reactive, or corrosive.

This information enables proper handling and storage of hazardous waste. As part of the DRMO testing program for verifying the generator's identification of offbase Group II wastes, 10% of the containers will be sampled and analyzed. Table 1-2 identifies parameters for analyzing these wastes. The rationale for use of these parameters is for verifying the offbase generator's identification and for ensuring proper storage.

Test Methods

The test methods* to be implemented to measure the parameters listed in Table 1-1 are summarized in Table 1-2. Density will be tested through volume-to-weight ratios or the hydrometer method.

Sampling Methods

The sampling methods that will be used are shown in Table 1-3 for each type of waste to be stored at the DRMO.

Frequency of Analyses

Frequency of analyses will be as follows:

- 1) For offbase turn-in activities transferring property to the DRMO once or more per month, sampling will be performed once per month.
- 2) For offbase turn-in activities transferring property to the DRMO less than once per month, sampling will be performed at each turn-in.

*U.S. Environmental Protection Agency, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA Office of Solid Waste, EPA Publication, #Sw-846 (as revised), and 40 CFR 261.

Initially, Schedule A of Table 1-4 will be used to determine the number of samples to be taken. Shipment size is the number of containers (whatever size) which hold Group II wastes. Containers to be sampled and selected at the discretion of the environmental specialist or other person designated by the DRMO Chief. If the analysis of these samples agrees with the generator's identification for three consecutive samplings, then sampling will be conducted in accordance with Schedule B of Table 1-4. Schedule B will continue to be used until test results do not verify the generator's identification. If such a discrepancy is found, Schedule A will be used again until three consecutive samplings occur without disagreement between the results and the generator's identification.

Chain of Custody

Since the DRMO does not have any chemical analysis capability, those who perform physical/chemical analysis will be required to establish and use a chain of custody procedures. This chain of custody procedure will conform to EPA's requirements in the EPA Publication, "Methods of Evaluating Solid Waste, Physical/Chemical Methods," SW-846.

Additional Requirements for Facilities Handling Ignitable, Reactive, or Incompatible Waste

No additional testing of ignitable, reactive, or incompatible hazardous waste is necessary because DOD turn-in requirements (as stated in previous section) provide the necessary information to properly store ignitable and reactive wastes and prevent the mixing of incompatible wastes. Precautions to prevent the accidental ignition or reaction of ignitable, reactive, or incompatible wastes are described in Attachment 7.

Tracking Movement of Hazardous Waste

All hazardous waste being transported to DRMO-Memphis will be accompanied by a DTID (previous section). Additionally, all hazardous waste from off-site will be manifested. Once the waste is received at the DRMO, a specific location is assigned for storing the waste. Movement of hazardous wastes within the DRMO does not routinely occur. However, in the event a move is required, a new location will be identified via the DRMO's mechanized accounting system. The following page contains an example page from the accounting system.

EXAMPLE OF ACCOUNTING SYSTEM

Time Period	Date Received	Disposal/Turn-In Document	NSN/LSN	Noun Name	Unit of Issue	Qty	FCC	Site Only	Location	Record Status Code	Freeze Code
0-30	90173	FB302201570225	5640PH6D07		LB	00162	HX	D*	Bldg. 449	D	
0-30	90173	FB302200790052	6810PHWF0014706		IL	00044	HX	D*	Bldg. 449	D	
0-30	90173	FB302201220237	6810PHWF0054715		IL	00150	HX	D*	Bldg. 449	D	
0-30	90173	FB302201340311	6810PHWF0054715		IL	00050	HX	D*	Bldg. 449	D	
0-30	90173	FB302201370118	6850PHWD0015007		IL	00044	HX	D*	Bldg. 449	D	
0-30	90173	FB302201370116	6850PHWD0015007		IL	00040	HX	D*	Bldg. 449	D	
0-30	90173	FB302201340313	801OPHWF0013300		IL	00100	HX	D*	Bldg. 449	D	
TOTAL DODAACL/1 6											
0-30	90159	FB463401410201	61400NSN		LB	00167	HX	20	BIN 14	D	
0-30	90173	FB463401450243	6120PHW0PCB7002		LB	00240	HX	20	C01009001	D	
0-30	90173	FB463401450245	6120PHW0PCB7007		LB	00580	HX	20	C01009001	D	
0-30	90173	FB463401440883	6120PHW0PCB7010		LB	00580	HX	20	C01009001	D	
0-30	90173	FB463401440685	6120PHW0PCB7010		LB.	00730	HX	20	C01009001	D	
TOTAL DODAACL/1 5											
0-30	90180	N6309300172051	8010009269174	Polyurethane Ocatin	CN	00003	A3	Z0	A125411AA	A	
TOTAL DODAACL/1 1											
0-30	90159	SW350001430118	6850002246686	Cleaning Compound,S	CR	00008	HX	Z0	A126016AA	D	
0-30	90166	SW350001420147	6850006600653	Cleaning Compound,S	CR	00015	HX	Z0	A126016AA	D	
0-30	90166	SW350001420145	6850007534827	Decontami-nating Age	CN	00146	HX	Z0	A126007AA	D	
0-30	90173	SW350000870114	913000NSN		DR	00001	HX	Z0	Y502368AA	D	
0-30	90180	SW350001200158	801000F002321		DR	00001	HX	Z0	A125610AA	D	
0-30	90180	SW350001650100	801000F002321		DR	00003	HX	Z0	A125610AA	D	
TOTAL DODAACL/1 6											
0-30	90173	W30HONO1550011	6810000000000		LB	39031	HX	4*	D1103	D	
TOTAL DODAACL/1 1											
TOTAL SXR 0-30 19											

**Table 1-1 Analytical Parameters for all Group II
Wastes Stored at the DRMO**

<u>Test</u>	<u>Rationale</u>
1. pH	Verify Corrosivity
2. Flashpoint	Verify Ignitability
3. Specific Gravity	
4. Reactivity a. water b. cyanides c. sulfides	Verify Reactivity
5. EP Toxicity and Metals	Verify if waste contains any of the contaminants listed under 40 CFR 264.24 or Rule 1200-1-11-.02(3)(c. Levels of heavy metals particularly pollutant metals in a waste needs to be known to ensure that losses to the environment does not occur during treatment or disposal.
6. TCLP	

**Table 1-2 Test Methods to be Used to Measure the
Parameters Identified in Table 1-1**

<u>Parameter</u>	<u>Test Method</u>	<u>Reference</u>
pH	Electrometric Methods 5.2, 5.3	"Test Methods for Evaluating Solid Waste," Physical/ Chemical Methods, EPA Publication #SW-846, as revised
Flashpoint	Pensky-Martens closed-cup tester setaflash closed closed-cup tester	EPA SW-846 1010 EPA SW-846 1020
Reactivity	Water reactivity cyanides sulfides	EPA SW-846 Method 9010 EPA SW-846 Method 9030
EP Toxicity	Method 1310	"Test Methods for Evaluating Solid Waste," Physical/ Chemical Methods; USEPA SW-846, 3rd Edition
Metals by ICAP, (Ag, Al, Ba, Be, Cd, Fe, Li, Na, Pb, Cu, Cr, Mg, Mn, Ni, Ti, Zn)	Method 6010	"Test Methods for Evaluating Solid Waste," Physical/ Chemical Methods; USEPA SW-846, 3rd Edition
Metals by AA (As, SE)	Method 7060	"Test Methods for Evaluating Solid Waste," Physical/ Chemical Methods; USEPA SW-846, 3rd Edition
Mercury by cold vapor AA	Method 7470, 7471	"Test Methods for Evaluating Solid Waste," Physical/ Chemical Methods; USEPA SW-846, 3rd Edition
TCLP		

**Table 1-3 Sampling Methods for Waste Stream Items
Which May be Accepted at DRMO-Memphis**

<u>Type of Waste</u>	<u>Guidance Reference</u>
1. Extremely viscous liquid	ASTM Standard D140-70
2. Crushed or powdered material	ASTM Standard D346-75
3. Soil or rock-like material	ASTM Standard D420-69
4. Soil-like material	ASTM Standard D1452-64
5. Fly-ash-like material	ASTM Standard D2234-76
6. Containerized liquid waste	"COLIWASA" described in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication #SW-846, as revised, or "Samplers and Sampling Procedures for Hazardous Streams."

**Table 1-4 Number of Samples To Be Collected as a Function of
the Number of Items in the Shipment***

SCHEDULE A - Military Standard 105D Normal Inspection

<u>Shipment Size</u>	<u>Number of Samples To Be Collected</u>
2 to 8	2
9 to 15	3
16 to 25	5
26 to 50	8
51 to 90	13
91 to 150	20
<u>Shipment Size</u>	<u>Number of Samples To Be Collected</u>
2 to 8	1
9 to 15	2
16 to 25	2
26 to 50	3
51 to 90	5
91 to 150	8

* Sample collection schedules are based on statistical sampling rates for product performance verification contained in Military Standard 105D - Sampling Procedures and Tables for Inspection by Attribute.

APPENDIX - 1-1

Group I Hazardous Wastes Which May
Be Stored at DRMO-Memphis

APPENDIX 1-1

Group I Hazardous Wastes Which May Be Stored at
DRMO-Memphis

REACTIVE/TOXIC SUBSTANCES

CHEMICAL NAME	UN/NA	EPA
Methyl Ethyl Ketone Peroxide	*	U-160
Toluene Di-isocyanate	2078	U-223

* Multiple variations of chemical which require specific information for accurate identification.

POISONS

CHEMICAL NAME	UN/NA	EPA
Sodium Cyanide	1689	P-106
Potassium Cyanide	1680	P-098
Silver Cyanide	1684	P-104
Berium Cyanide	1665	P-013
Toluene Di-isocyanate	2078	U-223

HERBICIDES/PESTICIDES

CHEMICAL NAME	UN/NA	EPA
Dursban	*	ORM-A
Diazinon	2783	ORM-A
Malathion	2783	ORM-A
Lindane	2761	ORM-A
Rotenone	2588	*
Carbamtes	*	*
Roundup	*	*
Baylam	*	*
Phenol	1671/2312	U-188
DiQust	*	*

Group I Hazardous Wastes Which May Be Stored at
DRMO-Memphis (Continued)

HERBICIDES/PESTICIDES (Continued)

CHEMICAL NAME	UN/NA	EPA
Creosote	1993	U-051
DiPhenthronone	*	*
Pyrethrin	9184	ORM-E
Dichlorouos	*	*
Sodium Dichromate	1479	*
Aviatrol	*	*
Baygon 2%	2588	*
Insect Strip	*	*
Warfarin	2476	U-248/P-001

DDMT HAZARDOUS MATERIALS INVENTORY
October 1990

FLAMMABLES/IGNITABLES

CHEMICAL NAME	UN/NA	EPA
Methyl Ethyl Ketone	1193	U-159
Methyl Isobutyl Ketone	1245	U-161
Acetone	1090	U-002
Ethyl Acetate	1173	U-112
Isopropanol	1219	D-001
Denatured Alcohol	1987	D-001
Xylene	1307	U-239
Toluene	1294	U-220
Naphtha	2553	D-001
Methanol	1230	D-001
Cyclohexylamine	2357	D-001
Isooctane	1262	D-001
Methyl Methacrylate	1247	D-162
Petroleum Ether	1271	D-001
Diethyl Ether	1155	D-001
Ammonium Inhalers	**	D-001
Insect Repellant	**	D-001
Dioxane	1166	U-108
Amyl Acetate	1104	D-001
Ethylene Chloride	1184	U-077
Primatol Herbicide	**	D-001
Bromax Herbicide	**	D-001
Toluene Methyl Isobutyl Ketone	**	D-001
Benzene	1114	U-019
Propane	1978	D-001
Butane	1011	D-001
Calcium Hydride	1404	D-001
N-Butyl Acetate	1123	D-001
Alcohol, 94.9%	*	D-001
Styrene Monomer	2055	D-001
Petroleum Distillate, n.o.s.	1268	D-001
PD-680 (Stoddard Solvent)	**	D-001
POL, Ignitables	**	D-001
Ketone, Liquid, n.o.s.	1224	D-001
Glycol Ether	*	D-001
Alcohol, n.o.s.	1987	D-001
Acetylene	1001	D-001
Insecticide Liquid, n.o.s.	1993	D-001

* Multiple variations of chemical which require specific information for accurate identification.

** Additional data needed to provide this information.

DDMT HAZARDOUS MATERIALS INVENTORY
October 1990 (Continued)

CORROSIVES/BASES

CHEMICAL NAME	UN/NA	EPA
Sodium Hydroxide	1823	D-002
Potassium Hydroxide	1813	D-002
Ammonium Hydroxide	2672	D-002
Nitric Acid	*	D-002
Sodium Hypochlorite	1791	D-002
Sulfuric Acid	*	D-002
Perchloric Acid	*	D-002
Hydrochloric Acid	1789	D-002
Fluoboric Acid	1775	D-002
Ferric Chloride	*	D-002
Diethylene Triamine	2079	D-002
Corrosive Liquids, n.o.s.	1760	D-002
Carbon Removing Compound	1132	D-002
Cleaning Compounds	1142	D-002
Hydrofluoric Acid	*	D-002
Hydrofluorosilicic Acid	1778	D-002
Hydroquinone	2662	D-002
Ethylenediaminetetraacetic Acid	9117	D-002
Acetic Anhydride	1715	D-002
Ascorbic Acid		D-002

* Multiple variations of chemical which require specific information for accurate identification.

OXIDIZERS

CHEMICAL NAME	UN/NA	EPA
Oxygen, compressed	1072	
Potassium Permanganate	1490	
Chromium Trioxide	1463	
Silver Nitrate	1493	
Potassium Superoxide	2406	
Ammonium Nitrate	*	
Chlorinated Lime	Not identified by DOT/EPA	
Hydrogen Peroxide	*	
Potassium Nitrate	1486	
Sodium Nitrate	1498	
Super Tropical Bleach		ORM-C
Methyl Ethyl Ketone Peroxide	*	U-160

* Multiple variations of chemical which require specific information for accurate identification.

DDMT HAZARDOUS MATERIALS INVENTORY
October 1990 (Continued)

REACTIVES

CHEMICAL NAME	UN/NA	EPA
Ammonium Nitrate	*	D-003
Potassium Nitrate	1486	D-003
Potassium Permanganate	1490	D-003
Sodium Nitrate	1498	D-003
Urea Nitrate, wet	1357	D-003
Oxidizing Material, n.o.s.	1479	D-003

* Multiple variations of chemical which require specific information for accurate identification.

HALOGENATED SOLVENTS

CHEMICAL NAME	UN/NA	EPA
1,1,1 Trichloroethane	2831	U-226
Perchloroethylene	1897	U-210
Freon 11	*	
Freon 12	1028	U-075
Freon 22	*	
Trichloroethylene	1710	U-226
Carbon Tetrachloride	1846	
Trichlorotrifluoroethane	*	

* Further information is required; when exposed to flame phosgene gas and chlorine gas may develop, use extreme caution to avoid exposure to open flame.

TOXIC MATERIALS

CHEMICAL NAME	UN/NA	EPA
Silver Nitrate	1493	D-011
Methyl Bromide	1062	U-029
Creosols	2076	U-052
Dichlorodifluoromethane	1028	U-075

IGNITABLE/TOXIC SUBSTANCES

CHEMICAL NAME	UN/NA	EPA
Chloromethane	10163	U-045
Methyl methacrylate	1247	U-162
Methyl Ethyl Ketone	1193	U-159
Toluene	1294	U-220

Table 5. Tests for Wastes

<u>Waste</u>	<u>Parameter</u>	<u>Test Method(s)</u>	<u>Rationale</u>
Battery Acid	pH Pb, Cr	9040 or 9041 EP Toxicity 1310 then 7420 or 7421 7130 or 7131	to determine if it is a hazardous waste; i.e., corrosive and/or EP toxic and to ensure proper storage.
Waste plant related material	ignitability Cr, Pb TOX	1010 or 1020 EP Toxicity 1310 7190 or 7191 7420 or 7421 9020 or 9021	The solvent used is an ignitable substance and chromium and lead are components of paint. Tests are to determine if it is a hazardous waste; i.e., ignitable and/or meets the criteria of an EP Toxic. Total organic halide to ensure chlorinated solvents have not been mixed. All tests are to assist the disposal contractor in choosing a proper disposal method and ensure proper storage.

(1) Methods are taken from EPA's SW-846 Test Methods for Evaluating solid Wastes Physical/Chemical Method as amended.

ATTACHMENT 2
SECURITY

SECURITY

Security

Security procedures to be implemented in order to prevent hazards are described in the following sections:

24-Hour Surveillance System

Defense Depot Memphis is responsible for on-site security to control entry at all times through the gates or other entrances to the active portion of the entire installation. All entrances are manned from 0730 to 1600 hours. At least one entrance is open and manned 24 hours per day to accommodate the night shift at the DDMT. All others are locked from 1600 to 0730 hours. Proper identification is required for entry.

During normal working hours, the storage building is usually occupied. When not in use, the building is locked. During hours of non-operation, Depot security personnel patrol the active portion of the Depot. These patrols will check the fence line and buildings.

Barrier and Means to Control Entry

Barriers

A 6-foot-high metal chain-link fence, topped with three strands of barbed wire, encircles the property of the DDMT.

Means to Control Entry

Gates to the DDMT are manned as described previously or are locked.

Warning Signs

Warning signs with the legend, "Danger -- Unauthorized Personnel, Keep Out," will be posted at the entrances to the HWSF. These signs will be visible from a minimum of 25 feet and will be printed in English. The signs will be located at the entrances on all four sides to the hazardous waste storage building. Signs with legend, "No Smoking," and "Hazardous Waste" will be posted.

ATTACHMENT 3

INSPECTIONS

INSPECTIONS

Inspection Schedule

Table 3-1 presents the General Inspection Schedule for inspecting safety and emergency equipment, security devices, operating and structural equipment, monitoring equipment, communication equipment, and mobile equipment. The quantity and type of equipment to be maintained at the HWSF is shown in Table 3-2. The HWSF will be inspected daily to assure that the doors are locked when the building is unattended and during hours of non-operation. Items listed in Table 3-1 are important because of their role in preventing, detecting, or responding to environmental or human health hazards.

General Inspection Requirements

DRMO-Memphis will conduct regular inspections at its HWSF for equipment malfunctions, structural deterioration, operator errors, and discharges that could cause or lead to the release of hazardous waste constituents and adversely affect the environment or threaten human health. Inspection log sheets are shown in Table 3-3.

Types of Problems

Table 3-1 presents the schedules for inspecting monitoring equipment, safety and emergency equipment, security devices, operating and structural equipment, and the container storage areas. Items listed in the tables are considered important because of their role in preventing, detecting, or responding to environmental or human health hazards. Provided with each item is a list of problems normally encountered.

Table 3-1

General and Specific Inspection Schedules

<u>Area Equipment</u>	<u>Specific Item</u>	<u>Types of Problems</u>	<u>Frequency</u>
Safety and Emergency Equipment	1. Standard industrial absorbents, (e.g., sorball, vermiculite)	Out of stock saturated with water	Weekly
	2. Spare containers and overpacks	Corrosion, structural damage	Weekly
	3. Emergency shower and eyewash	Water pressure leaking.	Weekly
	4. Face shields and goggles	Broken or dirty	Weekly
	5. Ventilation systems	Operational	Weekly
	6. Fire extinguishers	Charged	Monthly
	7. Fire alarm system	Working	Monthly
	8. Telephone system	Operational	Monthly
	9. First aid equipment and supplies	Properly stocked, sterile	Monthly
	10. Protective clothing (impermeable full body coveralls, gloves and foot coverings)	Holes, normal wear, missing	Weekly
	11. Shovel (non-sparking)	Missing, damaged	Weekly
	12. Bung wrench (non-sparking)	Missing, damaged	Weekly
	13. Push broom	Missing, damaged	Weekly

Table 3-1

General and Specific Inspection Schedules
(Continued)

<u>Area Equipment</u>	<u>Specific Item</u>	<u>Types of Problems</u>	<u>Frequency</u>
Security Device	1. Signs	Illegible	Weekly
	2. Container storage building doors, locks	Locks missing, unlocked, signs of tampering	Weekly*
	3. Lighting	Burned out	Weekly*
Building/Load/Unload Area	1. Base/foundation, ramps containment trenches, roof, walls	Structural integrity; e.g., erosion, uneven settlement; cracks spilling on concrete	Weekly
		Leaks from roof/wall; wet spots on floor	Initially after the first rain storms; after completion and then weekly
		Wet spots from leaking containers	Weekly*
	2. General debris and refuse	Aesthetics, obstruction present.	Weekly
	3. Odor, fumes	Detectable, present	Weekly

Table 3-1

General and Specific Inspection Schedules
(Continued)

<u>Area Equipment</u>	<u>Specific Item</u>	<u>Types of Problems</u>	<u>Frequency</u>
Mobile Equipment MHE, Forklift	1. Brakes	Worn pads, rotors	Prior to each use
	2. Hydraulics	Leaking	Weekly
	3. Trailer hitches	Loose, missing safety chains	Prior to each use
	4. Lights-running/emergency	Burned out	Prior to each use
	5. Horns/sirens	Inoperative	During use
	6. Battery	Inoperative, low water level	Weekly
	7. Hydraulic oil level	Low level, leaks	Weekly
	8. Lubrication	Low level	Weekly
	9. Tire condition	Worn, low pressure	Weekly
	10. Safety equipment	Inoperative	Weekly
	11. General condition	Deficiencies	Weekly
	12. Warning siren	Operating	Weekly
	13. Instruments	Inoperative	Weekly
	14. Shutdown precautions	Incorrectly performed	Weekly
	15. MHE drum lifter/handler.	Missing, inoperative	Weekly

Table 3-1

General and Specific Inspection Schedules
(Continued)

<u>Area Equipment</u>	<u>Specific Item</u>	<u>Types of Problems</u>	<u>Frequency</u>
Container Storage	1. Container placement and stacking	Insufficient aisle space, excessive height of stacks	Weekly
	2. Sealing of containers	Open lids	Weekly*
	3. Labeling of containers	Improper identification data missing	Weekly
	4. Containers	Corrosion, leakage, structural defects	Weekly*
	5. Segregation of incompatible wastes	Storage of incompatible wastes in same area	Weekly
	6. Pallets	Damage (e.g., broken warping, nails missing)	Weekly
	7. Loading docks/unloading areas, valves	Leaks, correct position, spots indicating spills	Weekly*
	8. General debris and refuse	Aesthetics, possible reaction with leaks	Weekly
	9. Containment area costing sealant	Cracks, worn spots presence of accumulating liquids	Weekly*

*Daily when in use.

Table 3-2

Quantity and Type of Equipment
Available at the DRMO-Memphis HWSF

<u>QUANTITY</u>	<u>ITEMS</u>
3 Pairs	Boots, over the shoe, neoprene/rubber
3 Each	Faceshield
3 Each	Goggles, Chemical Splash
3 Pairs	Gloves, Rubber/Nitrile
3 Each	Coveralls, Disposable, Saranex Coated (or equivalent)
2 Each	80-Gallon Overpack Drum
200 Lb.	Absorbent
2 Each	Shovel, Non-Sparking
1 Each	Bung Wrench, Non-Sparking
1 Each	MHE3000#, DY Power Truck
1 Each	MHE Drum Lifter/Handler
2 Each	Broom, Push

Table 3-2

RCRA Inspection Log

Inspector Name/Title		Date of Inspection:		Time of Inspection	
Item	Types of Problems	Status		Observations	Date & Description
		Acceptable	Unacceptable		
* 1. Loading & Unloading Areas *	Spills, Leaks				
2. Absorbents	Out of Stock				
3. Drums, 55 & 65 Gallon	Out of Stock, Condition				
4. Locks on Entrance	In Place, Condition				
5. Container Placement	Aisle Space				
6. Container Closed	Open Bungs, Tops, Lids				
7. Container Marking/Labeling	Proper Labels, Dates on Drums				
8. Container Condition	Defects, Leaks, Corrosion				
9. Segregation	Capatability of Drums in Same Areas				
10. Pallets Condition	Integrity, Drums on Pallets				
11. Floors/Foundations/ Curbing, Dikes	Integrity, Leaks				
12. Warning Signs	In Place, Legible				
13. Housekeeping	Cleanliness, Trash				

* Inspected daily when in use.

"INSERT TABLE 3-2 AND 3-3"

Frequency of Inspection

Also provided in Table 3-1 is the frequency of inspection for each item. The frequency depends upon equipment deterioration, environmental or human health incidences, or equipment malfunction between inspections. The frequency of inspection will increase in these instances when problems are discovered. The loading/unloading dock will be inspected daily when in use.

Specific Process Inspection Requirements

Container Inspection

A Specific Process Inspection Schedule is also included in Table 3-1. Inspections of the container storage area will be conducted in accordance with Table 3-1 by an employee trained in hazardous waste management procedures. (Refer to Attachment 4 of this document for details regarding personnel training.) Other information contained in Table 3-1 includes a summary of the anticipated problems discovered during inspection of the containers and the frequency of inspection.

All results of the general process and specific process inspections will be recorded on log sheets (Table 3-3) which will be stored at the DRMO. Information on these log sheets includes the name of the inspector, date and time of inspection, item, problems observed, and the date and nature of repairs and remedial action(s). All inspection logs will be maintained at the DRMO for a minimum of 3 years.

Remedial Action

If inspections reveal that non-emergency maintenance is needed, the DRMO will initiate immediate action(s) to preclude further damage and to reduce the need for emergency repairs. If a hazard is imminent, or has already occurred during the course of an inspection or at any time between inspections, then remedial action(s) will also be immediately taken. Appropriate authorities will be notified according to the Contingency Plan (Attachment 5). In the event of an emergency involving the release of hazardous constituents to the environment, efforts will be directed towards containing the hazard, removing it, and subsequently decontaminating the affected area. These procedures are also outlined in Attachment 5.

Inspection Log

The inspection log notebook will be kept on-site at the DRMO for at least three years. Table 3-2 indicates that the inspection log requires the date of inspection, the name of the inspector, the items inspected, a notation of the observations made, and the date and nature of any repairs or other remedial actions.

ATTACHMENT 4
PERSONNEL TRAINING

PERSONNEL TRAINING

The information contained in this attachment outlines training programs for personnel at the DRMO, in accordance with 40 CFR Sections 264.16 and 270.14(b)(12), Tennessee Hazardous Waste Management Rules 1200-1-11-.07(5)(a)12 and .06(4)(g).

Outline of Training Program

Facility personnel who handle hazardous wastes must successfully complete a program of classroom instruction and/or on-the-job training in order to prepare them to operate and maintain the facility in a safe manner and ensure the facility's compliance with 40 CFR 264. No employee works unsupervised until he/she has completed either the formal 40 hour training course or the equivalent in on-the-job training or a combination of the two totaling 40 hours.

DRMS Headquarters offers a complete environmental training package in handling, storing and transporting hazardous wastes to comply with training requirements in 40 CFR 264.16(a)(3). All employees involved in the managing or handling of hazardous wastes are required to participate. DRMO personnel are enrolled in the DRMS hazardous waste training program by their region.

Job Titles and Duties

The duties, responsibilities and qualifications of the positions directly responsible for handling hazardous wastes are as follows:

Position Title: Defense Reutilization and Marketing Office Chief

Responsibilities:

Directs the operations of the excess and surplus personal property program at the DRMO; provides assistance and guidance to commands served, and is the technical authority on all disposal matters. Ensures that personnel receive adequate training.

Major Duties:

Interprets regulations and develops necessary operating procedures as required. Processes an extremely wide variety of property ranging from common use to highly specialized items, such as hazardous materials/wastes. Determines requirements for manpower, space and equipment, and initiates required actions. Determines needs for modifications to existing facilities and initiates action to improve economy, efficiency, safety and physical security of operations. Develops appropriate requirements and initiates requests for work.

Maintains personal contacts with local and State government agencies, military commands, and General Services Administration.

Assigns work to subordinate employees or supervisor, based upon priorities. Makes decisions on work problems referred by subordinate supervisors. Ensures that workload and project responsibilities are specifically delegated and assigned to subordinates.

Interviews candidates for position, making selections for supervisory positions.

Experience and Qualifications:

Ability to manage the DRMO operation by planning work for his staff, establishing priorities and preparing work schedules, determining training needs, and arranging attendance at specific training courses.

Ability to amend and improve the receipt, storage and issue methods, to define equipment and supply needs, and to determine the nature and quantity of services that DRMO will need from Defense Depot Memphis, such as vehicle and equipment maintenance, fire protection, safety and security support, and building maintenance.

Position Title: Environmental Protection Specialist

Responsibilities:

Serves as the DRMO hazardous property focal point and advises the Reutilization and Marketing Officer on hazardous property matters. Responsible for ensuring compliance with requirements relative to receiving, handling, storing, packaging and disposing of hazardous property. Provides technical guidance to DRMO personnel involved in all aspects of hazardous property processing.

Duties:

Conducts periodic inspections to ensure that hazardous property storage areas are maintained in accordance with pertinent State and Federal environmental regulations, and that material turned in by generating activities is properly identified and packaged. Acts as the Emergency Spill Coordinator at the DRMO storage facility; reacts to spillage by containment, clean-up, and decontamination of the spill site. Analyzes data and prepares hazardous waste reports as required. Assists DRMS and DRMR personnel in providing on-the-job training for DRMO personnel involved with hazardous materials/hazardous wastes operations.

Experience and Qualifications:

Applicants must have a background of one of the following: (A) A full four-year course in an accredited college or university leading to a bachelor's degree; or (B) Three years of experience in administrative, professional, technical, or other work that has required the ability to organize, analyze, and evaluate facts and concepts and prepare written material; (C) Combination of experience and education defined in (A) and (B).

Position Title: Materials Sorter and Classifier

Responsibilities:

Responsible for proper receipt and storage of property. Verifies nomenclature, description quantities, and condition against those listed on documentation; classifies items based on inspection of condition. Operates forklift and bailing machine as required to handle hazardous property.

Major Duties:

Receives and unloads all incoming excess and/or surplus property, and waste materials authorized for turn-in to the DRMO. Ensures that a properly prepared turn-in document accompanies each property turn-in. Routes property in a manner which will permit required processing with a minimum of handling and transportation.

Warehouses all property physically received in the DRMO from time of receipt at the receiving or inspection area until final disposition. Considers type of material handling equipment needed, fire and safety hazards involved, protection from damage, deterioration and pilferage, and ease of movement.

Arranges storage facilities for property to ensure segregation of property by type, condition, and sales appeal. Checks source document files and other records to determine the basis for over, short, or misplaced items. Assists other personnel in conducting sales of surplus property; including looting, displaying, and segregating property for sale.

Experience and Qualifications:

Ability to differentiate between various materials (i.e., corrosives, flammables, reactives); to catalog storage items by utilizing the HMIS and other reference documents; to read and to understand technical data presented on manifest and container labels. Skill in operating a forklift.

Position Title: Warehouse Worker

Responsibilities:

Serves as a warehouse worker responsible for accomplishment of a complete warehousing operation for an assigned area at one of the DRMOs. Operates forklift or other materials handling equipment as required to carry out the functions within the assigned operation. Directs lower graded employees as required by the work load.

Works under the general supervision of a Foreman. Independently uses turn-in, sales referral, issue and other documents to organize, arrange, rearrange, consolidate and otherwise determine the sequence steps, procedure, and technique to be followed to accomplish assigned functions. Supervisor furnishes information or advice on new, unusual or complex situations and problems. Work is reviewed primarily on the basis of timeliness, quality and quantity.

Major Duties:

Independently, or with the assistance of lower graded warehouseman or materials handling equipment operators, accomplishes all necessary warehousing functions for an assigned area during one or more of the disposal cycles.

Removes excess property from receiving stations and relocates in reportable or non-reportable property screening areas according to designation or turn-in document (DTID). Compares DTID with property for agreement of class, quantity, condition, etc. Assigns warehouse location. Accompanies and assists eligible screeners. Tags material selected for reutilization, transfer or donation, and prepares it for issue or shipment when authorization is given. Counts or weighs material and ensures correct item and quality is issued. Completes necessary documentation reflecting quantities issued or shipped and balance stored or to be delivered. Daily examines stock in storage to ensure screening periods are not exceeded.

Relocates excess property redesignated as surplus to the sales area upon the receipt of the sales referral card (XS-5). Stores and displays items in lots by class and condition or as specified by the Marketing Specialist. Verifies nomenclature, count, etc. Prepares stock location change and necessary sale identification markings to correspond to sale catalogs. Escorts prospective bidders through sales areas and assists them in locating items on sales lists. Upon receipt of sale release document, issues property to bidder and annotates action on the document. For partial deliveries, prepares shipment receipt or delivery pass. Obtains signature of recipient and distributes copies. Relots or rewarehouses no-bid or reject bid items as instructed by Marketing Specialist.

Determines the basis for over, short, or misplaced items by checking alternate locations, transaction registers, inventory on hand listings, etc. Examines storage areas periodically to assure that property held for disposition has not been removed, pilfered or otherwise tampered with. Rearranges storage areas or relocates property for maximum convenience of handling and ease of movement as well as protection from damage, deterioration, and pilferage. Instructs lower grade workers in specific tasks, proper processing techniques, organization of storage space, document preparation, and proper safety practices. Physically inventories stock as required. Observes all security, safety and housekeeping requirements.

May operate forklift (up to 15,000 pounds capacity), light truck, or warehouse tractor.

Experience and Qualifications

Requires reading and writing ability; skill in making up storage loads; stacking and arranging items; knowledge and skill in the use of common hand tools, e.g., hammer, pliers, and saws; and sufficient skill in forklift operation to obtain an operator's license.

Training Content, Frequency and Techniques [1200-1-11-.06(2)(g)1(i) and 3]

The training program employed by DRMS for employees handling hazardous wastes combines supervised on-the-job instruction and formal classroom training. Each employee learns about the particular dangers associated with hazardous wastes typically stored at the DRMO and their storage requirements.

On-the-job training provides DRMO employees with the following:

- a. Physical layout of the DRMO facilities including location and use of emergency equipment.
- b. Basic hazardous material/hazardous waste disposal policies of the DRMO (turn-in requirements, analysis, packaging, and recordkeeping).
- c. Basic procedures in handling, storing, and manifesting of hazardous waste.
- d. Inspection and procedures for correcting inadequacies found.
- e. Emergency procedures, such as spill response, fire response, evacuation, or explosions response.
- f. Opportunity to read and understand Environmental Compliance for the DRMS Hazardous Property Program. Publication DRMS-M 6050.1, Section V, (see Exhibit 4-1) which outlines procedures to ensure the safe management of a hazardous waste storage facility and handling of hazardous wastes.
- g. Opportunity to read and understand Receiving Operations at the Defense Reutilization and Marketing Offices DRMS-M 4160.3 which provides procedures for receiving personal property including hazardous waste.
- h. Opportunity to read and understand Storage Operations (Warehousing) at the Defense Reutilization and Marketing Offices DRMS-M 4160.5 which provides procedures for warehousing property including hazardous waste.

On-the-job training is also provided by environmental specialists from DRMR, who make periodic environmental quality assurance visits (EAV) throughout the year. These individuals provide guidance to personnel for the proper identification, handling, storage of hazardous wastes, initial response actions during spills, Personal Protective Equipment (PPE) use and limitations, and technical information retrieval.

After receiving sufficient on-the-job training, an employee will take the following formal courses or the equivalent training dealing with hazardous waste management:

1. Hazard Communication Standard and Safety for HM/HW consists of 32 hours of instruction. Exhibit 4-2 is an outline of this course.
2. For Environmental Specialist and DRMO Chief only, RCRA Facility Compliance consists of 36 hours of instruction (Exhibit 4-3).

In addition, those employees who have Contracting Officer's Representative duties will take the following courses or receive the equivalent training:

1. Transportation of Hazardous Materials and Hazardous Waste for DOD (Part-1) consists of 40 hours of classroom instruction preceded by 18-20 hours of self-study prepared by U.S. Department of Transportation and Transportation Safety Institute (Exhibit 4-4).
2. Manifest Procedures and CLIN Assignment prepared consists of 36 hours of classroom instruction prepared by DRMS (Exhibit 4-5).

The topics covered in these courses provide the employee with an understanding of potential hazards inherent in the job, as well as with the precautions necessary to minimize these hazards. In addition, DRMO personnel who handle hazardous wastes will meet annually to discuss the effectiveness of their training programs and recommend program needs. The initial training will be reviewed annually to update personnel on changes to and remind personnel of the requirements of the regulations and operating procedures. The spill response plan will be executed at least once annually for training purposes.

Training Director

The person in charge of the DRMS Environmental Training Program is Mrs. Carol Givens. Mrs. Given has over 10 years experience in the environmental field and 4 years of experience in training. She has attended and presented numerous environmental courses. She has a Master's Degree from the University of Toledo in Ohio.

Exhibit 4-1

Environmental Compliance for the
DRMS Hazardous Property Program
DRMS-M 6050.1

Chapters

1. General Provisions
2. Receipt
3. Storage
4. RCRA Facility Compliance
5. Disposal Cycle
6. Disposal Contracts
7. Oil and Hazardous Materials/Hazardous Wastes (HM/HW) Spill Prevention and Response
8. Environmental Documentation
9. Retrogrades
10. Training
11. Disposal Funding
12. Waste Minimization
13. Environmental Certification
14. Off-installation Hazardous Clean-up
15. Emergency Planning and Community Right-to-Know Title III, Superfund Amendment and Reauthorization Act
16. Defense Environmental Restoration Program (DERP)
17. Audit Program
18. Property Requiring Special Handling
19. Notification of Suspected Environmental Violation

Exhibit 4-2

HAZARD COMMUNICATION STANDARD AND SAFETY FOR HM/HW

Prepared by Argonne National Laboratories

Course Description:

Course is designed for employees that are working with or around Hazardous Materials or Hazardous Waste. The course provides information on how to safely manage and operate a RCRA HM/HW storage facility, use personal protective equipment, work safely around chemicals, recognize unsafe work situations and respond to spills and other emergencies. This course meets the requirements of 29 CFR 1910.1200 OSHA Hazardous Communication Standard, and 29 CFR 1910.120 OSHA Hazardous Waste Operations Standard.

Course Outline:

1. Laws and Regulations Relevant to Worker Safety
2. Industrial Toxicology
3. Personnel Protective Equipment
4. Fire Safety and Fire Extinguishing Methods
5. Electrical Safety
6. Accident Prevention
7. Spill Prevention, Drum Handling, and Emergency Planning
8. First Aid and Medical Preparedness
9. OSHA's Hazard Communication Standard
10. Basic Chemistry and DRMO Property
11. Introduction to Resource Conservation and Recovery Act
12. Preparedness and Prevention
13. Contingency Plans and Emergency Procedures

RCRA Facility Compliance

Course Description:

Course is designed for employees that are in a position to manage a RCRA hazardous waste storage facility. Course provides a working knowledge of the rules and regulations governing the handling, storage, and recordkeeping for containerized hazardous waste. Course provides a basic understanding of chemical properties and toxic/physical effects of chemicals. Course places emphasis on compliance with Federal and State regulations.

Course Outline:

1. Hazardous Waste Laws and Regulations
2. Land Ban Restrictions
3. Hazardous Waste Liability
4. Generation of Hazardous Waste
5. Storage Compatibility
6. Hazardous Waste Identification
7. Treatment, Storage and Disposal Facilities
8. Contingency Plans and Emergency Procedures
9. Closure Plans
10. Recordkeeping Requirements

Exhibit 4-4

**Transportation of Hazardous Materials
and Hazardous Waste for DOD (Part I)**

Course Description:

This course provides basic understanding of the DOT regulations. Includes how to use the Hazardous Materials Table, prepare shipping papers, determine proper packaging including placarding and use of CFRs.

Course Content

Introduction and Legal Aspects

**Cargo Tanks
Specifications
Inspection Procedures**

Organization and Introduction to 49 CFR

Procedure for Using HM Regulations

Roadside Inspection Procedures

Shipper Functions (All Modes)

Enforcement and Field Problems

Hazardous Substances and Wastes

Citing Noncompliance

Modal Requirements

Emergency Response

Overview: Int'l Civil Aviation Organization (ICAO)

Training and Education

Overview: Int'l Maritime Organization (IMO)

Inspection Procedures

Introduction to Radioactive Materials

Note: Prior to Phase I each course participant will receive:

49 CFR Parts 100-177, Phase I Student Text and Workbook, and a qualifying examination.

During Phase II (in-residence - 5 days) participants will receive: 49 CFR Parts 178-199, Phase II Student Workbook and other support material.

Exhibit 4-5

**Manifest Procedures and CLIN Assignments
by DRMS**

Course Description:

This course emphasizes manifesting and includes use of CFRs, HW definitions, how to select a proper shipping name for a HW, how to prepare a Uniform Hazardous Waste Manifest and Contract work requirements.

Course Outline:

Hazardous Property Identification

Contract Line Item Number (CLIN) Assignment

Funding/Contract Renewal Process

Contract Work Requirements

Shipping Papers

Assigning a Proper Shipping Name

HW Manifest

Packaging, Marking, Labeling and Placarding

Land Disposal Restrictions

Relevance of Training to Job Position

Training is required for all DRMO personnel as outlined in Attachment 4. The courses discussed provide instruction in the safe storage of hazardous materials and wastes and emergency actions. They are minimum requirements; additional training is encouraged. There is little tailoring of training to specific job classifications except for those who have duties as Contracting Officer's representative. They have additional training as stated above.

Training for Emergency Response

The DRMS training program ensures that its employees receive emergency response training. On-the-job training requires that each employee read and understand Chapter VII of Environmental Considerations for the DRMS Hazardous Property Program DRMS-M 6050.1 entitled "Oil and Hazardous Materials/Hazardous Wastes Spill Prevention and Response."

Emergency response is also covered in classroom instruction with lectures and practical exercises. The Hazard Communication Standard and Safety for HM/HW Course (Exhibit 4-2) addresses the topic of spill containment and control.

Procedures for Using, Inspection, Repairing, and Replacing Facility Emergency and Monitoring Equipment

Facility emergency and monitoring equipment is routinely inspected in accordance with the General Inspection Schedule (Table 3-3, Attachment 3). On-the-job training is provided as to the locations of equipment; how to inspect, maintain and use each item; and replacement of equipment (if necessary) after the emergency is over.

Key Parameters for Automatic Waste Feed Cutoff Systems

No automatic waste feed cutoff system will exist at the DRMO. All hazardous wastes will be containerized in accordance with DOT specifications. No specialized training for an automatic waste feed cutoff system is required.

Communications or Alarm Systems

Areas of training with respect to communications or alarm systems include supervisor on-the-job training in types of equipment available at the site and how to use them, locations of equipment, emergency telephone numbers to be used to summon external assistance, alarm codes, how to maintain the equipment, and frequency of serviceability checks.

Response to Fires or Explosions

Specific procedures that will be followed in the event of a fire or explosion are outlined in the Contingency Plan. All personnel are trained in their contingency plan

responsibilities, evacuation procedures and means of exit from their respective work areas. Drills are held regularly to practice these procedures.

In addition to hazardous waste management personnel, the Memphis Fire Department is continuously prepared to respond to all fires involving hazardous waste.

Response to Groundwater Contamination Incidents

The potential for groundwater contamination is low, because all hazardous wastes/materials will be stored in DOT-approved leakproof containers. The floors of the HWSF will be coated with a chemically resistant sealant. Each bay will also have a depressed floor, which will provide containment in the event of a leak or spill. Doors will be equipped with concrete curbs. In addition, a pre-established Contingency Plan will provide for swift clean-up, thereby minimizing the risk of an outside spill or leak. Personnel will be trained in spill response and Contingency Plan implementation. At a minimum, one simulated spill will be conducted each year to test the effectiveness and response of the emergency response team.

Shutdown of Operations

When operations must shut down, no special actions are required; therefore, no specific training is required.

Implementation of Training Program

Any current DRMO employee and future employees assigned to manage/handle hazardous materials and hazardous wastes will complete the training program discussed in Section 4-1b within 6 months of their date of employment. At a minimum, these employees will attend the Safety Course offered by Argonne National Laboratories or DRMS and the Property Disposal Hazardous Materials Course offered by ALMC or receive equivalent training.

No employee will work unsupervised with hazardous wastes until he/she successfully completes on-the-job training. This training may be provided by either the DRMR environmental specialists during their periodic environmental assistance visits throughout the year. Formal training programs will be attended by personnel as required by their duties. The content of these programs is outlined in Exhibits 4-2 through 4-5.

All records documenting the job title for each position, job descriptions, employee names, and completed training programs (both introductory and review) will be kept on-site in the DRMO Administration Office. These records will be kept until closure of the facility for current employees, and for 3 years from the date of termination for former employees.

ATTACHMENT 5
CONTINGENCY PLAN

CONTINGENCY PLAN

The information contained herein is submitted in accordance with the requirements for a Contingency Plan, as contained in Tennessee Hazardous Waste Management Rules 1200-1-11-.07(5)(a)7.

General Information

This Contingency Plan is for the Defense Reutilization and Marketing Office (DRMO) located on the Defense Depot Memphis, Memphis, Tennessee (DDMT). The facility is owned by the Defense Depot Memphis and operated by the Defense Reutilization and Marketing Service (DRMS).

DRMO-Memphis will store containerized wastes in an enclosed concrete masonry building. A maximum quantity of 154,440 gallons in 55-gallon drums and smaller containers will be stored at this facility. A general site plan and a full description of this facility is contained in Attachment 7. A description of the wastes to be stored is provided in Attachment 1 and the containment system is described in Attachment 8.

Emergency Coordinators

For emergencies at the DRMO, the emergency coordinator (also called the on-scene coordinator (OSC) occupies the following position(s):

DRMO-Chief	(901) 775-4895
First Alternate--Environmental Monitor	(901) 775-4895
Second Alternate(s)--Warehouse Worker/HM Handler	(901) 775-4895

Names of persons filling these positions will be supplied to the commissioner at the time of certification. These persons have the authority to commit the needed resources to carry out the contingency plan.

If a spill gets beyond the capability of DRMO personnel, they activate the host's DDMT Spill Contingency Plan, Appendix 5-1.

Implementation of the DDMT Contingency Plan

The DRMO will activate the DDMT contingency plan when there is a fire or an explosion. If there is a spill of minor proportion (minute quantities), the DRMO will handle it; all other spills, the DRMO will request assistance from the host per Appendix 5-1.

Emergency Response Procedures

Notification

DRMO employees discovering a spill or emergency situation will report to their supervisor via phone, radio or messenger. The supervisor will report to the DRMO Chief or alternate designated by the DRMO Chief. The DRMO Chief or his designee reports all incidents to the Defense Depot security desk Sergeant, x6677/6339. Information provided the desk sergeant is:

- Name and extension of the caller.
- Location of spill (building number, time, type of incident; e.g., spill, fire).
- Identity and quantity of substance involved -- to the best of his ability.
- Personnel injuries, if any.

Any action involving notification outside DDMT is done immediately as it is determined necessary. This notification is done via telephone at the direction of the DDMR OSC as stated in the overall DDMT Contingency Plan, Appendix 5-1.

Identification of Hazardous Materials

The manager of the HWSF, the DRMO Chief or designated alternate, will immediately identify the character, exact source, amount, and area/extent of the release. This will be accomplished by visual observation and/or review of records.

The containers will be stored in rooms according to their hazardous characteristics. Generally, the contents of a drum can be determined through a check of the operating record. If necessary, samples will be taken and tested to identify substance involved in the incident.

Hazard Assessment

The DDMT OSC, with assistance as shown in the contingency plan, Appendix 5-1, shall assess possible direct and indirect hazards to human health or to the environment that may result from a chemical release, fire, or explosion.

Control Procedures

The initial response to any emergency will be to protect human health and safety and then the environment. Identification, containment, treatment, and disposal assessment will be the secondary response. Initial response will be to have all people evacuate building (see Attachment 5 for evacuation plan).

(i) Fire and/or Explosion:

The DRMO facilities can easily be accessed by firefighting and other emergency vehicles and equipment. The Memphis Fire Department is available 24 hours a day to respond to any emergency.

In the event of a fire and/or explosion involving hazardous materials, the following actions will be taken:

1. First the Memphis Fire Department will be notified;
2. All doors in the HWSF will be closed;
3. Work in all areas will immediately cease;
4. Second the DDMT OSC will be contacted by the Security Desk Sergeant;
5. All personnel not actively fighting the fire will be evacuated according to instructions from the OSC;
6. All injured persons will be transferred to medical facilities for treatment.

The containers for which immediate removal is not possible will be isolated by placing non-reactive absorbent or diking material around them. When the leaking container(s) can be moved, it should be brought into the aisle where appropriate action -- overpacking or repackaging -- can be accomplished.

Most waste spills and leaks are easily contained within the building's storage rooms and can be collected with absorbent materials or pumped into containers because of the design of the building as stated above. The contaminated area can then be flushed with water or some other appropriate solvent. The rinsate and any contaminated absorbents will be containerized for disposal. Identification will be sufficient to determine the proper storage location.

Prevention of Recurrence or Spread of Fires, Explosions, or Releases

Procedures which will be followed to prevent the spread of fires, explosions, or releases were discussed in Section G-4d.

No processing equipment (valves or pipes) exists to be monitored for leaks or pressure build-up. After the incident has been cleaned up or the fire is out, the containers in the immediate room and adjacent rooms will be visually inspected for signs of deterioration and pressure build-up (bulging). The emergency coordinator will conduct monitoring activities as appropriate. Gas monitoring and detection equipment is available through the DDMT safety and health office.

The report of the incident will be prepared to assess the cause of the fire, explosion, or spill. This report will also indicate remedial actions which will be taken to prevent any recurrence of the hazardous situation.

Storage and Treatment of Released Material

DRMO-Memphis will store the hazardous waste resulting from a spill, fire, or explosion in accordance with its characteristics, using procedures that are used for any waste received. Storage will be at the HWSF.

If the hazardous waste storage building cannot be used, another storage area on the DRMO or DDMT will be used in emergency situations, while expediting contract removal of the hazardous wastes.

If a highly flammable material is released (and if deemed necessary) the following action will be taken:

1. All persons within the area of flammable influence will be notified;
2. All ignition sources will be eliminated;
3. Motor vehicles will be restricted or eliminated to avoid ignition of the vapor;
4. All persons within an appropriate evacuation distance radius of the source will be evacuated if the likelihood of an impending explosion is determined.

The Fire Chief will determine when the fire has been controlled while consulting with the DDMT OSC, and they both will determine when normal activities in the area can resume.

(ii) Release of Hazardous Waste to Air, Land or Water

The HWSF is composed of individual rooms, each designed to contain a spill. (That is, each room's spill containment capacity is 1,585 gallons for a large room and 165 gallons for a small room; the storage capacity is 9,240 and 1,320, respectively.) The most likely spill occurrence would be a spill of 1, 55-gallon drum or at most, a pallet load--165 gallons/3 55-gallon drums. Thus, spills will normally be contained within a room. If a spill occurs, releasing hazardous waste into the air, land, or water, it would be a spill where the DRMO has requested assistance from DDMT, who would follow procedures in the contingency plan (Appendix G-1) to control and clean up the spill. DRMO personnel would follow the notification procedure in Attachment 5. Then they may, at the direction of the OSC, return to the scene and aid in the containment of the spill and/or proceed to make the scene off limits to all unauthorized personnel.

Incompatible Waste

The OSC will insure that the waste resulting from the clean-up is properly stored, that is, no incompatible wastes are stored together. The OSC will insure that areas affected by the spill do not cause wastes that are incompatible to be stored together.

If the hazardous waste storage building cannot be used, another storage area on the DRMO or DDMT will be used in emergency situations, while expediting contract removal of the hazardous wastes.

Post-Emergency Equipment Maintenance

After an emergency event, all emergency equipment which was used will be cleaned or replaced so that it will be fit for its intended use. An inspection of all safety equipment will be conducted as discussed in Section F-2 before operations are resumed [40 CFR 264.56 (i)].

The commissioner and local authorities will be notified by telephone and followed up in writing that post-emergency equipment maintenance has been performed and operations will resume.

Container Spills and Leakage

Refer to the previous section for a discussion of emergency response procedures for container spills and leaks.

Emergency Equipment

The storage facility will be equipped with a sprinkler system. Portable fire extinguishers will be placed in strategic locations inside the facility. Two emergency eyewashes and showers will be located in the storage facility. A telephone will be installed in the facility and two-way radios will be used for communication purposes. Another telephone is located in the DRMO office. Equipment for containing and cleaning up spilled hazardous waste will be stored inside the HWSF. Materials available include adsorbents, shovels, brooms, and empty drums.

Protective clothing and equipment are provided to protect employees during normal and emergency operations. Protective eyewear, gloves, rubber boots, and plastic aprons are the minimum protective clothing required. First aid supplies are available in the main office of the DRMO complex. Additional equipment and supplies are available through DDMT; see Appendix 5-1, Base Contingency Plan.

Coordination Agreements

Appendix 5-2 is a copy of correspondence file communication dated 22 March 1974, wherein it is established that DDMT has no formal fire support agreement with the City of Memphis. This understanding remains in effect at this time. To clarify this position, the Memphis Fire Department considers all areas within the City as part of its responsibility. DDMT is located within the City limits.

Periodically a storage plan of the hazardous material and hazardous waste is provided the Memphis Fire Department.

DDMT has no formal medical support agreement with any local hospital/medical association. Any injured individual can request to be taken to the local emergency medical treatment center of their choice. Any injured employee who is not able to indicate a choice is taken to the most readily available facility capable of providing necessary support as determined by the emergency medical treatment personnel responding from Memphis City Fire Department.

Evacuation Plan

All emergencies require prompt and deliberate action. In the event of any major emergency, it will be necessary to follow an established set of procedures. Such established procedures will be followed as closely as possible; however, in specific emergency situations, the OSC may deviate from the procedures to provide a more effective plan for bringing the situation under control. The OSC is responsible for determining which emergency situations require plant evacuation.

In the event an evacuation from the HWSF is necessary, the following actions will be taken:

1. The signal, either an alarm horn or bell, will be sounded, then building evacuation will be activated.
2. No further entry of visitors, contractors, or trucks will be permitted. All vehicle traffic within the DRMO property will cease to allow the safe exit of personnel and movement of emergency equipment.
3. ALL personnel, visitors, and contractors will immediately leave the hazardous waste storage building.
4. No persons shall remain or re-enter the location unless specifically authorized by the person or persons calling for the evacuation. In allowing this, the person in charge assumes responsibility for those persons within the perimeter. Those within the fenced area will normally only include fire brigade personnel or emergency teams.
5. ALL persons will be accounted for by their immediate supervisors, and will leave the DRMO complex if directed by OSC. The DRMO foreman will ensure that personnel stay together and proceed to a safe location.
6. Re-entry into the facility will be made only after clearance is given by the OSC. Evacuation of additional personnel in the vicinity of the DRMO complex will be done by the DDMT OSC, in accordance with Appendix G-1, Spill Contingency Plan.

All personnel are trained in evacuation procedures and means of exit from their respective work areas. Drills are held regularly to practice these procedures.

Required Reports

Any emergency event (e.g., fire, explosion, etc.) that requires implementation of the contingency plan will be reported in writing within 15 days to the Tennessee Department of Environment and Conservation. A reporting form for emergency events is shown in Figure 5-1.

In addition, the DRMO as a tenant on the Defense Depot has internal reporting requirements. The following incidents require that a report be filed:

- All fires
- Chemical spills of more than five gallons (or smaller volumes if highly toxic materials are involved)

- All injuries except minor cuts and bruises
- All burns and chemical irritations
- All equipment damage due to malfunction or operating error
- All "near misses" of the above that could have had serious consequences.
- Petroleum products

Figure 5-1

REPORTING FORM FOR EMERGENCY EVENTS

Name, address, and phone number of owner or operator

Name, address, and phone number of facility

Date, time, and type of incident (e.g., fire, explosion, etc.)

Name and quantity of material(s) involved

Extent of injuries (if any)

Assessment of actual or potential hazards to human health or the environment
(if applicable)

Estimated quantity and disposition of material recovered from the incident

Send to: Department of Environment and Conservation
Division of Solid Waste Management
2510 Mt. Moriah, Suite E-645
Memphis, Tennessee 38115

DDMT-DW (Danny Chumney/6969)

19 Oct 1990

SUBJECT: Amendment of Spill Contingency Plan

THRU: DDMT-W

TO: DDMT-WI

1. In accordance with 40 CFR 264.54, the contingency plan must be reviewed, and immediately amended, if necessary, whenever:

(a) The facility changes - in its design, construction, operation, maintenance, or other circumstances...

(b) The list of emergency coordinators changes.

2. Amendments have been made to the plan and recertification is needed to complete the process. Please provide the appropriate certification and return the Plan NLT COB 2 Nov 90.

CHERYL P. BLAS
Manager, Safety, Health and
Environmental Office

COORDINATION / CONCURRENCE		
SYMBOL	SIGNATURE	ACTION
DDMT-DW	<i>Cheryl Blas</i>	<i>19 Oct 90</i>
DDMT-		
DDMT-		
DDMT-		

SPILL PREVENTION, CONTROL AND COUNTERMEASURE (SPCC) PLAN

INCLUDING

INSTALLATION SPILL CONTINGENCY PLAN (ISCP)

FOR

DEFENSE DEPOT MEMPHIS, TENNESSEE
2163 AIRWAYS BOULEVARD
MEMPHIS, TENNESSEE 38114

AUGUST 1994

CERTIFICATION

I hereby certify that I have examined the facility, and being familiar with the provisions of 40 CFR 112, attest that this SPCC Plan for Defense Depot Memphis, Tennessee has been prepared in accordance with good engineering practices:

Signature of Registered Professional Engineer

Printed Name of Registered Professional Engineer

DATE _____

Registration No.

State

I hereby certify that I have examined this SPCC Plan and acknowledge that all levels of management accept and will implement the plan.

DATE _____

Michael R. Rust
Columbus, USA

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DEFENSE DEPOT

MEMPHIS, TENNESSEE

SPILL PREVENTION, CONTROL AND COUNTERMEASURE (SPCC) PLAN

PART I OF SPCC

PART I

SECTION I

GENERAL INFORMATION

- A. MISSION OF THE INSTALLATION.** The Defense Depot Memphis, Tennessee, hereafter referred to as the Depot or DDMT, is one of six principal distribution depots in the Defense Logistics Agency (DLA) integrated wholesale distribution system. Its mission is the receipt, storage, maintenance, inventory and issue of clothing, textiles, general supplies, subsistence and medical supplies. Its major function is the distribution of those commodities to all military activities in the South Central Region consisting of the states of Texas, Oklahoma, Arkansas, Louisiana, and Tennessee, plus the overseas support for all military activities in the Caribbean area, including South America.
- B. OPERATION.**
1. Storage Area. Storage areas comprise by far the bulk of space required by the Depot. The three main areas, enclosed storage, covered storage and open storage are considered to be well located.
 - a. Enclosed Storage. Most of the area is of permanent construction. A minor amount of construction will be required to totally meet permanent construction criteria. As more covered and enclosed storage space is required, it may be obtained by conversion of open storage space.
 - b. Covered Storage. Concrete floor slabs in open sheds permit effective materials handling with solid tired equipment. The Depot does not have adequate covered storage space for metal items, flammable storage and hazardous materials.
 - c. Open Storage. Open storage is to continue in the same area. The area north of Dunn Avenue is used for open storage of bulk materials.
 2. Administrative Area. Buildings 144, 210, and 270 have primary office facilities. Small offices are located strategically throughout the warehousing area.
 3. Medical Storage. Medical Facility at Building 359 controlled temperature storage area. Area has 120,000 SF of controlled temperature space (59

degrees to 86 degrees F) and 9,100 SF of chilled space (35 degrees to 46 degrees F).

4. Materials Handling Equipment (MHE). MHE at the Depot includes various types of powered and non-powered equipment.. Powered equipment is driven either electrically, or by gasoline, propane, or diesel engine. Trucks, tractors, and forklift vehicles are the most predominant vehicles used to transport material and supplies at the Depot. These vehicles are modified to be used in either an indoor environment or outdoor environment. At this time, there are approximately 400 pieces of MHE on the Depot.

C. HOUSING AND OTHER FACILITIES:

1. Personnel Housing. There are four (4) duplex buildings containing eight family quarters on the depot for military officers. These units are located in the southeast section of the reservation and readily accessible to the Administration Building. These units are of Colonial townhouse design containing approximately 2,000 square feet per quarters. There is no housing provided for enlisted personnel or civilians.
2. Recreational Facilities. The Depot's recreational facilities consist of tennis/basketball/volleyball courts, a swimming pool, softball diamond, and a twenty (20) acre nine-hole golf course.
3. Fallout Shelter. The shelter is located in Building 359.
4. Cafeteria. A new cafeteria has recently been opened. It is located at the intersection of 2nd and K Streets.

D. TRANSPORTATION FACILITIES:

1. Roads and Streets. Access roads for entry to and exit from the Depot are considered adequate. Existing roads and streets within the Depot area will be retained in their present location and the entire net of primary and secondary roads are hard surfaced.
2. Railroads. Changes are contemplated in the railroads within the reservation. In event of future expansion, present tracks could be extended to serve additional facilities. New construction may require the rerouting or deletion of certain rail track sections. The Depot is adequately served by seven major railroads through switching arrangements with the Illinois Central Gulf, L&N and Burlington Northern Incorporated.

3. Water. Transportation by water is available at Memphis for shipments which can be transported via Mississippi River Port facilities.
4. Air. Facilities for air transportation are not planned in conjunction with the Depot. Necessary air shipments can be handled via commercial aircraft at Memphis International Airport, and military aircraft at the Naval Air Station, Millington, Tennessee and the Tennessee Air National Guard at the Memphis International Airport.

E. UTILITIES SYSTEMS. Water, natural gas and electricity are supplied by Memphis Light Gas and Water with ample quantities of electricity, natural gas and water supplies for future expansion.

F. FIRE PROTECTION. The Memphis Fire Department is charged with responding to fire calls within the Memphis City Limits. Since DDMT is inside the Memphis City Limits, the Memphis Fire Department will be called upon to provide fire protection. Therefore, DDMT does not have a formal agreement with the Memphis Fire Department.

SECTION II

INSTALLATION HISTORY

- A. LOCATION.** DDMT is located in the southern portion of the City of Memphis, Shelby County, Tennessee, in extreme southwestern portion of the State. DDMT is approximately five miles east of the Mississippi River and just northeast of the Interstate 240, Interstate 55 junction. The 260-hectare (ha) site was officially activated on 26 Jan 1942, as the Memphis General Depot. Construction actually began in June 1941 on an original 200-ha site and was completed in May 1942.
- B. MISSION AND FUNCTIONS.** From its inception, the DDMT mission and its functions have been related to the Army Engineer, Chemical and Quartermaster Services. DDMT also provided supply, stock control, storage and maintenance for all three services. During World War II (WWII), DDMT performed supply missions for the Signal and Ordnance technical services and served as a prisoner of war (POW) camp for 800 prisoners.
- C. STORAGE CAPACITY.** The storage capacity of DDMT has approximately 5.5 million square feet of covered storage space and 6.0 million square feet of open storage space. DDMT has held several designations over the years (see Table 1).
- D. PRINCIPAL DISTRIBUTION CENTER.** In 1963, the Defense Supply Agency (DSA), now DLA, selected the installation as one of its principal distribution centers for the complete range of DSA commodities. The U.S. Army released the installation to DSA, and on 1 Jan 1964, the installation became the Defense Depot Memphis. As a major DLA field element, it performs mission responsibilities for storage and distribution of Department of Defense (DOD) commodities within the south-central United States region.

Table 1. DDMT Designations

DATE	DESIGNATION
Jan. 1942	Memphis General Depot
July 1942	Memphis Quartermaster Depot
May 1943	Memphis Army Service Forces Depot
May 1946	Memphis General Depot
Aug. 1962	Memphis Army Depot
Jan. 1964	Defense Depot Memphis (under DLA)
1964	Defense Depot Memphis
1991	Defense Distribution Region Central
1993	Defense Distribution Depot Memphis, Tennessee

SECTION III

ENVIRONMENTAL SETTING

- A. LOCATION.** DDMT is located in Shelby County within the city limits of Memphis, Tennessee, approximately 4 miles from the downtown area. Situated on 642 acres, DDMT is bounded by Dunn Avenue on the north, Airways Boulevard on the east, Ball Road on the south, and Perry Road on the west.
- B. METEOROLOGY.** The U.S. Weather Bureau reports that average monthly temperatures range from 82 F in July to 41 F in January with an overall average of 62 F. Rainfall is fairly well distributed throughout the year and averages approximately 50 inches. Snowfall for the region averages 5.5 inches per year. Winds are predominant from the south with an average annual windspeed of 8.7 miles per hour. Relative humidity averages 70 percent for the year.
- C. BIOTA:**
1. General. The land on which DDMT is situated was originally cotton fields. The City of Memphis has expanded and surrounds DDMT.
 2. Flora. The natural flora in the unsurfaced areas are native Bermuda grass and occasional deciduous black oak (Quercus velutina). Several decorative species of shrubs and trees have been introduced over the years, via landscaping programs, and are concentrated in the housing area, golf course, administrative areas and lake.
 3. Fauna. Although a U.S. Army Corps of Engineers (COE) study (1975) lists several federally protected animals as occurring in the Memphis area, none of the listed fauna have been reported as observed on the installation. The most prevalent animal life are pests, i.e., roaches (Blattella germanica), RATS (Ratus noregicus), and mosquitos (Culex sp.), attracted by subsistence stocks. Lake Danielson has been stocked periodically with bass (Micropterus sp.) and bluegill (Lepomis sp.), and also contains catfish (Letalurus sp.). The lake is a closed system; therefore, the population is directly impacted by installation operations. Dunn Field is the only undisturbed natural open ground in the local area.

SECTION IV

GEOLOGY

- A. **PHYSIOGRAPHY.** DDMT lies within the East Gulf Coastal Plain section of the Coastal Plain physiographic province. This section is described as youthfully to maturely dissected belted coastal plain.
- B. **TOPOGRAPHY.** The terrain of the major portion of DDMT is fairly uniform. The elevation in the area south of Dunn Road, excluding the golf course, varies from 86 to 91-m mean sea level (MSL). The topography of the golf course area, which was not extensively altered by cut or fill or construction purposes, varies from 80 to 91-m MSL. Elevations in the area north of Dunn Road (Dunn Field) are generally around 91-m MSL, except for the northeast corner that varies from 80 to 91-MSL and the excavated bauxite storage area in the southwest corner, which has a 5-m to 10-m cutbank along its west side.
- C. **DRAINAGE.** Surface drainage on DDMT is almost completely controlled by an effective storm drainage system. The western border of Dunn Field has natural surface drainage that flows off the installation in the area of the outfalls along the western boundary. The outfalls on the northern boundary, including all of Dunn Field, flow into city ditches or small unnamed creeks. These creeks flow northerly into Cane Creek, which flows southwesterly into Nonconnah Creek. The outfalls along the eastern, western and southern boundaries flow into city ditches or small unnamed creeks that flow southerly into Nonconnah Creek. Nonconnah Creek flows westerly into McKellar Lake, an old river lake that empties directly into the Mississippi River to the west. There are (Number) National Pollutant Discharge Elimination System (NPDES) outfalls monitored quarterly and reported to the State of Tennessee. McKellar Lake is approximately 5 km west of the junction of Nonconnah and Cane Creeks.
- D. **SURFACE.** DDMT is situated in an area of gently rolling loess hills with approximately 33-m of relief. The Pleistocene Loess, a wind blown silt or silty clay (Table 2), was up to 12-m thick. Borings made after construction showed the thickness of the loess to vary from 4.5-m to greater than 9-m.

Table 2. Cenozoic Geologic Units Underlying the Memphis Area

SYSTEM	SERIES	GROUP	STRATIGRAPHIC UNIT	THICKNESS (FEET)	LITHOLOGY AND ENVIRONMENTAL SIGNIFICANCE
Quaternary	Holocene and Pleistocene		Alluvium	0-175	Sand, gravel, silt, and clay. Provides borrow material for fills and levees and some aggregates for concrete and bituminous mixes. Used as foundation material or base on which fill is placed for residences and light buildings in flood plains. Lower sand and gravel beneath Mississippi Alluvial Plain used as foundation material for heavy structures. Supplies water to a few industrial wells on President and Mud Islands.
	Pleistocene		Loess	0-65	Silt, silty clay, and minor sand. Used generally as foundation material for residences and light buildings in upland areas. Provides material for fills placed in low places and flood plains. Thick deposits utilized for waste disposal.
	Quaternary and Tertiary (?)		Fluvial deposits (terrace deposits)	0-100	Sand and gravel; minor ferruginous sandstone and clay. Provides most commercial aggregates for concrete and bituminous mixes. Used as a foundation material for heavy structures and high rise buildings in upland areas. Supplies water to many shallow

INSERT TABLE 2

Attachment 5-1
SPCC Part I - 8

APPENDIX E

INSTALLATION SPILL CONTINGENCY PLAN

REPORTABLE QUANTITIES LISTING

4. Cap the jars tightly with the Teflon-lined screw caps and shake for 5 minutes at 315 to 333 2-cm (0.75-inch) strokes per minute on a reciprocal shaker.

5. Remove the jars from the shaker, take water quality data, and add two acclimated fish per jar.

6. Aerate with 100 ± 15 bubbles per minute through a 1-ml serological pipette.

7. Observe and record mortalities, water quality, and behavioral changes each 24 hours.

8. After 96 hours, terminate the test, and calculate LC50 values and corresponding confidence limits.

Artemia.

1. Initiate the procedure for hatching the *Artemia* in sufficient time (approximately 48 hours) before the toxicity test is to be conducted so that 24-hour-old larvae are available.

2. With the use of a small pipette, transfer 20 *Artemia* into small beakers, each containing 20 ml of the proper synthetic seawater.

3. To prepare the test stock dispersant and oil solutions, add 550 ml of the artificial seawater to the prescribed blender jar. By means of a gas-tight glass syringe with a Teflon-tipped plunger, add 0.55 ml of the dispersant (or oil) and mix at 10,000 rpm for 5 seconds. To prepare the test stock oil/dispersant mixture, add 550 ml of the standard seawater to the blender jar. While the blender is in operation (10,000 rpm), add 0.5 ml of the oil, then 0.05 ml of the dispersant with the use of a calibrated syringe with a Teflon-tipped plunger. Blend for 5 seconds after adding the dispersant. One ml of these stock solutions added to the 100 ml of standard seawater in the test containers yields a concentration of 10 ppm dispersant, oil, or oil/dispersant combination (the test will be in a ratio of 1 part dispersant to 10 parts of oil).

4. Each test consists of 5 replications of each of 5 concentrations, of the material under study, a control series of 5 dishes, and a standard reference series of 5 different concentrations, a total of 35 dishes. Simultaneous performance of toxicity tests on the oil, dispersant, and oil/dispersant mixture requires a total of 105 dishes. Immediately after preparing the test solution of the dispersant or oil/dispersant solution, and using an appropriately sized syringe, draw up the necessary amount of test solution and dispense into each of the five containers in each series.

Each time a syringe is to be filled for dispensing to the series of test containers, start the mixer and withdraw the desired amount in the appropriate syringe while the mixer is in operation. Turn mixer off immediately after the sample is taken to limit the loss of volatiles. After adding the required amount of the test oil/dispersant or dispersant mixture, bring the volume of liquid in each of

Environmental Protection Agency

3. Conditions for use: water salinity, water temperature, types and ages of pollutants, VII(a). Toxicity (Dispersants and Surface Collecting Agents):

Materials tested	Species	LC50 (ppm)
Product	<i>Fundulus heteroclitus</i>	—96 hr
No 2 sub of	<i>Artemia salina</i>	—48 hr
Product and	<i>Fundulus heteroclitus</i>	—96 hr
No 2 sub	<i>Artemia salina</i>	—48 hr
at (1, 10)	<i>Fundulus heteroclitus</i>	—96 hr
	<i>Artemia salina</i>	—48 hr

VIII(b). Effective (Dispersants):

STANDARD EFFECTIVENESS TEST WITH NO. 6 FUEL OIL

Volume (ml) dispersant	Initial (10 min) mean percent dispersion	Final (2 hrs) mean percent dispersion
3		
10		
25		

Dosage causing 50 percent dispersion (from initial dispersion graph) is — ml.

Dosage causing 25 percent dispersion (from initial dispersion graph) is — ml.

VIII. Microbiological Analysis (Biological Additives).

IX. Physical Properties of Dispersant/Surface Collecting Agent:

1. Flash Point: (°F)
2. Pour Point: (°F)
3. Viscosity: — at —°F (furol seconds).
4. Specific Gravity: — at —°F.
5. pH: (10 percent solution if hydrocarbon based).

6. Surface Active Agents (Dispersants):

7. Solvents (Dispersants):
8. Additives (Dispersants):
9. Solubility (Surface Collecting Agents):
- X. Analysis for Heavy Metals and Chlorinated Hydrocarbons (Dispersants and Surface Collecting Agents):

Compounds	Concentration (ppm)
Arsenic	
Cadmium	
Chromium	
Copper	

If the submitter claims that the information presented under this subheading is confidential, this information should be submitted on a separate sheet of paper clearly labeled according to the subheading and entitled "Confidential Information."

Compounds	Concentration (ppm)
Lead	
Mercury	
Nickel	
Zinc	
Cyanide	
Chlorinated Hydrocarbons	

REFERENCES

- (1) L.T. McCarthy, Jr., I. Wilder, and J.S. Dorrier. *Standard Dispersant Effectiveness and Toxicity Tests*. EPA Report EPA-R2-73-201 (May 1973).
- (2) R.T. Rewick, H.C. Bailey, and J.H. Smith. *Evaluation of Oil Spill Dispersant Testing Requirements*, draft report submitted in partial fulfillment of EPA Contract No. 68-03-2621. U.S. Environmental Protection Agency, Oil and Hazardous Materials Spills Branch, Edison, New Jersey (September 1982).
- (3) R.T. Rewick, K.A. Sabo, J. Gates, J.H. Smith, and L.T. McCarthy, Jr. "An Evaluation of Oil Spill Dispersant Testing Requirements." *Proceedings, 1987 Oil Spill Conference*, Publication No. 4334. American Petroleum Institute, 1220 L Street, NW, Washington, DC 20005 (1981).

(49 FR 29199, July 18, 1984)

PART 302—DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION

Sec.

- 302.1 Applicability
- 302.2 Abbreviations
- 302.3 Definitions
- 302.4 Designation of hazardous substances quantities
- 302.5 Determination of reportable quantities
- 302.6 Notification requirements
- 302.7 Penalties

AUTHORITY: Sec. 102 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 9602, secs 311 and 301(a) of the Federal Water Pollution Control Act, 33 U.S.C. 1321 and 1361.

Source: 50 FR 13474, Apr. 4, 1985, unless otherwise noted.

§ 302.1 Applicability.

This regulation designates under section 102(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("the Act") those substances in the statutes referred to in section 101(14) of the

Act, identifies reportable quantities for these substances, and sets forth the notification requirements for releases of these substances. This regulation also sets forth reportable quantities for hazardous substances designated under section 311(b)(2)(A) of the Clean Water Act.

§ 302.2 Abbreviations.

- CASRN = Chemical Abstracts Service Registry Number
- RCRA = Resource Conservation and Recovery Act of 1976, as amended
- lb = pound
- kg = kilogram
- RQ = reportable quantity

§ 302.3 Definitions.

As used in this part, all terms shall have the meaning set forth below:

- "The Act," "CERCLA," or "Superfund" means the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Pub. L. 96-510);
- "Administrator" means the Administrator of the United States Environmental Protection Agency ("EPA");
- "Consumer product" shall have the meaning stated in 15 U.S.C. 2052;
- "Environment" means (1) the navigable waters, and the waters of the contiguous zone, and the ocean waters of which the natural resources are under the exclusive management authority of the United States under the Fishery Conservation and Management Act of 1976, and (2) any other surface water, ground water, drinking water supply, land surface or subsurface strata, or ambient air within the United States or under the jurisdiction of the United States;
- "Facility" means (1) any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft, or (2) any site or area where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located; but does not include any consumer product in consumer use or any vessel;
- "Hazardous substance" means any substance designated pursuant to 40 CFR Part 302;

"Hazardous waste" shall have the meaning provided in 40 CFR 261.3;

"Navigable waters" or "navigable waters of the United States" means waters of the United States, including the territorial seas;

"Offshore facility" means any facility of any kind located in, on, or under, any of the navigable waters of the United States, and any facility of any kind which is subject to the jurisdiction of the United States and is located in, on, or under any other waters, other than a vessel or a public vessel;

"Onshore facility" means any facility (including, but not limited to, motor vehicles and rolling stock) of any kind located in, on, or under, any land or non-navigable waters within the United States;

"Person" means an individual, firm, corporation, association, partnership, consortium, joint venture, commercial entity, United States Government, State, municipality, commission, political subdivision of a State, or any interstate body;

"Release" means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, but excludes (1) any release which results in exposure to persons solely within a workplace, with respect to a claim which such persons may assert against the employer of such persons, (2) emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station engine, (3) release of source, byproduct, or special nuclear material from a nuclear incident, as those terms are defined in the Atomic Energy Act of 1954, if such release is subject to requirements with respect to financial protection established by the Nuclear Regulatory Commission under section 170 of such Act, or for the purposes of section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act or any other response action, any release of source, byproduct, or special nuclear material from any processing site designated under section 102(a)(1) or 302; a) of the Uranium Mill Tailings Radiation Control Act of 1978, and (4) the normal application of fertilizer;

"Reportable quantity" means that quantity, as set forth in this part, the release of which requires notification pursuant to this part;

"United States" include the several States of the United States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the United States Virgin Islands, the Commonwealth of the Northern Marianas, and any other territory or possession over which the United States has jurisdiction; and "Vessel" means every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water.

§ 302.4 Designation of hazardous substances.

(a) Listed hazardous substances. The elements and compounds and hazardous wastes appearing in Table 302.4 are designated as hazardous substances under section 102(a) of the Act.

(b) Unlisted hazardous substances. A solid waste, as defined in 40 CFR 261.2, which is not excluded from regulation as a hazardous waste under 40 CFR 261.4(b), is a hazardous substance

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES
(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		Final RQ		
			RO	Code	RCRA Waste Number	Category	
Acetophenone	63329		1*	2		B	100 (45.4)
Acetylphenylene	209368	Ethanal	1*	2		D	5000 (2270)
Acetaldehyde	75070	Chloroacetaldehyde	1000	1,4	U001	C	1000 (454)
Acetaldehyde, chloro-	107200	Chloral	1*	4	P023	C	1000 (454)
Acetaldehyde, trichloro-	75876	1-Acetyl 2-thiourea	1*	4	U034	X	10 (4.54)
Acetamide, N-	591082		1*	4	P002	C	1000 (454)
(aminothio)ethyl-							
Acetamide, N (1-ethoxyphenyl)-	62442	Phenacetin	1*	4	U187	X	10 (4.54)
Acetamide, N-9H-	53963	2-Acetylaminothiourea	1*	4	U005	X	10 (4.54)
Acetamide, 2-fluoro-	640197	Fluoroacetamide	1*	4	P057	B	100(45.4)
Acetic acid	64197	Ethyl acetate	1000	1	U112	D	5000 (2270)
Acetic acid ethyl ester	141786	Fluoroacetic acid, sodium salt	1*	4	P058	A	10 (4.54)
Acetic acid butyrate	62748	Sodium salt	5000	1,4	U144	D	5000# (2270)
Acetic acid, lead salt	301042	Lead acetate	1*	4	U214	B	100 (45.4)
Acetic acid, thallium(I)	563688	Thallium(I) acetate	1*	4			
Acetic anhydride	108247		1000	4			
Acetic acid N-(methylcarbamoyl)-	1675275	Methylol	1*	4	P066	B	5000 (2270)
Acetic acid N-(1-hydroxyethyl)-							
Acetic acid N-(1-methyl ester)							
Acetone	67641	2-Propanone	1*	4	U002	D	5000 (2270)

under section 101(14) of the Act if it exhibits any of the characteristics identified in 40 CFR 261.20 through 261.24.

Note: The numbers under the column headed "CASRN" are the Chemical Abstracts Service Registry Numbers for each hazardous substance. Other names by which each hazardous substance is identified in other statutes and their implementing regulations are provided in the "Regulatory Synonyms" column. The "Statutory RQ" column lists the RQs for hazardous substances established by section 102 of CERCLA. The "Statutory Code" column indicates the statutory source for designating each substance as a CERCLA hazardous substance. "1" indicates that the statutory source is section 311(b)(4) of the Clean Water Act, "2" indicates that the source is section 307(a) of the Clean Water Act, "3" indicates that the source is section 112 of the Clean Air Act, and "4" indicates that the source is RCRA section 3001. The "RCRA Waste Number" column provides the waste identification numbers assigned to various substances by RCRA regulations. The column headed "Category" lists the code letters "X," "A," "B," "C," and "D," which are associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds, respectively. The "Pounds (kg)" column provides the reportable quantity for each hazardous substance in pounds and kilograms.

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—
Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds/(kg)
			RQ	Code			
Acetone cyanohydrin	75865	2 Methylacetonitrile Propanenitrile, 2- hydroxy-2-methyl-	10	1.4	P069	A	10 (4.54)
Acetonitrile	75058	Ethanimine, N-phenyl-	1*	4	U003	D	5000 (2270)
3-(4-chlorophenyl)-4-hydroxycoumarin and salts	81812	Warfarin	1*	4	P001	B	100 (45.4)
Acetophenone	98862	Ethanone, 1-phenyl-	1*	4	U004	D	5000 (2270)
2-Acetylaminofluorene	53983	Acetamide, N-phenyl- fluoren-2-yl-	5000	4	U005	X	1# (0.454)
Acetyl bromide	50897	Ethanoyl chloride	5000	1	U006	D	5000 (2270)
Acetyl chloride	75345	Acetamide, N-	5000	1.4	P002	D	5000 (2270)
1-Acetyl-2-thiourea	591082	(aminothiosemethyl)-	1*	4	U007	C	1000 (454)
Acrolein	107028	2-Propenal	1*	1.2,4	P003	X	1 (0.454)
Acrylamide	78081	2-Propenamide	1*	4	U007	X	5000 (2270)
Acrylic acid	79107	2-Propenoic acid	1*	4	U008	D	5000 (2270)
Acrylonitrile	107131	2-Propenenitrile	100	1.2,4	U008	B	100# (45.4)
Adipic acid	124046		5000	4	U150	D	5000 (2270)
Alanna, 3-(p-butyl-2-chloroethylamino)phenyl-L-	148823	Meqthalan	1*	4	U150	X	1# (0.454)
Aldicarb	116063	Propenal, 2-methyl-2-(methylthio)-O-(methylamino)carbamoyloams.	1*	4	P070	X	1 (0.454)
Aldrin	309002	1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-1,4,5,8-endo,endo-dimethanonaphthalene	1	1.2,4	P004	X	1# (0.454)
Allyl alcohol	107186	2-Propen-1-ol	100	1.4	P005	B	100 (45.4)
Allyl chloride	107051		1000	1	P005	C	1000 (454)
Aluminum phosphide	20839736		1*	4	P006	B	100 (45.4)
Aluminum sulfide	10043013		5000	1	U328	D	5000 (2270)
2-Amino-1-methylbenzene	95534	o-Toluidine	1*	4	U328	X	1# (0.454)
4-Amino-1-methylbenzene	108490	p-Toluidine	1*	4	U353	X	1# (0.454)
5-(Aminoethyl)-3-isoxazolone	2763964	3(2H)-isoxazolone, 5-	1*	4	P007	C	1000 (454)
4-Aminopyridine	504245	4-Pyridinamine	1*	4	P008	C	1000 (454)
Amitrole	81825	1H,1,2,4-Triazol-3-amine	100	4	U011	B	100 (45.4)
Ammonia	7664417		5000	1		D	5000 (2270)
Ammonium acetate	631818		5000	1		D	5000 (2270)
Ammonium benzoate	1863834		5000	1		D	5000 (2270)
Ammonium bicarbonate	1066337		1000	1		D	5000 (2270)
Ammonium bichromate	7789095		1341497	5000		B	100# (45.4)
Ammonium bisulfide	10192300		5000	1		D	5000 (2270)
Ammonium bisulfite	1111780		5000	1		D	5000 (2270)
Ammonium carbonate	508276		5000	1		D	5000 (2270)
Ammonium chlorate	12125029		1000	1		D	5000 (2270)
Ammonium chromate	7784989		5000	1		D	5000 (2270)
Ammonium citrate, dibasic	3012655		5000	1		D	5000 (2270)
Ammonium fluoride	13826830		5000	1		D	5000 (2270)
Ammonium fluoborate	12125018		5000	1		B	100 (45.4)
Ammonium hydroxide	1336216		1000	1		D	1000 (454)
Ammonium hydroxide, 60% solution	6009707		5000	1		D	5000 (2270)
Ammonium oxalate	5972736		14258492	1		D	5000 (2270)

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds/(kg)
			RQ	Code			
Ammonium picrate	131748	Phenol 2,4,6-trimethoxy- ammonium salt	1*	4	P008	A	10 (4.54)
Ammonium picolinate	16918190		1000	1		C	1000 (454)
Ammonium sulfamate	7772060		5000	1		D	5000 (2270)
Ammonium sulfide	12135761		5000	1		B	100 (45.4)
Ammonium sulfite	10196040		5000	1		D	5000 (2270)
Ammonium tartrate	14307438		5000	1		D	5000 (2270)
Ammonium thiocyanate	3164292		5000	1		D	5000 (2270)
Ammonium thiosulfate	1782954		5000	1		D	5000 (2270)
Ammonium veratrate	7783188		5000	1		C	1000 (454)
Amly acetate iso-	629837	Vanadic acid ammonium salt	1000	1	P119	D	5000 (2270)
sec-	123822						
tert-	628360						
tert-	625161						
Aniline	82533	Benzeneamine	1000	1.4	U012	D	5000 (2270)
Anthracene	120127		1*	2		D	5000 (2270)
Antimony trichloride	7440080		1*	2		D	5000 (2270)
ANTIMONY AND COMPOUNDS							
Antimony pentachloride	7647189		1000	1		C	1000 (454)
Antimony potassium tartrate	28300745		1000	1		B	100 (45.4)
Antimony tribromide	7789619		1000	1		C	1000 (454)
Antimony trichloride	10025819		1000	1		C	1000 (454)
Antimony trisulfide	7783564		1000	1		C	1000 (454)
Antimony trioxide	1309844		5000	1		C	1000 (454)
Aroclor 1018	12674112	Polychlorinated biphenyls (PCBs)	10	1.2		A	10# (4.54)
Aroclor 1221	11104282	Polychlorinated biphenyls (PCBs)	10	1.2		A	10# (4.54)
Aroclor 1232	11141185	Polychlorinated biphenyls (PCBs)	10	1.2		A	10# (4.54)
Aroclor 1242	53468219	Polychlorinated biphenyls (PCBs)	10	1.2		A	10# (4.54)
Aroclor 1248	12672296	Polychlorinated biphenyls (PCBs)	10	1.2		A	10# (4.54)
Aroclor 1254	11097881	Polychlorinated biphenyls (PCBs)	10	1.2		A	10# (4.54)
Aroclor 1260	11066825	Polychlorinated biphenyls (PCBs)	10	1.2		A	10# (4.54)
Arsenic trichloride	7440382		1*	2.3	P010	X	1# (0.454)
Arsenic acid	1327522		1*	4		X	1# (0.454)
ARSENIC AND COMPOUNDS							
Arsenic disulfide	1303328	Arsenic trioxide	5000	1		D	5000# (2270)
Arsenic(III) oxide	1327533	Arsenic pentoxide	5000	1.4	P012	D	5000# (2270)
Arsenic(V) oxide	1303282	Arsenic(V) oxide	5000	1.4	P011	D	5000# (2270)
Arsenic pentoxide	1303282	Arsenic(V) oxide	5000	1.4	P011	D	5000# (2270)
Arsenic trichloride	7784341		5000	1		D	5000# (2270)
Arsenic trioxide	1327533	Arsenic(III) oxide	5000	1.4	P012	D	5000# (2270)
Arsenic trisulfide	1303339		5000	1		D	5000# (2270)
Arsine, diethyl-	692422	Diethylarsine	1*	4	P038	X	1# (0.454)
Asbestos 1:1	1332214		1*	2.3		X	1# (0.454)
Auramine	492808	Benzeneamine 4,4'-carbonyldiethylaniline	1*	4	U014	X	1# (0.454)
Azaserine	115026	dimethyl-L-serine diacetate (ester)	1*	4	U015	X	1# (0.454)
Azidine	151564	1,1,1-triazine	1*	4	P054	X	1# (0.454)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds(kg)
			RQ	Code			
3,4-Benzopyrene	50328	Benz[<i>a</i>]pyrene	1*	2,4	U022	X	1# (0.454)
p-Benzquinone	10514	1,4-Cyclohexadienedione	1*	4	U197	A	10 (4.54)
Benzotrifluoride	98077	Benzene trichloromethyl-	1*	4	U023	X	1# (0.454)
Benzoyl chloride	98884		1000	1	U050	C	1000 (454)
1,2-Benzophenanthrene	218019	Chrysene	1*	2,4	P028	B	1# (0.454)
Benzyl chloride	100447	Benzene, chloromethyl-	100	1,4	P015	X	100# (45.4)
Benzyl alcohol	7440417	Benzyl alcohol	1*	2,3,4	P015	X	1# (0.454)
BERYLLIUM AND COMPOUNDS							
Beryllium chloride	7787475	Beryllium	5000	1		D	5000# (2270)
Beryllium dust	7440417	Beryllium	1*	2,3,4	P015	X	1# (0.454)
Beryllium fluoride	7787487	Beryllium fluoride	5000	1		D	5000# (2270)
Beryllium nitrate	13597894	Beryllium nitrate	5000	1		D	5000# (2270)
alpha - BHC	310846	Hexachlorocyclohexane	1*	2		X	1# (0.454)
beta - BHC	310857	Hexachlorocyclohexane	1*	2		X	1# (0.454)
gamma - BHC	58889	Hexachlorocyclohexane (gamma isomer)	1	1,2,4	U129	X	1# (0.454)
delta - BHC	310868	Lindane	1*	2		X	1# (0.454)
2,2-Bisoxane	1464535	1,2,3,4-Dioxaphthalane	1*	4	U085	X	1# (0.454)
(1,1'-Biphenyl)-4,4'-diamine	92875	Benzidine	1*	2,4	U021	X	1# (0.454)
(1,1'-Biphenyl)-4,4'-diamine,3,3'-dichloro-	91941	3,3'-Dichlorobenzidine	1*	2,4	U073	X	1# (0.454)
(1,1'-Biphenyl)-4,4'-diamine,3,3'-dimethoxy-	119904	3,3'-Dimethoxybenzidine	1*	4	U091	X	1# (0.454)
(1,1'-Biphenyl)-4,4'-diamine,3,3'-dimethyl-	119927	3,3'-Dimethylbenzidine	1*	4	U095	X	1# (0.454)
Bis(2-chloroethyl) ether methane	111911	Ethane, 1,1'-[methylenebis(oxy)]bis(2-chloro-	1*	2,4	U024	C	1000 (454)
Bis (2-chloroethyl) ether	111444	Dichloroethyl ether	1*	2,4	U025	X	1# (0.454)
Bis(2-chloroethoxy) ether	109601	Chloro-chloro-	1*	2,4	U027	C	1000 (454)
Bis(chloromethyl) ether	542881	Propane, 2,2'-oxybis(2-chloro-	1*	4	P016	X	1# (0.454)
Bis(methylthiocarbonyl) disulfide	132288	Methane, oxybis(chloro-	1*	4	U244	A	10 (4.54)
Diethylphthalate	117817	Thram	1*	2,4	U028	X	1# (0.454)
Bromine cyanide	506683	1,2-Benzenedicarbonylic acid, [bis(2-ethylthio-)] ester	1*	4	U246	C	1000 (454)
Bromotoluene	598312	Cyanogen bromide	1*	4	P017	C	1000 (454)
Bromobenzene	75252	2-Propanone, 1-bromo-	1*	2,4	U225	B	100 (45.4)
4-Bromophenyl phenyl ether	101553	Methane, tetrabromo-	1*	2,4	U030	B	100 (45.4)
Brucine	357373	Benzene, 1-bromo-4-phenoxy-	1*	4	P018	B	100 (45.4)
1,3-Butadiene	87683	Styrene, 1,3-	1*	2,4	U128	X	1# (0.454)
1-Butanol	924163	Hexachlorobutadiene	1*	4	U172	X	1# (0.454)
1-Butanone	305033	N-Nitrosod-n-butylamine	1*	4	U035	X	1# (0.454)
2-Butanone	71363	Chlorambucil	1*	4		D	5000 (2270)
2-Butanone peroxide	78933	n-Butyl alcohol	1*	4	U031	D	5000 (2270)
	1338234	Methyl ethyl ketone	1*	4	U159	D	10 (4.54)
		Methyl ethyl ketone peroxide	1*	4	U160	A	10 (4.54)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds(kg)
			RQ	Code			
2-Butenal	123739	Crotonaldehyde	100	1,4	U053	B	100 (45.4)
2-Butene, 1,4-dichloro-	4170003	1,4-Dichloro-2-butene	1*	4	U074	X	1 (0.454)
Butyl acetate	764410		5000	1		D	5000 (2270)
Butyl alcohol	110190		1*	4	U031	D	5000 (2270)
n-Butyl alcohol	71363	1-Butanol	1000	1		C	1000 (454)
Butylamine	109739		1*	2		B	100 (45.4)
Butylamine	78819		1000	1		A	10 (4.54)
Butylamine	513495		1*	2		D	5000 (2270)
Butylamine	13952846		100	1,2,4	U069	A	10 (4.54)
Butylamine	75949		1*	2		X	1# (0.454)
Butylamine	85987		100	1,2,4		B	100# (45.4)
Butylamine	84742	1,2-Benzenedicarbonylic acid, dibutyl ester	5000	1		D	5000 (2270)
Butylamine	107928	Di-n-butyl phthalate	1*	4	U136	X	1# (0.454)
Butylamine	79312		1*	2		X	1# (0.454)
Butylamine	75605	Hydroxymethylmethacrylate	100	1		B	100# (45.4)
Butylamine	7440439		1000	1		C	1000# (45.4)
Butylamine	543908		1000	1		B	1000# (45.4)
Butylamine	7789428		1000	1		C	1000# (45.4)
Butylamine	10108642		1000	1		C	1000# (45.4)
Butylamine	7778441		1000	1		A	10 (4.54)
Butylamine	52740166		5000	1		C	1000# (45.4)
Butylamine	75207		1000	1,4	U032	C	1000# (45.4)
Butylamine	13765190	Chromic acid, calcium salt	10	1,4	P021	A	10 (4.54)
Butylamine	592018		1000	1		C	1000 (454)
Butylamine	28264082	Calcium dodecylbenzene sulfonate	100	1		A	10 (4.54)
Butylamine	7778543	Calcium hypochlorite	100	1,2,4	P123	A	1# (0.454)
Butylamine	6001352	Camphene, octachloro-	10	1		A	1# (0.454)
Butylamine	133962	Capitan	1*	4	U238	X	1# (0.454)
Butylamine	51796	Carbamic acid, ethyl ester	1*	4	U178	X	1# (0.454)
Butylamine	815532	Carbamic acid, methylthio-, ethyl ester	1*	4		X	1# (0.454)
Butylamine	759739	Carbamate, N-ethyl-N-nitroso-	1*	4	U176	X	1# (0.454)
Butylamine	664935	Carbamate, N-methyl-N-nitroso-	1*	4	U177	X	1# (0.454)
Butylamine	62566	Thiourea	1*	4	U219	X	1# (0.454)
Butylamine	630104	Selenourea	1*	4	P103	C	1000 (454)
Butylamine	79447	Dimethylcarbamoyl chloride	100	1		B	100 (45.4)
Butylamine	63252	Carbonyl fluoride	10	1		A	10 (4.54)
Butylamine	1563662	Carbon disulfide	5000	1,4	P022	B	100 (45.4)
Butylamine	75150	Carbon disulfide	5000	1,4	P022	B	100 (45.4)
Butylamine	6533739	Thallium(I) carbonate	1*	4	U215	B	100 (45.4)
Butylamine	79221	Methyl chloroacetate	1*	4	U156	C	1000 (45.4)
Butylamine	353504	Carbonyl fluoride	1*	4	U033	C	1000 (45.4)
Butylamine	56235	Methane tetrachloro	5000	1,2,4	U211	D	5000# (2270)
Butylamine	75445	Phosgene	5000	1,4	P095	A	10 (4.54)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[See footnotes at end of Table 302.4]

[See footnotes at end of Table 302.4]

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds/kg
			RQ	Code†			
Carbonyl fluoride	353504	Carbon oxyfluoride	1*	4	U033	C	1000 (454)
Chloral	75876	Acetaldehyde, trichloro-	1*	4	U034	X	1# (0.454)
Chlorambucil	305033	Sulfonic acid, 4-[(2-2-chloroethylamino) benzene-	1*	4	U035	X	1# (0.454)
CHLORDANE (TECHNICAL MIXTURE AND METABOLITES)			1*	2			**
Chlordane	57749	Chlordane, technical 4,7-dibromododecyl, 1,2,4,5,6,7,8,9-octachloro-3a,4,7,7b-tetrahydro-	1	1,2,4	U036	X	1# (0.454)
Chlordane, technical	57749	Chlordane, technical 4,7-dibromododecyl, 1,2,4,5,6,7,8,9-octachloro-3a,4,7,7b-tetrahydro-	1	1,2,4	U036	X	1# (0.454)
CHLORINATED BENZENES							
CHLORINATED ETHANES							
CHLORINATED NAPHTHALENE							
CHLORINATED PHENOLS							
Chlorine	7782505	Cyanogen chloride	10	1	P033	A	10 (4.54)
Chlorine cyanide	508774	2-Naphthylamine, N,N-bis(2-chloroethyl)-	10	1,4	U026	X	1# (0.454)
Chloromethane	494031	Acetaldehyde, chloro-	1*	4	P023	C	1000 (454)
Chloroacetaldehyde	107200	Acetaldehyde, chloro-	1*	2			**
CHLOROALKYL ETHERS							
p-Chloroanisole	106478	Benzene, 4-chloro-	1*	4	P024	B	100 (45.4)
Chlorobenzene	100907	Benzene, chloro-	100	1,2,4	U037	C	100 (45.4)
4-Chloro-m-cresol	59507	p-Chloro-m-cresol methyl-	1*	2,4	U039	D	5000 (2270)
p-Chloro-m-cresol	59507	4-Chloro-m-cresol methyl-	1*	2,4	U039	D	5000 (2270)
Chlorobromomethane	124481	Phenol, 4-chloro-3-methyl-	1*	2	U041	B	100 (45.4)
1-Chloro-2,3-epoxypropane	108898	Epichlorohydrin	1000	1,4		C	1000# (454)
Chloroethane	75003	Oxirane, 2-(chloromethyl)-	1*	2	U042	B	100 (45.4)
2-Chloroethyl vinyl ether	110758	Ethene, 2-chloroethoxy	5000	2,4	U044	C	1000 (454)
Chloroform	67663	Methane, trichloro-	1*	1,2,4	U046	X	5000# (2270)
Chloromethyl methyl ether	107202	Methane,	1*	4			1# (0.454)
beta-Chloronaphthalene	91587	Chloronaphthalene	1*	2,4	U047	D	5000 (2270)
2-Chloronaphthalene	91587	Naphthalene, 2-chloro-beta-Chloronaphthalene	1*	2,4	U047	D	5000 (2270)
2-Chlorophenol	95578	Naphthalene, 2-chloro-o-Chlorophenol	1*	2,4	U048	B	100 (45.4)
o-Chlorophenol	95578	Phenol, 2-chloro-	1*	2,4	U048	B	100 (45.4)
4-Chlorophenyl ether	7005723	Phenol, 2-chloro-	1*	2		D	5000 (2270)
1-(o-Chlorophenyl)thiourea	5344821	Thiourea, (2-chlorophenyl)-	1*	4	P026	B	100 (45.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds/kg
			RQ	Code†			
3-Chloropropionitrile	542767	Propanenitrile, 3-chloro-	1*	4	P027	C	1000 (454)
Chlorosulfonic acid	7790945	Benzenamine, 4-chloro-	1000	1		C	1000 (454)
4-Chloro-o-toluidine, hydrochloride	3165933	Benzenamine, 4-chloro-2-methyl-, hydrochloride	1*	4	U049	X	1# (0.454)
Chlorpyrifos	2921882		1	1		X	1 (0.454)
Chromic acetate	1066204		1000	1		C	1000 (454)
Chromic acid	11115745		1000	1		C	1000# (454)
Chromic acid, calcium salt	7738945	Calcium chromate	1000	1,4	U032	C	1000# (454)
Chromic sulfate	10101538		1000	1		C	1000 (454)
Chromium II	7440473		1*	2		X	1# (0.454)
CHROMIUM AND COMPOUNDS							
Chromium chloride	10049055	1,2-Benzophenanthrene	1000	1	U050	C	1000 (454)
Chrysene	218019		1*	2,4		X	1# (0.454)
Coal-tar bromide	7789437		1000	1		C	1000# (454)
Coal-tar formalin	544183		1000	1		C	1000 (454)
Coal-tar sulfonates	14017415		1000	1		C	1000 (454)
Coal-tar emulsions	N.A.		1*	3		X	1# (0.454)
Copper I	7440508		1*	2		D	5000 (2270)
COPPER AND COMPOUNDS							
Copper cyanide	544923		1*	4	P028	A	10 (4.54)
Coumathep	56724		10	1		X	10 (4.54)
Coumathep	6001589		1*	4	U051	X	1# (0.454)
Cresol(s)	1318773	Cresylic acid	1000	1,4	U052	C	1000# (454)
m-Cresol	108384						
o-Cresol	95487						
p-Cresol	106445						
Cresylic acid	1318773	Cresol(s)	1000	1,4	U052	C	1000# (454)
m-Cresol	108394						
o-Cresol	95487						
p-Cresol	106445						
Crotonaldehyde	123739	2-Butenal	100	1,4	U053	B	100 (45.4)
Cumene	142712	Benzene, 1-methyl-ethyl-	1*	4	U055	D	5000 (2270)
Cupric acetate	12002038		100	1		B	100 (45.4)
Cupric acetoarsenite	7447394		100	1		B	100 (45.4)
Cupric chloride	3251238		100	1		A	10 (4.54)
Cupric nitrate	5892683		100	1		B	100 (45.4)
Cupric oxalate	7758987		100	1		B	100 (45.4)
Cupric sulfate	10380297		100	1		A	10 (4.54)
Cupric sulfate ammoniated	815827		100	1		B	100 (45.4)
Cupric tartrate	57125		1*	2	P030	A	10 (4.54)
CYANIDES							
Cyanides (soluble cyanide salts), not elsewhere specified	460195	Bromine cyanide	1*	4	P031	B	100 (45.4)
Cyanogen	506683	Chlorine cyanide	1*	4	U246	C	1000 (454)
Cyanogen bromide	508774	Chlorine cyanide	10	1,4	P033	A	10 (4.54)
Cyanogen chloride	106514	p-Benzocoumarone	1*	4	U197	A	10 (4.54)
1,4-Cyclohexanedione	110827	Benzene, hexahydro-	1000	1,4	U056	C	1000 (454)
Cyclohexane	108341	Hexachlorocyclopentadiene	1*	4	U057	D	5000 (2270)
1,3-Cyclopentanediene	77474	Diene	1	1,2,4	U130	X	1# (0.454)
1,2,3,4,5,5-hexachloro-cyclophosphamide	50180	2H-1,3,2-Oxazaphosphorine 2-thioethylamino) tetrahydro-2-oxide	1*	4	U058	X	1# (0.454)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[See footnotes at end of Table 302.4]

[See footnotes at end of Table 302.4]

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds(kg)
			RO	Code			
2,4-Dichlorophenoxyacetic acid salts and esters	94757	2,4-D Acid	100	1,4	U240	B	100 (45.4)
Dichlorophenylarsine	696286	2,4-D salts and esters	1*	4	P026	X	1# (0.454)
Dichloropropene	26638187	Phenyl dichloroarsine	5000	1		C	1000 (454)
1,1-Dichloropropene	78699						
1,3-Dichloropropene	142280	Propylene dichloride	5000	1,2,4	U083	C	1000 (454)
Dichloropropene	78675		5000	1		B	100# (45.4)
Dichloropropene (mixture)	8003198		5000	1		B	100 (45.4)
Dichloropropene(s)	26952228	Propene 1,3-dichloro-	5000	1,2,4	U084	B	100# (45.4)
2,3-Dichloropropene (isomer)	78696		5000	1		D	5000 (2270)
1,3-Dichloropropene	542756						
2,2-Dichloropropionic acid	75090						
Dichlorvos	82737	1,2,3,4,10,10-Hexachloro-8,7-epoxy-	10	1	P037	A	10 (4.54)
Dieldrin	80871	1,4,4,4,3,8,7,8,8-octahydro-amb,iso-1,4,5,8-dimethanonaphthalene	1	1,2,4		X	1# (0.454)
1,2,3,4-Diisopropylidene	1464535	2,2'-Bisoxazone	1*	4	U085	X	1# (0.454)
Diethylarsine	109897		1000	1		B	100 (45.4)
Diethylarsine	692422	Arsine diethyl-	1*	4	P036	X	1# (0.454)
1,4-Dioxane dioxide	123811	1,4-Dioxane	1*	4	U106	X	1# (0.454)
N,N-Diethylhydrazine	1613801	Hydrazine, 1,2-diethyl-	1*	4	U086	X	1# (0.454)
O,O-Diethyl S-(2-ethylthio)ethyl phosphorothioate	298044	Disulfoton	1	1,4	P038	X	1 (0.454)
O,O-Diethyl S-methyl phosphorothioate	3268152	Phosphorothioic acid, O,O-diethyl S-methyl ester	1*	4	U087	D	5000 (2270)
Diethyl-p-nitrophenyl phosphonate	311455	Phosphoric acid diethyl p-nitrophenyl ester	1*	4	P041	B	100 (45.4)
Diethyl phthalate	84662	1,2-Benzenedicarboxylic acid, diethyl ester	1*	2,4	U088	C	1000 (454)
O,O-Diethyl O-pyrazinyl phosphorothioate	297872	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester	1*	4	P040	B	100 (45.4)
Diethylstilbestrol	56531	4,4'-Stilbenediol	1*	4	U089	X	1# (0.454)
1,2-Dihydro-3,6-pyridazinedione	123331	Malic hydrate	1*	4	U148	D	5000 (2270)
Dihydrostilole	94586	Benzene, 1,2-methylenebis(4-propyl-)	1*	4	U090	X	1# (0.454)
Diisopropyl fluorophosphate	55814	Phosphoric acid bis(1-methylethyl) ester	1*	4	P043	B	100 (45.4)
Dimethylate	60515	Phosphorothioic acid, O,O-dimethyl S-(2-iminopyridinyl)-2-oxoethyl ester	1*	4	P044	A	10 (4.54)
3,3-Dimethylbenzidine	119804	(1,1'-Biphenyl)-4,4'-diamine 3,3'-dimethyl-	1*	4	U091	X	1# (0.454)
Dimethylamine	124403	4,4'-Diamine 3,3'-dimethyl-	1000	1,4	U092	C	1000 (454)
7,12-Dimethylbenz[e]anthracene	57976	1,2-Benzanthracene 7,12-dimethyl-	1*	4	U094	X	1# (0.454)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		Final RQ	
			RQ	Code	Category	Pounds(Kg)
Duron	330541		100	1	B	100 (45.4)
Dodecylbenzenesulfonic acid	27176970		1000	1	C	1000 (454)
Endosulfan	115297	5-Norbornene-2,3-dimethanol, 1,4,5,6,7,7-hexachloro, cyclic sulfoxide	1	1,2,4	X	1 (0.454)
alpha-Endosulfan	959988		1*	2	X	1 (0.454)
beta-Endosulfan	33219859		1*	2	X	1 (0.454)
ENDOSULFAN AND METABOLITES			1*	2	X	1 (0.454)
Endosulfan sulfate	1031078		1*	2	X	1 (0.454)
Endosulfan	145733	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid	1*	4	C	1000 (454)
Endrin	72208	1,2,3,4,10,10-Hexachloro-8,7-epoxy-1,4,8,5,8,7,8b-octahydro-endo,endo-dimethanonaphthalene	1	1,2,4	X	1 (0.454)
Endrin aldehyde	7421934		1*	2	X	1 (0.454)
ENDRIN AND METABOLITES			1*	2	X	1 (0.454)
Epichlorohydrin	106808	1-Chloro-2,3-epoxypropane	1000	1,4	C	1000# (454)
Epinephrine	51434	Oxirane, 2-(chloromethyl) (chloromethyl) hydroxy-2-	1*	4	C	1000 (454)
Ethanal	75070	(methylamino)methyl acetate	1000	1,4	C	1000 (454)
Ethanol	122008	alpha, alpha-Dimethylphenethylamine	1*	4	D	5000 (2270)
Ethanolamine, N-ethyl-N-methyl-	55185	N-Norododecylamine	1*	4	X	1# (0.454)
Ethanolamine, N-ethyl-N-methyl-	108934	Ethylene dibromide	1000	1,4	C	1000# (454)
Ethane, 1,2-dibromo-	75343	1,1-Dichloroethane	1*	2,4	C	1000 (454)
Ethane, 1,1-dichloro-	107062	Ethylidene dichloride	5000	1,2,4	D	5000# (2270)
Ethane, 1,2-dichloro-	87721	Hexachloroethane	1*	2,4	X	1# (0.454)
Ethane, 1,1,1,2,2,2-hexachloro-	111911	Hexachloroethane	1*	2,4	X	1# (0.454)
Ethane, 1,1'-oxybis(2-chloro-)	60297	Bis(2-chloroethyl) ether	1*	4	B	100 (45.4)
Ethane, 1,1'-oxybis(2-chloro-)	111444	Bis (2-chloroethyl) ether	1*	2,4	X	1# (0.454)
Ethane, pentachloro-	78017	Dichloroethyl ether	1*	4	X	1# (0.454)
Ethane, 1,1,1,2,2-pentachloro-	630208	Pentachloroethane	1*	4	X	1# (0.454)
Ethane, 1,1,1,2,2-pentachloro-	78045	Tetrachloroethane	1*	2,4	X	1# (0.454)
Ethane, 1,1,2,2-tetrachloro-	78005	Tetrachloroethane	1*	2,4	X	1# (0.454)
Ethane, 1,1,2-trichloro-	72435	1,1,2-Trichloroethane	1	1,4	X	1 (0.454)
Ethane, 1,1,1-trichloro-2,2-bis(p-methoxyphenyl)-	111546	Ethylenebis (dihydrocarbamoyl)	1*	4	D	5000 (2270)
Ethanedithiocarbamic dihydroxy acid	75058	Acetonitrile	1*	4	D	5000 (2270)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		Final RQ	
			RQ	Code	Category	Pounds(Kg)
Ethanesulfamide	62555	Thioacetamide	1*	4	X	1# (0.454)
Ethanol, 2,2-	1116547	N-Norododecylamine	1*	4	X	1# (0.454)
Ethanol, 1-phenyl-	98862	Acetophenone	1*	4	D	5000 (2270)
Ethanol, 1-phenyl-	75385	Acetyl chloride	5000	1,4	D	5000 (2270)
Ethanolamine, N-methyl-N-norodo-	4549400	Nitrosomethylamine	1*	4	X	1# (0.454)
Ethene, chloro-	75014	Vinyl chloride	1*	2,3,4	X	1# (0.454)
Ethene, 2-chloroethyl-	110758	2-Chloroethyl vinyl ether	1*	2,4	C	1000 (454)
Ethene, 1,1-dichloro-	75354	1,1-Dichloroethylene	5000	1,2,4	D	5000# (2270)
Ethene, 1,1,2,2-	127184	Vinylidene chloride	1*	2,4	X	1# (0.454)
Ethene, 1,1,2,2-tetrachloro-	159605	Tetrachloroethylene	1*	2,4	C	1000 (454)
Ethene, trans-1,2-dichloro-	563122	1,2-trans-Dichloroethylene	10	1	A	10 (4.54)
Ethanol	110805	Ethylene glycol	1*	4	X	1# (0.454)
Ethyl acetate	141786	Ethylene glycol monoethyl ether	1*	4	D	5000 (2270)
Ethyl acetate	140885	Acetic acid, ethyl ester	1*	4	D	1000 (454)
Ethyl acetate	100414	2-Propanoic acid, ethyl ester	1000	1,2	C	1000 (454)
Ethylbenzene	51796	Carbonyl acid, ethyl ester	1*	4	X	1# (0.454)
Ethyl carbamate (Urethane)	107120	Propanoic acid, ethyl ester	1*	4	A	10 (4.54)
Ethyl cyanide	510158	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl) alpha-hydroxy- ethyl ester	1*	4	X	1# (0.454)
Ethyl 4,4'-dichlorobenzilate	108934	Ethylene dibromide	1000	1,4	D	1000# (454)
Ethylene dibromide	107062	Ethylene dichloride	5000	1,2,4	C	5000# (2270)
Ethylene dichloride	75218	Ethane, 1,2-dichloro-	1*	4	X	1# (0.454)
Ethylene oxide	111546	Oxirane	1*	4	D	5000 (2270)
Ethylenebis (dihydrocarbamoyl)	107153	Ethanedithiocarbamic dihydroxy acid	1000	1	D	5000 (2270)
Ethylamine	60004	Ethylamine	5000	1	D	5000 (2270)
Ethylamine	110805	2-Ethoxyethanol	1*	4	X	1# (0.454)
Ethylamine	96457	2-Imidazolidinethione	1*	4	X	1# (0.454)
Ethylamine	15154	Azidine	1*	4	X	1# (0.454)
Ethyl ether	80297	Ethane, 1,1'-oxybis	1*	4	B	100 (45.4)
Ethylene dichloride	75343	1,1-Dichloroethane	1*	2,4	C	1000 (45.4)
Ethyl methacrylate	87632	Ethane, 1,1-dichloro-2-propanoic acid, 2-methyl-, ethyl ester	1*	4	C	1000 (45.4)
Ethyl methanesulfonate	62500	Methanesulfonic acid, ethyl ester	1*	4	X	1# (0.454)
Famphur	52857	Phosphorothioic acid O,O-dimethyl-O [(p-(dimethylamino)sulfonyl]phenyl] ester	1*	4	C	1000 (45.4)
Ferric ammonium citrate	1185575		1000	1	C	1000 (45.4)
Ferric ammonium sulfate	2944674		1000	1	C	1000 (45.4)
Ferric chloride	5548874		1000	1	C	1000 (45.4)
Ferric dextran	7705680		1*	4	D	5000 (2270)
Ferric fluoride	904664		100	1	B	100 (45.4)
Ferric nitrate	7781508		1000	1	C	1000 (45.4)
	1042484	Iron dextran ***	1000	1	C	1000 (45.4)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—
Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Final RQ Pounds(Kg)
			RQ	Code		
Ferric sulfate	10028225		1000	1		
Ferrous ammonium sulfate	10045893		1000	1		
Ferrous chloride	7758943		100	1		
Ferrous sulfate	7720787		1000	1		
Fluoroacetic acid, sodium salt	62748	Acetic acid, fluoro-sodium salt	1*	4	P058	10 (4.54)
Fluoranthene	206440	Benzol[1]fluorene	1*	2,4	U120	100 (45.4)
Fluorene	88737		1*	2		5000 (2270)
Fluorine	7782414		1*	4	P056	10 (4.54)
Fluoroacetamide	840197	Acetamide, 2-fluoro-	1*	4	P057	100 (45.4)
Formaldehyde	50000	Methylene oxide	1000	1,4	U122	1000 (454)
Formic acid	64108	Methanoic acid	5000	1,4	U123	5000 (2270)
Formic acid, mercury(II) salt	628864	Mercury formate	1*	4	P085	10 (4.54)
Fumaric acid	110178		5000	4		5000 (2270)
Furan	110008	Furfural	1*	4	U124	100 (45.4)
Furan, tetrahydro-	100998	Tetrahydrofuran	1*	4	U213	1000 (454)
2-Furancarboxaldehyde	98011	Furfural	1000	1,4	U125	5000 (2270)
2,5-Furandione	108316	Maleic anhydride	5000	1,4	U147	5000 (2270)
Furfural	98011	2-Furancarboxaldehyde	1000	1,4	U125	5000 (2270)
Furfuran	110008	Furan	1*	4	U124	100 (45.4)
D-Glucopyranose 2-deoxy-2-(3-methyl-3-nitrosoureido)-glycidylaldehyde	765344	1-Propenal, 2,3-epoxy-	1*	4	U126	1 (0.454)
Guaridine, N-nitroso-methyl-N'-nitro-	70257	N-Methyl-N'-nitro-N-nitrosoguanidine	1*	4	U163	1 (0.454)
Guaiacol	86500		1*	2		1 (0.454)
HALOMETHANES						
Heptachlor	76448	4,7-Methano-1H-indene-1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-	1*	2		1 (0.454)
HEPTACHLOR AND METABOLITES						
Heptachlor epoxide	1024373		1*	2		1 (0.454)
Heptachlorobenzene	118844	Benzene, heptachloro-	1*	2,4	U127	1 (0.454)
Heptachlorobutadiene	87683	1,3-Butadiene, 1,1,2,3,4,4,4-heptachloro-	1*	2,4	U128	1 (0.454)
HEXANE (all isomers)						
Hexachlorocyclohexane (gamma isomer)	608731	gamma-BHC	1*	2		1 (0.454)
Hexachlorocyclopentadiene	58899	Lindane	1	1,2,4	U129	1 (0.454)
Hexachlorocyclopentadiene	77474	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	1	1,2,4	U130	1 (0.454)
Hexachlorocyclopentadiene	72208	Endrin	1	1,2,4	P051	1 (0.454)
Hexachlorocyclopentadiene	60571	Dieldrin	1	1,2,4	P037	1 (0.454)
Hexachlorocyclopentadiene	67721	Ethane 1,1,1,2,2,2-hexachloro-	1*	2,4	U131	1 (0.454)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—

Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds(kg)
			RQ	Code			
Methane, dichlorodifluoro-	75718	Dichlorodifluoromethane	1*	4	U075	D	5000 (2270)
Methane, iodide	74884	Methyl iodide	1*	4	U138	X	1# (0.454)
Methane, oxybis(chloro-	542881	Bis(chloromethyl) ether	1*	4	P016	X	1# (0.454)
Methane, tetrachloro-	56235	Carbon tetrachloride	5000	1.4	U111	D	5000# (2270)
Methane, tetraortho-	509148	Tetraorthomethane	1*	4	P022	D	10 (4.54)
Methane, tribromo-	75252	Bromotrimethane	1*	2.4	U025	B	100 (45.4)
Methane, trichloro-	67663	Chloroform	5000	1.4	U044	D	5000# (2270)
Methane, trichloroaur-	75694	Trichloroauric acid	1*	4	U121	D	5000 (2270)
Methanesulfonic acid, ethyl ester	62500	Ethyl methanesulfonate	1*	4	U119	X	1# (0.454)
Methanethiol	74931	Methylmercaptan	100	1.4	U153	B	100 (45.4)
Methylsulfenyl chloride	594423	Trichloromethylsulfenyl chloride	1*	4	P118	B	100 (45.4)
4,7-Methano-1H-indeno[1,4,5-b]7,8-benzofluorene	76448	Heptachlor	1	1.4	P059	X	1# (0.454)
Methanoic acid	64186	Formic acid	5000	1.4	U123	D	5000 (2270)
4,7-Methanobenzofluorene	57749	Chlordane	1	1.4	U026	X	1# (0.454)
Methanol	67561	Methyl alcohol	1*	4	U154	D	5000 (2270)
Methylpyrene	91805	Pyridine, 2-(2-(dimethylamino)ethyl)-	1*	4	U155	D	5000 (2270)
Methylol	16752775	Acetic acid, N-[(methylcarbamoyloxy)thio-, methyl ester, 2,2-bis(p-phenyl)-	1*	4	P066	B	100 (45.4)
Methylolol	72435	Ethane, 1,1,1-trichloro-	1	1.4	U247	X	1 (0.454)
Methylololol	67561	Methanol	1*	4	U154	D	5000 (2270)
Methylololol	75558	1,2-Propylene glycol	1*	4	P067	X	1# (0.454)
Methylololol	74839	Methane, bromo-	1*	2.4	U029	C	100 (45.4)
Methylololol	504609	1,3-Pentadiene	1*	4	U186	B	100 (45.4)
Methylololol	74873	Methane, chloro-	1*	2.4	U045	X	1# (0.454)
Methylololol	79221	Carbonylchloric acid, methyl ester	1*	4	U156	C	1000 (454)
Methylololol	71556	1,1,1-Trichloroethane	1*	2.4	U226	C	1000 (454)
Methylololol	101144	Benzene, 4,4'-methylenebis(2-chloro-	1*	4	U158	X	1# (0.454)
Methylololol	70304	Hexachlorobenzene	1*	4	U132	B	100 (45.4)
Methylololol	56495	Benz[1]aceanthrylene, 1,2-dihydro-3-methyl	1*	4	U157	X	1# (0.454)
Methylololol	74953	Methane, dibromo-	1*	4	U068	C	1000 (454)
Methylololol	75092	Methane, dichloro-	1*	2.4	U080	C	1000 (454)
Methylololol	50000	Formaldehyde	1000	1.4	U122	D	1000# (454)
Methylololol	78933	2-Butanone	1*	4	U159	D	5000 (2270)
Methylololol	1338234	2-Butanone peroxide	1*	4	U160	A	10 (4.54)
Methylololol	60314	Hydrazine, methyl-	1*	4	P068	A	10 (4.54)
Methylololol	74884	Methane, iodide	1*	4	U138	X	1# (0.454)
Methylololol	108101	4-Methyl-2-pentanone	1*	4	U161	D	5000 (2270)
Methylololol	624839	Isocyanic acid, methyl ester	1*	4	P064	X	1# (0.454)
Methylololol	75865	Acetone cyanohydrin	10	1.4	P069	A	10 (4.54)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—

Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds(kg)
			RQ	Code			
Keptone	143500	Decachlorooctahydro-1,3,4-methano-2H-cyclobut[e,d]pentalen-2-one	1	1.4	U142	X	1# (0.454)
Lasocarpine	303344		1*	4	U143	X	1# (0.454)
Lead	7439921		1*	2	U144	D	5000# (2270)
Lead acetate	301042	Acetic acid, lead salt	1*	2		D	5000# (2270)
LEAD AND COMPOUNDS							
Lead arsenate	7784409		5000	1		D	5000# (2270)
Lead chloride	7645252		5000	1		B	100# (45.4)
Lead fluoride	7758954		5000	1		B	100# (45.4)
Lead fluoride	13814965		5000	1		B	100# (45.4)
Lead fluoride	7783462		5000	1		B	100# (45.4)
Lead iodide	10101830		5000	1		B	100# (45.4)
Lead nitrate	10099748		5000	1		B	100# (45.4)
Lead phosphate	7448277	Phosphoric acid, lead salt	1*	4	U145	X	1# (0.454)
Lead stearate	7428480		5000	1		D	5000# (2270)
Lead subacetate	1072351		1*	4	U146	X	1# (0.454)
Lead sulfate	52632592		5000	1		B	100# (45.4)
Lead sulfate	58189094		5000	1		B	100# (45.4)
Lead sulfide	1373907		5000	1		D	5000# (2270)
Lead sulfide	7448142		5000	1		B	100# (45.4)
Lead thioyanate	1314870		5000	1		B	100# (45.4)
Lindane	592870	gamma - BHC	1	1.4	U129	X	1# (0.454)
Lithium chromate	14307358	Hexachlorocyclohexane (gamma isomer)	1000	1		C	1000# (454)
Malathion	121755		10	1		B	100 (45.4)
Maleic acid	110167		5000	1		D	5000 (2270)
Maleic anhydride	108316	2,5-Furandione	5000	1.4	U147	D	5000 (2270)
Maleic hydrazide	123331	1,2-Dihydro-3-benzopyridazinone	1*	4	U148	D	5000 (2270)
Malononitrile	109773	Propanedinitrile	1*	4	U149	C	1000 (454)
Melphalan	148823	Alanine, 3-(p-bis(2-chloroethyl)amino)phenyl-L-	1*	4	U150	X	1# (0.454)
Mercuriodimethyl	2032657		100	1		A	10 (4.54)
Mercuric cyanide	592941		10	1		X	1 (0.454)
Mercuric nitrate	10048640		10	1		A	10 (4.54)
Mercuric sulfate	7783359		10	1		A	10 (4.54)
Mercuric thioyanate	592858		10	1		A	10 (4.54)
Mercurous nitrate	10415755		10	1		A	10 (4.54)
Mercury	7439978		1*	2.4	U151	X	1 (0.454)
MERCURY AND COMPOUNDS							
Mercury (acetato-	62384	Phenylmercuric acetate	1*	4	P092	B	100 (45.4)
Mercury (phenyl-	628664	Fumic acid mercury(II) salt	1*	4	P065	A	10 (4.54)
Mercury (thio-	126987	2-Propenylmercuric, 2-methyl-	1*	4	U152	C	1000 (454)
Methacrylonitrile	124403	Dimethylamine	1000	1.4	U092	C	1000 (454)
Methanamine N-methyl	74839	Methyl bromide	1*	2.4	U029	C	1000 (454)
Methane bromo-	74873	Methyl chloride	1*	2.4	U045	X	1# (0.454)
Methane chloro-	107302	Chloromethyl methyl ether	1*	4	U046	X	1# (0.454)
Methane	74853	Methylene bromide	1*	4	U068	C	1000 (454)
Chloromethoxy	75092	Methylene chloride	1*	2.4	U090	C	1000 (454)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

[See footnotes at end of Table 302.4]

[See footnotes at end of Table 302.4]

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		Regulatory Synonyms	CASRN	Regulatory Synonyms	Statutory		Final RQ
			RD	Code				RD	Code	
5-Norbornene-2,3-dimethanol 1,4,5,6,7,7-heptachloro cyclic sulfide	115297	Endosulfan	1	1,2,4	P050			1*	4	100 (454)
Octamethylpyrophosphoramide	152169	Diphosphoramide, octamethyl-	1*	4	P085			1*	4	100 (454)
Osmium oxide	20816120	Osmium tetroxide	1*	4	P087			1*	4	1000 (454)
7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid	20816120	Osmium oxide	1*	4	P088			1*	4	1000 (454)
1,2-Oxathiolane 2,2-dioxane	1120714	1,3-Propane sulfone	1*	4	U193			1*	4	1# (0 454)
2H-1,3,2-Oxazaphosphorine, 2-[bis(2-chloroethyl)amino] tetrahydro-2-oxide	50180	Cyclophosphamide	1*	4	U058			1*	4	1# (0 454)
Oxirane, 2-(chloromethyl)-	75218	Ethyleneoxide	1*	4	U115			1*	4	1# (0 454)
Paralomaldehyde	106806	1-Chloro-2,3-epoxypropane	1000	1,4	U041			1000	1,4	1000# (454)
Paraldehyde	30525494	Epichlorohydrin	1000	1	U182			1000	1	1000 (454)
Parathion	123837	1,3,5-Trioxane, 2,4,6-trimethyl-	1*	4	P089			1*	4	1# (0 454)
Pentachlorobenzene	56382	Phosphorothioic acid bis(1-methylethyl) ester	1	1,4				1	1,4	10 (4 54)
Pentachloroethane	608935	Benzene, pentachloro-	1*	4	U183			1*	4	10 (4 54)
Pentachloronitrobenzene	76017	Ethane, pentachloro-	1*	4	U184			1*	4	1# (0 454)
Pentachlorophenol	82888	Benzene, pentachloro-	1*	4	U185			1*	4	1# (0 454)
1,3-Pentadiene	87865	Phenol, pentachloro-	10	1,2,4	U242			10	1,2,4	10# (4 54)
Phenacetyl	504809	1-Methylbutadiene	1*	4	U186			1*	4	100 (454)
Phenanthrene	82442	Acetamide, N-(4-ethoxyphenyl)-	1*	4	U187			1*	4	1# (0 454)
Phenol, 2-chloro-	85018	Benzene hydroxy-	1000	2				1000	2	5000 (2270)
Phenol, 2,4-dinitro-6-methyl-	108552	2-Chlorophenol	1000	1,2,4	U188			1000	1,2,4	1000 (454)
Phenol, 2,4-dinitro-6-methyl-, end salts	95578	o-Chlorophenol	1*	2,4	U048			1*	2,4	100 (454)
Phenol, 4-chloro-3-methyl-	59507	p-Chlorophenol	1*	2,4	U038			1*	2,4	5000 (2270)
Phenol, 2-cyclohexyl-4,6-dinitro-	131895	4,8-Dinitro-o-cresol	1*	4	P024			1*	4	100 (454)
Phenol, 2,4-dichloro-	120022	Cyclohexylphenol	1*	2,4	U081			1*	2,4	100 (454)
Phenol, 2,6-dichloro-	87650	2,4-Dichlorophenol	1*	4	U082			1*	4	100 (454)
Phenol, 2,4-dimethyl-	105679	2,6-Dichlorophenol	1*	2,4	U101			1*	2,4	100 (454)
Phenol, 2,4-dinitro-	51285	2,4-Dinitrophenol	1000	1,2,4	P048			1000	1,2,4	100 (4 54)
Phenol, 2,4-dinitro-6-(1-methylpropyl)-	88857	Dinitrophenol	1*	4	P020			1*	4	1000 (454)
Phenol, 2,4-dinitro-6-methyl-, end salts	534521	4,6-Dinitro-o-cresol and salts	1*	2,4	P047			1*	2,4	10 (4 54)
Phenol, 4-nitro-	100027	p-Nitrophenol	1000	1,2,4	U170			1000	1,2,4	100 (454)
Phenol, pentachloro-	87665	m-Nitrophenol	10	1,2,4	U242			10	1,2,4	10# (4 54)
Phenol, 2,3,4,6-tetrachloro-	58902	Pentachlorophenol	1*	4	U212			1*	4	10 (4 54)
Phenol, 2,4,5-trichloro-	95954	Tetrachlorophenol	10	1,4	U230			10	1,4	10# (4 54)
Phenol, 2,4,6-trichloro-	88062	2,4,6-Trichlorophenol	1*	1,2,4	U231			1*	1,2,4	10# (4 54)
Phenol, 2,4,6-trinitro- ammonium salt	131748	Ammonium picrate	1*	4	P009			1*	4	10# (4 54)
Phenyl dichloroarsine	696286	Dichlorophenylarsane	1*	4	P036			1*	4	1# (0 454)
Phenylseleniopyrene	193395	Indano[1,2,3-cd]pyrene	1*	2,4	U137			1*	2,4	1# (0 454)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—
Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		Final RO	
			RO	Code	Category	Pounds(Kg)
Sodium dodecylbenzene sulfonate	25155300		1000	1	C	1000 (454)
Sodium fluoroaluminate	7681484		5000	1	C	1000 (454)
Sodium fluoride	16721805		5000	1	D	5000 (2270)
Sodium hydrosulfide	1310732		1000	1	C	1000 (454)
Sodium hydroxide	7681529		100	1	B	100 (45.4)
Sodium hypochlorite	10022705		1000	1	C	1000 (454)
Sodium methylate	124414		1000	1	B	100 (45.4)
Sodium nitrite	7632000		100	1	B	100 (45.4)
Sodium phosphate dibasic	7558794		5000	1	D	5000 (2270)
Sodium phosphate tribasic	10740635		5000	1	D	5000 (2270)
Sodium selenite	7782623		1000	1	B	100 (45.4)
4,4'-Subbenedol, alpha, alpha, -diethyl- Streptozocin	56531	Diethylsuberol	1*	4	X	1# (0.454)
Strontium chromate	7780082	D-Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-	1*	4	X	1# (0.454)
Strontium sulfide	1314981	Strychnine and salts	10	1,4	A	10 (4.54)
Strychnen-10-one, and salts	57249	Brucine	1*	4	B	100 (45.4)
Strychnen-10-one, 2,3-dimethoxy-	357573	Strychnan-10-one, and salts	10	1,4	A	10 (4.54)
Strychnine and salts	57249	Hydrogen sulfide	1000	1	C	1000 (454)
Styrene	100425	Hydro-sulfuric acid	100	1,4	B	100 (45.4)
Sulfur hydride	7783004	Phosphorus pentasulfide	1000	1	C	1000 (454)
Sulfur monochloride	12771083	Phosphorus sulfide	100	1,4	B	100 (45.4)
Sulfur phosphide	1314903	Selenium disulfide	1*	4	X	1# (0.454)
Sulfur selenide	7488564	Dimethyl sulfide	1000	1	C	1000 (454)
Sulfur acid	7664939	Thalium(I) sulfide	100	1,4	B	100 (45.4)
Sulfuric acid, dimethyl ester	8014957	2,4,5-T acid acetic acid	100	1,4	C	1000 (454)
Sulfuric acid, thallium(I) salt	77781	2,4,5-Trichlorophenoxy acetic acid	100	1,4	C	1000 (454)
2,4,5-T	83765		100	1	D	5000 (2270)
2,4,5-T acid	83765		100	1	C	1000 (454)
2,4,5-T amines	2008460		100	1	C	1000 (454)
2,4,5-T esters	6389966		100	1	C	1000 (454)
2,4,5-T esters	6389977		100	1	C	1000 (454)
2,4,5-T esters	1319728		100	1	C	1000 (454)
2,4,5-T esters	2813147		100	1	C	1000 (454)
2,4,5-T esters	91798		100	1	C	1000 (454)
2,4,5-T esters	2545597		100	1	C	1000 (454)
2,4,5-T esters	6192072		100	1	C	1000 (454)
2,4,5-T esters	1928478		100	1	C	1000 (454)
2,4,5-T salts	25168154		100	1	C	1000 (454)
2,4,5-T salts	11560991		100	1	C	1000 (454)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—
Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		ACRA Waste Number	Category	Final RO
			RO	Code			
TDE	72548	DDD	1	1,2,4	U060	X	1# (0.454)
1,2,4,5-Tetrachlorodiphenyl ether	95943	Dichlorodiphenyl ether	1*	4	U207	D	5000 (2270)
1,2,3,7,8-Pentachlorodibenzop-dioxin (TCDD)	1746016	Benzene, 1,2,4,5-tetrachloro	1*	2		X	1# (0.454)
1,1,1,2-Tetrachloroethane	630206	Ethane, 1,1,1,2-tetrachloro-	1*	4	U208	X	1# (0.454)
1,1,2,2-Tetrachloroethane	79345	Ethane, 1,1,2,2-tetrachloro-	1*	2,4	U209	X	1# (0.454)
1,1,2,2,3,3-Hexachloroethane	127184	Ethane, 1,1,2,2-tetrachloro-	1*	2,4	U210	X	1# (0.454)
2,3,4,6-Tetrachlorophenol	58902	Phenol, 2,3,4,6-tetrachloro-	1*	4	U212	A	10 (4.54)
Tetrahydrophosphoric acid	3699245	Dihydrophosphoric acid, tetraethyl ester	1*	4	P109	B	100 (45.4)
Tetraethyl lead	78002	Pb(CH ₃) ₄	100	1,4	P110	A	10# (4.54)
Tetraethyl pyrophosphate	107493	Pyrophosphoric acid, tetraethyl ester	100	1,4	P111	A	10 (4.54)
Tetrahydrofuran	109999	Furan, tetrahydro-	1*	4	U213	C	1000 (454)
Tetrahydrofuran	509148	Methane, tetrahydro-	1*	4	P112	A	10 (4.54)
Tetrahydrofuran	757384	Hexaethyl ether	1*	4	P062	B	100 (45.4)
Tetrahydrofuran	1314325	Tetrahydrophosphate	1*	4	P113	B	100 (45.4)
Thalium(I) acetate	7440280	Thalium(I) oxide	1*	2		C	1000 (454)
Thalium(I) acetate	583688	Acetic acid, thallium(I) salt	1*	4	U214	B	100 (45.4)
Thalium(I) carbonate	6533739	Carbonic acid, thallium(I) salt	1*	4	U215	B	100 (45.4)
Thalium(I) chloride	7791120	Thalium(I) chloride	1*	4	U216	B	100 (45.4)
Thalium(I) nitrate	10102451	Thalium(I) nitrate	1*	4	U217	B	100 (45.4)
Thalium(I) oxide	1314325	Thalium(I) oxide	1*	4	P113	B	100 (45.4)
Thalium(I) selenide	12038520	Thalium(I) selenide	1*	4	P114	C	1000 (454)
Thalium(I) sulfate	7446186	Sulfuric acid, thallium(I) salt	1000	1,4	P115	B	100 (45.4)
Thioacetamide	10031591	Ethanethioamide	1*	4	U218	X	1# (0.454)
Thioanox	62555	3,3-Dimethyl-1-(methylthio)-butanone O-(methylamino) carbonyl oxime	1*	4	P045	B	100 (45.4)
Thiomethoxy carbonyl diamide	541537	2,4-Dithioburet	1*	4	P049	B	100 (45.4)
Thiomethanol	74931	Methanethiol	100	1,4	U153	B	100 (45.4)
Thiophenol	108985	Methylmercaptan	1*	4	P014	B	100 (45.4)
Thiourea	79196	Benzeneethiol	1*	4	P116	B	100 (45.4)
Thiourea (2-chlorophenyl)	62566	Hydrazinecarbothioamide	1*	4	U219	X	1# (0.454)
Thiourea (2-chlorophenyl)	5344821	Carbamide, thio	1*	4	P026	B	100 (45.4)
Thiourea (2-chlorophenyl)	86884	Chlorophenylthiourea	1*	4	P072	B	100 (45.4)
Thiourea (2-chlorophenyl)	103855	alpha-Naphthylthiourea	1*	4	P093	B	100 (45.4)
Thiourea (2-chlorophenyl)	137268	N-Phenylthiourea	1*	4	U244	A	10 (4.54)
Thiourea (2-chlorophenyl)	108883	Bis-(dimethylamino) disulfide	1000	1,2,4	U220	C	1000 (454)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—

Continued

Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds(kg)
			RQ	Code			
Triphenylamine	95607 25376458 498720	Diaminotoluene	1*	4	U221	X	1# (0.454)
Toluene dicyanate	823405 584848	Benzene, 2,4-dicyanatomethyl-	1*	4	U223	B	100 (45.4)
o-Toluidine	91087 26471825 95534	2-Amino-1-methylbenzene	1*	4	U226	X	1# (0.454)
p-Toluidine	108480	4-Amino-1-methylbenzene	1*	4	U353	X	1# (0.454)
o-Toluidine hydrochloride	638215	Benzonitrile, 2-methyl-	1*	4	U222	X	1# (0.454)
Tosaphene	8001352	Hydrochloride	1	1,2,4	P123	X	1# (0.454)
2,4,5-TP acid	93721	Propionic acid, 2-(2,4,5-trichlorophenyl)-	100	1,4	U233	B	100 (45.4)
2,4,5-TP acid esters	32534955	Solvent	100	1	U011	B	100 (45.4)
1H-1,2,4-Triazol-3-amine	61825	Azide	1000	1	U011	X	1# (0.454)
Trichloronitroethane	53888	Methyl chloroform	1000	2	U226	B	100 (45.4)
1,2,4-Trichlorobenzene	120821	Ethane, 1,1,2-trichloro-	1*	2,4	U227	C	1000 (454)
1,1,1-Trichloroethane	78005	Trichloroethylene	1*	2,4	U228	X	1# (0.454)
1,1,2-Trichloroethane	78016	Trichloroethylene	1000	1,2,4	U228	C	1000# (454)
Trichloroethene	78016	Trichloroethylene	1000	1,2,4	U228	C	1000# (454)
Trichloroethylene	78016	Trichloroethylene	1000	1,2,4	U228	C	1000# (454)
Trichloromethanesulfonyl chloride	584423	Methanesulfonyl chloride, trichloro-	1*	4	P118	B	100 (45.4)
Trichloromethane	75884	Methane, trichloro-	1*	4	U121	D	5000 (2270)
Trichlorophenol	25187822 15950660	Phenol, 2,4,5-trichloro-	10	1	U121	A	10# (4.54)
2,4-Trichlorophenol	933788	Phenol, 2,4,5-trichloro-	1000	1	U121	A	10# (4.54)
2,4,6-Trichlorophenol	933755	Phenol, 2,4,6-trichloro-	1000	1	U121	A	10# (4.54)
2,4,5-Trichlorophenol	95954	Phenol, 2,4,5-trichloro-	1000	1	U121	A	10# (4.54)
2,4,6-Trichlorophenol	88062	Phenol, 2,4,6-trichloro-	1000	1	U121	A	10# (4.54)
2,4,5-Trichlorophenol	800198	Phenol, 2,4,5-trichloro-	1000	1	U121	A	10# (4.54)
2,4,6-Trichlorophenol	95954	Phenol, 2,4,6-trichloro-	1000	1	U121	A	10# (4.54)
2,4,5-Trichlorophenol	88062	Phenol, 2,4,5-trichloro-	1000	1	U121	A	10# (4.54)
2,4,6-Trichlorophenol	80785	Phenol, 2,4,6-trichloro-	1000	1	U121	A	10# (4.54)
Trichlorophenylacetic acid	128727	2-(2,4,5-trichlorophenyl)acetic acid	1*	4	U235	X	1# (0.454)
Triethanolamine	27232417	2,2,2-Tris(2-hydroxyethyl)aminoethane	1000	1	U235	C	1000 (454)
Triethylamine	121448	Triethylamine	5000	1	U235	D	5000 (2270)
Triethylamine	75503	Triethylamine	1000	1	U235	B	100 (45.4)
syn-Triethylbenzene	98354	Benzene, 1,3,5-trimethyl-	1*	4	U234	A	10 (4.54)
1,3,5-Trioxane, 2,4,6-trimethyl-	129837	Paraldehyde	1*	4	U182	C	1000 (454)
Tri(2,3-dibromopropyl)phosphite	128727	i-Propanol, 2,3-dibromo-, phosphite (3:1)	1*	4	U235	X	1# (0.454)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds(kg)
			RQ	Code			
ZINC AND COMPOUNDS			1*	2			**
Zinc acetate	557346		1000	1		C	1000 (454)
Zinc ammonium chloride	52628258		5000	1		C	1000 (454)
Zinc borate	1332078		1000	1		C	1000 (454)
Zinc bromide	7699456		5000	1		C	1000 (454)
Zinc carbonate	3496359		1000	1		C	1000 (454)
Zinc chloride	7644857		5000	1		C	1000 (454)
Zinc cyanide	557211		10	1,4	P121	A	10 (4.54)
Zinc fluoride	7782495		1000	1		C	1000 (454)
Zinc formaldehyde	557415		1000	1		C	1000 (454)
Zinc hydroxide	7779664		1000	1		C	1000 (454)
Zinc mercuric	7779666		5000	1		C	1000 (454)
Zinc phenanthroline	127822		5000	1		D	5000 (2270)
Zinc phosphide	1314847		1000	1,4	P122	B	100 (45.4)
Zinc silicofluoride	16871719		5000	1		C	5000 (2270)
Zinc sulfide	7733020		1000	1		C	1000 (454)
Zincum nitrate	1374888		5000	1		D	5000 (2270)
Zincum potassium fluoride	16823656		5000	1		C	1000 (454)
Zincum sulfate	14844812		5000	1		D	5000 (2270)
Zincum trichloride	10028116		5000	1		D	5000 (2270)
F001			1*	4	F001	X	1# (0.454)
The following spent halogenated solvents used in degreasing and sludges from the recovery of these solvents in degreasing operations:							
(a) Tetrachloroethylene	127184					X	1# (0.454)
(b) Trichloroethylene	79016					C	1000# (454)
(c) Methylene chloride	75062					C	1000 (454)
(d) 1,1,1-Trichloroethane	71556					C	1000 (454)
(e) Carbon tetrachloride	56235					D	5000# (2270)
(f) Chlorinated fluorocarbons	(N.A.)					D	5000 (2270)
F002			1*	4	F002	X	1# (0.454)
The following spent halogenated solvents and the sludges from the recovery of these solvents:							
(a) Tetrachloroethylene	127184					X	1# (0.454)
(b) Methylene chloride	75062					C	1000 (454)
(c) Trichloroethylene	79016					C	1000# (454)
(d) 1,1,1-Trichloroethane	71556					C	1000 (454)
(e) Chlorobenzene	108907					B	100 (45.4)
(f) 1,1,2-Trichloroethane	76131					D	5000 (2270)
(g) o-Dichlorobenzene	106467					B	100 (45.4)

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds(kg)
			RQ	Code			
(h) Trichlorofluoromethane	75694		1*	4	F003	D	5000 (2270)
F003			1*	4	F003	B	100 (45.4)
The following spent non-halogenated solvents and the sludges from the recovery of these solvents:							
(a) Xylene	1330207					C	1000 (454)
(b) Acetone	67641					D	5000 (2270)
(c) Ethyl acetate	141786					D	5000 (2270)
(d) Ethylbenzene	100414					C	1000 (454)
(e) Ethyl ether	80297					B	100 (45.4)
(f) Methyl isobutyl ketone	108101					D	5000 (2270)
(g) n-Butyl alcohol	71363					D	5000 (2270)
(h) Cyclohexanone	108941					D	5000 (2270)
(i) Methanol	67561		1*	4	F004	C	1000# (454)
F004			1*	4	F004	B	100 (45.4)
The following spent non-halogenated solvents and the sludges from the recovery of these solvents:							
(a) Cresols/Cresylic acid							
(b) Nitrobenzene							
F005			1*	4	F005	B	100 (45.4)
The following spent non-halogenated solvents and the sludges from the recovery of these solvents:							
(a) Toluene							
(b) Methyl ethyl ketone							
(c) Carbon disulfide							
(d) Isobutanol							
(e) Pyridine							
F006			1*	4	F006	X	1# (0.454)
Wastewater treatment sludges from electroplating operations except from the following processes:							
(1) Sulfuric acid aluminum anodizing of aluminum							
(2) tin plating on carbon steel							
(3) zinc plating (segregated basis) on carbon steel							
(4) aluminum or zinc aluminum plating on carbon steel							

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—
Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds(kg)
			RQ	Code			
F007 Spent cyanide plating bath solutions from electroplating operations (except for precious metals electroplating spent cyanide plating bath solutions)			1*	4	F007	A	10 (4.54)
F008 Plating bath sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process (except for precious metals electroplating plating bath sludges)			1*	4	F008	A	10 (4.54)
F009 Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process (except for precious metals electroplating spent stripping and cleaning bath solutions)			1*	4	F009	A	10 (4.54)
F010 Quenching bath sludge from oil baths from metal heat treating operations where cyanides are used in the process (except for precious metals heat-treating quenching bath sludges)			1*	4	F010	A	10 (4.54)
F011 Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations (except for precious metals heat treating spent cyanide solutions from salt bath pot cleaning)			1*	4	F011	A	10 (4.54)
F012 Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations (except for precious metals heat treating spent cyanide solutions from salt bath pot cleaning)			1*	4	F012	A	10 (4.54)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—
Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds(kg)
			RQ	Code			
(5) cleaning/ stripping associated with tin, zinc and aluminum plating on carbon steel and (6) chemical etching and mixing of aluminum							

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—
Continued

[See footnotes at end of Table 302.4]

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds(Kg)
			RQ	Code			
Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process (except for precious metals heat treating quenching wastewater treatment sludges)			1*	4	F019	X	1# (0.454)
Wastewater treatment sludges from the chemical conversion coating of aluminum			1*	4	F020	X	1# (0.454)
F020 Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol, or of intermediates used to produce their pesticide derivatives (This listing does not include wastes from the production of hexachlorophene from highly purified 2,4,5-trichlorophenol)							
F021 Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate or component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives			1*	4	F021	X	1# (0.454)
F022 Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate or component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives			1*	4	F022	X	1# (0.454)

[See footnotes at end of Table 302.4]

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds(Kg)
			RQ	Code			
Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzene under alkaline conditions			1*	4	F023	X	1# (0.454)
F023 Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate or component in a formulating process) of tri- and tetrachlorophenols (This listing does not include wastes from equipment used only for the production or use of hexachlorophene from highly purified 2,4,5-trichlorophenol)			1*	4	F024	X	1# (0.454)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—
Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		Final RQ	
			RQ	Code	Category	Pounds(kg)
Wastes, including but not limited to distillation residues, heavy ends, tars, and reactor cleanout wastes, from the production of chlorinated aliphatic hydrocarbons having carbon content from one to five, using free radical catalyzed processes. (This listing does not include light ends, spent filters and filter aids, spent desiccants(sic), wastewater, treatment sludges, spent catalysts, and wastes listed in § 261.32)			1*	4	X	1# (0.454)
Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzene under alkaline conditions			1*	4	X	1# (0.454)

F027

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—
Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		Final RQ	
			RQ	Code	Category	Pounds(kg)
Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols (This listing does not include formulations containing hexachlorophene synthesized from precursors 2,4,5-trichlorophenol as the sole component)			1*	4	X	1# (0.454)
	F028	Residues resulting from the incineration or thermal treatment of soil contaminated with EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027				
K001 Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol			1*	4	X	1# (0.454)
K002 Wastewater treatment sludge from the production of chrome yellow and orange pigments			1*	4	X	1# (0.454)
K003 Wastewater treatment sludge from the production of molybdate orange pigments			1*	4	X	1# (0.454)
K004 Wastewater treatment sludge from the production of zinc yellow pigments			1*	4	X	1# (0.454)
K005 Wastewater treatment sludge from the production of chrome green pigments			1*	4	X	1# (0.454)
K006			1*	4	X	1# (0.454)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—
Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds(Kg)
			RQ	Code†			
Heavy ends from the fractionation column in ethyl chloride production K019			1*	4	K019	X	1# (0.454)
Heavy ends from the distillation of ethylene dichloride K020			1*	4	K020	X	1# (0.454)
Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production K021			1*	4	K021	X	1# (0.454)
Aqueous spent anionity catalyst waste from fluoromethanes production K022			1*	4	K022	X	1# (0.454)
Distillation bottom loss from the production of phosfor/acelone from cumene K023			1*	4	K023	D	5000 (2270)
Distillation light ends from the production of phenolic anhydride from naphthalene K024			1*	4	K024	D	5000 (2270)
Distillation bottoms from the production of phenolic anhydride from naphthalene K025			1*	4	K025	X	1# (0.454)
Distillation bottoms from the production of nitrobenzene by the nitration of benzene K026			1*	4	K026	C	1000 (454)
Stepping still tails from the production of methyl ethyl pyridines K027			1*	4	K027	X	1# (0.454)
Centrifuge and distillation residues from toluene diisocyanate production K028			1*	4	K028	X	1# (0.454)
Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane K029			1*	4	K029	X	1# (0.454)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—
Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds(Kg)
			RQ	Code†			
Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated) K007			1*	4	K007	X	1# (0.454)
Wastewater treatment sludge from the production of iron blue pigments K008			1*	4	K008	X	1# (0.454)
Oven residue from the production of chrome oxide green pigments K009			1*	4	K009	X	1# (0.454)
Distillation bottoms from the production of acetaldehyde from ethylene K010			1*	4	K010	X	1# (0.454)
Distillation side cuts from the production of acetaldehyde from ethylene K011			1*	4	K011	X	1# (0.454)
Bottom stream from the wastewater stripper in the production of acrylonitrile K013			1*	4	K013	X	1# (0.454)
Bottom stream from the acetone/ethyl acetone purification column in the production of acrylonitrile K014			1*	4	K014	D	5000 (2270)
Bottoms from the acetonitrile purification column in the production of acrylonitrile K015			1*	4	K015	X	1# (0.454)
Still bottoms from the distillation of benzyl chloride K016			1*	4	K016	X	1# (0.454)
Heavy ends or distillation residues from the production of carbon tetrachloride K017			1*	4	K017	X	1# (0.454)
Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin K018			1*	4	K018	X	1# (0.454)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—
Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds(kg)
			RQ	Code			
Waste from the product steam stripper in the production of 1,1,1-trichloroethane			1*	4	K030	X	1# (0.454)
Column bottoms or heavy ends from the combined production of tetrachloroethylene and perchloroethylene			1*	4	K031	X	1# (0.454)
By-product salts generated in the production of MSMA and cacodylic acid			1*	4	K032	X	1# (0.454)
Wastewater treatment sludge from the production of chloridene			1*	4	K033	X	1# (0.454)
Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chloridene			1*	4	K034	X	1# (0.454)
Filler solids from the filtration of hexachlorocyclopentadiene in the production of chloridene			1*	4	K035	X	1# (0.454)
Wastewater treatment sludges generated in the production of creosote			1*	4	K036	X	1 (0.454)
Sulf bottoms from toluene reclamation distillation in the production of distillation			1*	4	K037	X	1 (0.454)
Wastewater treatment sludges from the production of distillation			1*	4	K038	X	1# (0.454)
Wastewater from the washing and stripping of phosphate production			1*	4	K039	A	10 (4.54)

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RQ Pounds(kg)
			RQ	Code			
Filter cake from the filtration of diethylphosphorodithioic acid in the production of phosphate			1*	4	K040	X	1# (0.454)
Wastewater treatment sludge from the production of phosphate			1*	4	K041	X	1# (0.454)
Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T			1*	4	K042	X	1# (0.454)
2,6-Dichlorophenol waste from the production of 2,4-D			1*	4	K043	X	1# (0.454)
Wastewater treatment sludges from the manufacturing and processing of explosives			1*	4	K044	A	10 (4.54)
Spent carbon from the treatment of wastewater containing explosives			1*	4	K045	A	10 (4.54)
Wastewater treatment sludges from the manufacturing and formulation of lead-based emitting compounds			1*	4	K046	B	100 (45.4)
Paint/ret water from TNT operations			1*	4	K047	A	10 (4.54)
Dissolved air flotation (DAF) float from the petroleum refining industry			1*	4	K048	X	1# (0.454)
Slop of emulsion solids from the petroleum refining industry			1*	4	K049	X	1# (0.454)
			1*	4	K050	X	1# (0.454)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—
Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		Final RQ
			RQ	Code	
Wastewater treatment sludges generated during the production of pharmaceuticals from arsenic or organo-arsenic compounds			1*	4	1# (0.454)
K085 Distillation or fractional column bottoms from the production of chlorobenzenes			1*	4	1# (0.454)
K086 Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers					
K087 Chromium and lead			1*	4	100 (45.4)
K088 Decanter tank bar sludge from coking operations			1*	4	5000 (2270)
K093 Distillation light ends from the production of phthalic anhydride from ortho-xylene			1*	4	5000 (2270)
K094 Distillation bottoms from the production of phthalic anhydride from ortho-xylene			1*	4	5000 (2270)
K095 Distillation bottoms from the production of 1,1,1-trichloroethane			1*	4	1# (0.454)
K096 Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane			1*	4	1# (0.454)
K097 Vacuum stripper discharge from the chloroform chlorinator in the production of chloroform			1*	4	1# (0.454)
K098			1*	4	1# (0.454)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—
Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		Final RQ
			RQ	Code	
Heat exchanger bundle cleaning sludge from the petroleum refining industry			1*	4	1# (0.454)
K051 API separator sludge from the petroleum refining industry			1*	4	1# (0.454)
K052 Tana bottoms (leaded) from the petroleum refining industry			1*	4	10# (4.54)
K060 Ammonia still lime sludge from coking operations			1*	4	1# (0.454)
K061 Emission control dust/sludge from the primary production of steel in electric furnaces			1*	4	1# (0.454)
K062 Spent pickle liquor from steel finishing operations			1*	4	1# (0.454)
K069 Emission control dust/sludge from secondary lead smelting			1*	4	1# (0.454)
K071 Brine purification muds from the mercury cell process in chlorine production, where separately repurified brine is not used			1*	4	1# (0.454)
K073 Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production			1*	4	1# (0.454)
K083 Distillation bottoms from aniline extraction			1*	4	100 (45.4)
K084			1*	4	1# (0.454)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—
Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final HQ
			RO	Code			
Product washwaters from the production of dinitrotoluene via nitration of toluene K112			1*	4	K112	X	1# (0.454)
Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene. K113			1*	4	K113	X	1# (0.454)
Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene. K114			1*	4	K114	X	1# (0.454)
Vacuaits from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene. K115			1*	4	K115	X	1# (0.454)
Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene. K116			1*	4	K116	X	1# (0.454)
Organic condensate from the solvent recovery column in the production of toluene dicyanate via phosgenation of toluenediamine K117			1*	4	K117	X	1# (0.454)
Wastewater from the reaction vent gas scrubber in the production of ethylene bromide via bromination of ethene K118			1*	4	K118	X	1# (0.454)
Spent absorbent solids from purification of ethylene dibromide in the production of ethylene dibromide K136			1*	4	K136	X	1# (0.454)

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—
Continued

(See footnotes at end of Table 302.4)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		RCRA Waste Number	Category	Final RO
			RO	Code			
Untreated process wastewater from the production of toluene K099			1*	4	K099	X	1# (0.454)
Untreated wastewater from the production of 2,4-D K100			1*	4	K100	X	1# (0.454)
Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting (Components of the waste are identical with those of K099) K101			1*	4	K101	X	1# (0.454)
Distillation by residues from the distillation of amine-based compounds in the production of veterinary pharmaceuticals from aromatic or organo-aromatic compounds K102			1*	4	K102	X	1# (0.454)
Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from aromatic or organo-aromatic compounds K103			1*	4	K103	B	100 (45.4)
Process residues from amine extraction from the production of amine K104			1*	4	K104	X	1# (0.454)
Combined wastewater streams generated from nitrobenzene/chlorobenzenes K105			1*	4	K105	X	1# (0.454)
Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes K106			1*	4	K106	X	1 (0.454)
Wastewater treatment sludge from the mercury cell process in chlorine production K111			1*	4	K111	X	1# (0.454)

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TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES—
Continued

(See footnotes at end of Table 302.4.)

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory		Final RQ
			Code ¹	Category	
Solid bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene					Pounds (kg)
					- indicates the statutory source as defined by 1, 2, 3, or 4 below

1 - no reporting of releases of this hazardous substance is required if the quantity of the solid metal released is equal to or exceeds 100 micrometers (0.004 inches).
 2 - The Agency may adjust the RQ for metals, except for lead, until then the statutory RQ applies.
 3 - indicates that the statutory source for designation of this hazardous substance under CERCLA is CWA Section 311(b)(4).
 4 - indicates that the statutory source for designation of this hazardous substance under CERCLA is CWA Section 307(a).
 5 - indicates that the statutory source for designation of this hazardous substance under CERCLA is CWA Section 112.
 6 - indicates that the statutory RQ is a CERCLA statutory RQ.
 7 - indicates that the RQ is being assigned to the generic or broad class.
 8 - indicates that this substance was designated as a hazardous substance under CERCLA solely because of its listing as a hazardous waste under Section 300.1 of RCRA. The Agency recently proposed to delist iron dust under RCRA150 FR 4848-4849, November 8, 1985). The Agency has also proposed to delist iron dust from Table 302.4 of 40 CFR 302.4 and thereby remove its designation as a CERCLA hazardous substance.
 9 - Uranyl acetate and uranyl nitrate currently are being evaluated for their radioactive properties. Their RQs may be further adjusted in a future rulemaking adjusting the RQ of radioisotopes.
 10 - indicates that the RQ is subject to change when the assessment of potential carcinogenicity and/or chronic toxicity is completed.
 11 - The Agency may adjust the RQ for radioisotopes in a future rulemaking, until then the statutory RQ applies.

APPENDIX A—SEQUENTIAL CAS REGISTRY NUMBER LIST OF CERCLA HAZARDOUS SUBSTANCES

CASRN	Hazardous Substance	CASRN	Hazardous Substance
50000	Formaldehyde	52686	Trichloron
50077	Methylene oxide	52857	Famphur
50180	Azuroic(2,3,4)pyridol(2,3,4-dione)-4,7-dione-6-amino-8-[[[amino]carboxyl(methyl)-1,1a,2,8,8a,8b-hexahydro-6a-methoxy-5-methyl-]methyl]	53703	Phosphorothioic acid, O,O-dimethyl-O-(p-(dimethylamino) sulfonyl)phenyl ester
50293	Melomycin C	53983	Diene(2,3,4)benzofuranone
50328	2H-1,3-Oxazaphosphorin-2-(oxalyl)-chloroethyl(methyl)tetrahydro-2-oxide	54115	Diene(2,3,4)benzofuranone
50555	4,4-DOT	55185	Diene(2,3,4)benzofuranone
51285	2,4-Dinitrophenol	55630	Nitroglycerine
51434	1,2-Benzenediol, 4-(1-hydroxy-2-(methylamino)ethyl)-	55914	Disopropyl fluorophosphate
51796	Carbamic acid, ethyl ester	56042	Phosphorothioic acid bis(1-methyl) ester
			4-(1H)Pyrimidinone, 2,3-dihydro-6-methyl-2-thio-
		56235	Carbon tetrachloride
		56382	Methane, tetrachloro-
		56495	Phosphorothioic acid O,O-dimethyl O-(p-(dimethylamino) sulfonyl)phenyl ester
		56531	Diethylstilbestrol
		56553	4,4'-Substituted alpha alpha'-diethyl-benzilidene
			1,2-Benzofuranone
			1,2-Benzofuranone

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CASRN	Hazardous Substance	CASRN	Hazardous Substance
56724	Coumatizon	71363	n-Butanol
57125	Cyanides (soluble cyanide salts), not elsewhere specified	71432	Benzene
57147	1,1-Dimethylhydrazine	71556	Methyl chloroform
57249	Hydrazine, 1,1-dimethyl-	72208	Endrin
57749	Strychnine-10-one, and salts		1,2,3,4,10-Hexachloro-6,7-epoxy-dimethanonaphthalene
	Chlordane		1,4,4a,5,6,7,8a-Octahydro-endo-1,4,5,8-dimethanonaphthalene
	Chlordane, technical		Methoxychlor
	4,7-Methanodan	72435	DDD
	3a,4,7,7a-tetrahydro-	72548	DDD
	1,2-Benzofuranone, 7,12-dimethyl-		4,4'-DDD
	7,12-Dimethylbenz(a)lanthracene		Dichlorodiphenyl dichloroethane
	gamma-BHC	72559	DDE
	Hexachlorocyclopentane (gamma isomer)		4,4'-DDE
	Lindane		2,7-Naphthalenedisulfonic acid, 3,3'-(1,3,3-dimethyl (1,1'-biphenyl)-4,4'-diyl)bis(fato)bis(5-amino-4-hydroxy)tetrasodium salt
	Phenol, 2,3,4,5-tetrachloro-	72571	Trypan blue
	2,3,4,6-Tetrachlorophenol		Methane, bromo-
	4-Chloro-m-cresol		Methane, bromo-
	p-Chloro-m-cresol	74839	Methane, bromo-
	Phenol, 4-chloro-3-methyl-		Methane, chloro-
	Ethyleneimine tetraacetic acid (EDTA)	74873	Methane, chloro-
80004	Benzeneamine, N,N-dimethyl-4-phenylazo-		Methane, chloro-
80017	Benzeneamine, N,N-dimethyl-4-phenylazo-		Methane, chloro-
80287	Diethyl ether	74884	Methane, chloro-
80344	Hydrazine, methyl-		Methyl iodide
80515	Methyl hydrazine	74895	Monomethylamine
	Dimethylamine	74908	Hydrocyanic acid
	Phosphorothioic acid O,O-dimethyl S-(2-methyl-1-mercapto-2-oxoethyl) ester	74931	Hydrogen cyanide
80571	Diethanol		Methanethiol
	1,2,2,4,10,10-Hexachloro-8,7-epoxy-		Methylmercaptan
	1,4,4a,5,6,7,8a-Octahydro-endo,exo-1,4,5,8-dimethanonaphthalene	74953	Thioethanol
	Amideol		Methane, dibromo-
81825	1H-1,2,4-Triazol-3-amine	75003	Methylene bromide
82384	Mercury, (acetato-O)phenyl-	75014	Chloroethane
82442	Phenylmercuric acetate		Ethene, chloro-
82500	Phenacetyl	75047	Vinyl chloride
82533	Ethyl methanesulfonate	75058	Monomethylamine
82555	Methanesulfonic acid, ethyl ester		Acetonitrile
82566	Methanesulfonic acid, ethyl ester		Ethanolamine
82737	Acetic acid fluoro, sodium salt	75070	Acetaldehyde
82748	Fluoroacetic acid, sodium salt	75082	Ethanol
82759	Dimethylacetamide		Methane, dichloro-
83252	Formic acid	75150	Methylene chloride
84186	Methanolic acid	75207	Calcium bisulfide
84197	Acetic acid	75218	Calcium carbide
84850	Stearic acid		Ethylene oxide
86751	Uracil, 5-[bis(2-chloroethyl)amino]	75252	Ovarane
87581	Methanol	75274	Bromolium
87641	Acetone	75343	Methane, tribromo-
87663	Chloroform		Dichlorobromomethane
87721	Ethane, 1,1,1,2,2,2-hexachloro-		1,1-Dichloroethane
70257	Guaridine, N-nitroso-N-methyl-N-nitro-		Ethane, 1,1-dichloro-
	1,2-Dimethyl-N-nitroso-N-nitrosoguanidine		Ethylene dichloride
	Hexachlorophene		1,1-Dichloroethylene
	2,2-Dimethyl-3,4,6-trichlorophenol		Vinylene chloride
			Methylene chloride
			Ethanol
			Calcium chloride
			Phosphene
			Trimethylamine
			2-Methylaziridine
			1,2-Propyleneamine
			Propylene oxide
			Cacodylic acid
			Hydroxydimethylarsine oxide
			tert-Butylamine
			Methane trichloroalkoxide
			Trichloromethoxydimethylamine

CASRN	Hazardous Substance	CASRN	Hazardous Substance	CASRN	Hazardous Substance
75718	Dichloroacromethane	85637	Buyl benzyl phthalate	96457	Ethylenethourea
75865	Methane dichloroethano	86306	N-Nitrosodiphenylamine	97632	2-Imidazolidinone
75876	Acetone cyanohydrin	86500	Guthion	98011	Ethyl methacrylate
75990	2 Methylacrylonitrile	86737	Fluorene	98077	2-Propanoic acid, 2-methyl-, ethyl ester
76017	Propionitrile, 2-hydroxy-2-methyl-	86984	Thiourea, 1-naphthalenyl-	107131	2-Furancarboxaldehyde
76448	Acetaldehyde, trichloro-	87650	2,6-Dichlorophenol	107153	Furfural
76819	2,2-Dichloropropionic acid	87883	Phenol, 2,6-dichloro-	107166	Benzoinchloride
76831	Ethane, pentachloro-	87885	Hexachlorobutadiene	98099	Benzene sulfonic acid chloride
76831	Heptachlor	88062	Phenol, pentachloro-	98826	Benzene sulfinyl chloride
77474	heptachlor-3a,4,7,8-tetrahydro-	88722	Phenol, 2,4,6-trichloro-	98826	Benzene, 1-methyl-ethyl-
77781	1,3-Cyclopentanone, 1,2,3,4,5-hexachloro-	88755	2,4,6-Trichlorophenol	98862	Cumene
78002	Dimethyl sulfate	89558	o-Nitrophenol	98873	Acetophenone
78002	Sulfuric acid, dimethyl ester	89558	2-Nitrophenol	98873	Ethanone, 1-phenyl-
78002	Tetraethyl lead	89558	2-Nitrophenol	98873	Benzene, dichloromethyl-
78002	Isophorone	89558	2-Nitrophenol	98873	Benzoyl chloride
78002	Isoprene	89558	2-Nitrophenol	98873	Nitrobenzene
78002	Isobutyl alcohol	89558	2-Nitrophenol	98873	m-Nitrotoluene
78002	1-Propanol, 2-methyl-	89558	2-Nitrophenol	98873	Benzene, 1,3,5-trinitro-
78002	1,2-Dichloroethane	89558	2-Nitrophenol	98873	sym-Tri-nitrobenzene
78002	Propylene dichloride	89558	2-Nitrophenol	98873	Benzene, 2-methyl-5-nitro-
78002	2,3-Dichloropropane (isomer)	89558	2-Nitrophenol	98873	5-Nitro-o-toluene
78002	Methyl ethyl ketone	89558	2-Nitrophenol	98873	m-Dinitrobenzene
78002	1,1-Dichloroethane	89558	2-Nitrophenol	98873	p-Nitrotoluene
78002	Ethane, 1,1,2-trichloro-	89558	2-Nitrophenol	98873	p-Nitrophenol
78002	1,1,2-Trichloroethane	89558	2-Nitrophenol	98873	4-Nitrophenol
78002	Trichloroethylene	89558	2-Nitrophenol	98873	Phenol, 4-nitro-
78002	Acrylamide	89558	2-Nitrophenol	98873	Ethylbenzene
78002	2-Propanamide	89558	2-Nitrophenol	98873	Styrene
78002	Acrylic acid	89558	2-Nitrophenol	98873	Benzene, chloromethyl-
78002	Hydroxycarboxylic acid	89558	2-Nitrophenol	98873	Benzyl chloride
78002	Thiosemicarbazide	89558	2-Nitrophenol	98873	Benzonitrile
78002	Carbonochloride acid, methyl ester	89558	2-Nitrophenol	98873	N-Nitrosodiphenylamine
78002	iso-Butyric acid	89558	2-Nitrophenol	98873	Thiourea, phenyl-
78002	Ethane, 1,1,2,2-tetrachloro-	89558	2-Nitrophenol	98873	sec-Butyl acetate
78002	Carbamoyl chloride, dimethyl-	89558	2-Nitrophenol	98873	2,4-Dimethylphenol
78002	Dimethylcarbamoyl chloride	89558	2-Nitrophenol	98873	Phenol, 2,4-dimethyl-
78002	Propane, 2-nitro-	89558	2-Nitrophenol	98873	Benzene, p-dimethyl-
78002	alpha alpha-Dimethylbenzylhydroperoxide	89558	2-Nitrophenol	98873	p-Xylene
78002	Hydroperoxide, 1-methyl-1-phenylethyl-	89558	2-Nitrophenol	98873	p-Cresol
78002	Methyl methacrylate	89558	2-Nitrophenol	98873	p-Cresylic acid
78002	2-Propanoic acid, 2-methyl-, methyl ester	89558	2-Nitrophenol	98873	p-Dichlorobenzene
78002	Saccharin and salts	89558	2-Nitrophenol	98873	Benzene, 1,4-dichloro-
78002	3-(alpha-Acetylbiphenyl)-4-hydroxycoumarin and salts	89558	2-Nitrophenol	98873	1,4-Dichlorobenzene
78002	Warfarin	89558	2-Nitrophenol	98873	Benzonitrile
78002	Benzene, pentachloro-	89558	2-Nitrophenol	98873	Pyridine, 2-methyl-
78002	Acenaphthene	89558	2-Nitrophenol	98873	Pyridine, 2,6-dimethyl-
78002	1,2-Benzenedicarboxylic acid, dimethyl ester	89558	2-Nitrophenol	98873	Pyridine, 2,6-dimethyl-
78002	1,2-Benzenedicarboxylic acid, dibutyl ester	89558	2-Nitrophenol	98873	Pyridine, 2,6-dimethyl-
78002	Dibutyl phthalate	89558	2-Nitrophenol	98873	Pyridine, 2,6-dimethyl-
78002	D-n-butyl phthalate	89558	2-Nitrophenol	98873	Pyridine, 2,6-dimethyl-
78002	Dequal	89558	2-Nitrophenol	98873	Pyridine, 2,6-dimethyl-
78002	Phenanthrene	89558	2-Nitrophenol	98873	Pyridine, 2,6-dimethyl-
78002	1,2-Benzenedicarboxylic acid anhydride	89558	2-Nitrophenol	98873	Pyridine, 2,6-dimethyl-
78002	Phthalic anhydride	89558	2-Nitrophenol	98873	Pyridine, 2,6-dimethyl-

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CASRN	Hazardous Substance	CASRN	Hazardous Substance	CASRN	Hazardous Substance
115322	Kaoline	142289	1,3-Dichloropropane	460195	Cyanogen
116083	Alcicarb	142712	Cupric acetate	465736	Hexa-chloro-2,2-hydro endo dimethanonaphthalene
117806	Propional (methylamino)carbonyl]oume	142847	Dipropylamine	1 2,3,4,10 Hexachloro-1,4,4a,5,8,8a hexahydro-1,4,5,8 endo dimethanonaphthalene	
117817	1,2-Benzenedicarbonylic acid [bis(2-ethylhexyl) ester]	143339	Sodium cyanide	492808	Aurazene (N,N-dimethylamino, 4,4'-carbonmido)bis methyl-
117840	1,2-Benzenedicarbonylic acid di-n-octyl ester	143500	Decachlorocyclohexane-1,3,4 methano-2H-cyclobutane(d)pentane 2-one	494031	Chloroazoxane
118741	Di-n-octyl phthalate	145732	Endothal	498720	2-Naphthylamine, N,N-bis(2-chloroethyl)-
119904	Benzene hexachloro-Hexachlorobenzene (1,1'-Biphenyl)-4,4'-diamine, 3,3'-dimethoxy-	148823	Alanine, 3-[p-bis(2-chloroethyl)amino]phenyl-L-	504245	Diametabolene
119937	1,1-Biphenyl-4,4'-diamine, 3,3'-dimethyl-3,3'-dimethylbenzidine	151508	Potassium cyanide	504608	4-Pyridinamine
120127	Anthraccene	151584	Atrazine	506618	1-Methylbutanone
120581	Isosaltol	152189	Dithioaziridine, octamethyl-	506649	1,3-Pentadiene
120821	1,2,4-Trichlorobenzene	154605	Octamethylphosphoramide	508878	Potassium silver cyanide
120832	2,4-Dichlorophenol	189559	1,2-azene-Dichloroethylene	506649	Silver cyanide
121142	Benzene, 1-methyl-2,4-dinitro-	181242	Ethene, trans-1,2-dichloro-	506683	Bromine cyanide
121211	Pyrethrin	183395	1,2,7,8-Tetrachlorodibenzofulvene	508774	Cyanogen chloride
121299	Pyrethrin	205992	Benzofluoranthene	508878	Ammonium carbonate
121446	Triethylamine	208440	Fluoranthene	509146	Acetyl bromide
121755	Malathion	207089	Benzothiazanthrene	510156	Tetraeromethane
122098	alpha.alpha.Dimethylphenethylamine	208668	Acanaphthylene	513495	Tetraeromethane, 4-chloro-alpha (4-chloro-phenyl)-alpha-hydroxy ethyl ester
122667	Ethanamine, 1,1-dimethyl-2-phenyl-	218019	1,3-Benzophenanthrene	513495	sec-Butylamine
123131	1,2-Diphenylhydrazine	225514	Benzic lacridine	528290	o-Dinitrobenzene
123626	Maleic hydrazide	229792	O,O-Diethyl O-pyrazinyl phosphorothioate ester	534521	4,6-Dinitro-o-cresol and salts
123637	Paraldehyde	290000	Methyl parathion	540738	Phenol 2,4-dinitro-6-methyl-, and salts
123729	2-Butoanol	298022	O,O-Dimethyl O-p-nitrophenyl phosphorothioate	540885	1,2-Dimethylhydrazine
123864	1,4-Diethylene dioxide	298044	Phosphorothioic acid, O,O-diethyl-, O-pyrazinyl ester	540895	Hydrazine, 1,2-dimethyl-
123911	1,4-Dioxane	300765	Dauktion	541093	tert-Butyl acetate
123922	iso-Amyl acetate	301042	Naled	541537	Uranyl acetate
124049	Adipic acid	302012	Acetic acid lead salt	541731	2,4-Dihydroxy-2,4-dithioarabine
124403	Dimethylamine	303344	Diamine	542756	Thiomethocarbonic diamide
124431	Sodium methylate	305033	Hydrazine	542767	Benzene, 1,3-dichloro-
124431	Chlorobromomethane	308002	Chlorambucil	542881	m-Dichlorobenzene
126727	Tri(2,3-dibromopropyl) phosphite	311455	Adren	543908	Cadmium acetate
126987	Methacrylonitrile	315184	Phosphoric acid, diethyl-p-nitrophenyl ester	544183	Cobaltous formate
127184	Ethene 1,1,2,2-tetrachloro-	319846	alpha-BHC	544923	Copper cyanide
127822	Tetrachloroethylene	319857	beta-BHC	554837	Nickel cyanide
129000	Pyrene	329715	delta-BHC	557197	Nickel(II) cyanide
130154	1,4-Naphthalenedione	330541	Duron	557211	Zinc cyanide
130154	1,4-Naphthoquinone	333415	Diazon	557346	Zinc acetate
131113	1,2-Benzenedicarbonylic acid dimethyl ester	335304	Carbon oxyfluoride	557415	Zinc formate
131748	Ammonium picrate	357573	Brucine	563122	Ethion
131895	Phenol 2,4,6-trinitro-, ammonium salt			563688	Acetic acid thallium(I) salt
132062	Phenol 2-cyclohexyl-4,6-dinitro-			573568	2,6-Dinitrophenol
134327	Caplan			584849	Benzene 2,4-dicyanalamomethyl
137268	1-Naphthylamine			591082	Toluene diisocyanate
140885	Bis(dimethylthiocarbonyl) disulfide			592018	Acetamide, N-(ammonio)acetyl
141786	Ethyl acrylate			592858	Lead thiocyanate
	Acetic acid, ethyl ester			594427	Methanediyl chloride
	Ethyl acetate				Trichloroethanesulfenyl chloride

CASRN Hazardous Substance

CASRN	Hazardous Substance	CASRN	Hazardous Substance
1300328	A sene disulfide	3486359	Zinc carbonate
1300339	Arsenic trisulfide	3689245	Dithyroglyphosphoric acid tetraethyl ester
1300844	Antimony trisulfide	7681494	Tetraethylthiopyrophosphate
1310583	Potassium hydrosulfide	7681529	2,4,5-T amines
1310732	Sodium hydrosulfide	7697372	2-Buional
1314325	Thalium(I) oxide	7699458	Cyanoacetylene
1314621	Vanadium pentoxide	7705060	Ethylamine, N-methyl-N-nitroso-
1314803	Vanadium(V) oxide	7718548	N-Nitrosomethylmethanamine
1314803	Phosphorus pentasulfide	7719122	1-(o-Chlorophenyl)thiourea
1314847	Phosphorus sulfide	7720787	Thiourea, (2-chlorophenyl)-
1314870	Sulfur phosphide	7722647	Cupric oxide
1314881	Lead sulfide	7723140	Ammonium oxalate
1318726	Selenium sulfide	7723020	Ammonium oxalate
1318773	2,4,5-T amines	7723845	2,4,5-T amines
1320189	Cresols	7725284	Carbonic acid, diethalam (I) salt
1320189	Cresylic acid	7725954	Thalium(I) carbonate
1321126	2,4-D Esters	7725954	4-Chlorophenyl phenyl ether
1321522	Nerolidolone	7726060	Endim aldehyde
1327522	Arsenic acid	7726113	Lead stearate
1327523	Arsenic(III) oxide	7727394	Mercury
1328207	Arsenic trisulfide	7727394	Nickel
1328207	Benzene, dimethyl-	7727841	Silver
1332076	Zinc borate	7727841	Sodium
1332214	Albescos	7727854	Thalium
1332831	Sodium borate	7727854	Arsenic
1335326	Lead subacetate	7727854	Antimony
1336216	Ammonium hydrosulfide	7727854	Arsenic
1336363	POLYCHLORINATED BIPHENYLS (PCBs)	7727854	Beryllium
1338274	2-Butanone peroxide	7727854	Beryllium dust
1338245	Methyl ethyl ketone peroxide	7727854	Chromium
1341487	Naphthene acid	7727854	Chromium
1464535	Ammonium borate	7727854	Copper
1464535	2,2-Bis(azirane)	7727854	Selenium dioxide
1523462	Carbofuran	7727854	Selenium oxide
1615801	Hydrazine, 1,2-dimethyl-	7727854	Lead sulfide
1746016	2,3,7,8-Tetrahydrobenzo-p-dioxin (TCDD)	7727854	Sulfuric acid, thalium(I) salt
1762954	Ammonium thiocyanate	7727854	Thalium(I) sulfide
1863634	Ammonium benzoate	7727854	Lead phosphate
1888717	Hexachloropropene	7727854	Phosphoric acid, lead salt
1918009	1-Propene, 1,1,2,3,3,3-hexachloro-	7727854	Cupric chloride
1928287	Decalene	7727854	Selenium disulfide
1928478	2,4-D Esters	7727854	Sulfur selenide
1928478	2,4,5-T esters	7727854	Sodium phosphite, dibasic
1929733	2,4-D Esters	7727854	Sodium phosphite, tribasic
2008460	2,4,5-T amines	7727854	Sodium arsenate
2032657	Mercaptoethanol	7727854	Sodium borate
2303164	Diallate	7727854	Sodium nitrate
2312358	S-(2,3-Dichloroethyl) diisopropylthiocarbamate	7727854	Lead arsenate
2545587	Propargite	7727854	Potassium arsenate
2763864	2,4,5-T esters	7727854	Sodium phosphate, tribasic
2767280	Chlorpyrifos	7727854	Mercuric sulfide
2944874	Ferric ammonium oxalate	7727854	Lead fluoride
2871382	2,4-D Esters	7727854	Zinc fluoride
3012655	Ammonium carbonate, dibasic	7727854	Ferric fluoride
3164292	Benzonamine, 4-chloro-2-methyl-hydrochloride	7727854	Antimony trifluoride
3165933	4-Chloro-o-toluidine, hydrochloride	7727854	Arsenic trichloride
3251238	Cupric nitrate	7727854	Nickel sulfide
3288582	O,O-Diethyl S-methyl dithiophosphate	7727854	Ammonium vanadate
	Phosphorodithioic acid, O,O-diethyl S-methyl-	7727854	Vanadic acid ammonium salt
	ester	7727854	Camphene, octachloro-
		7727854	Toraphene

CASRN	Hazardous Substance	CASRN	Hazardous Substance
7664417	Ammonia	8001389	Cycloole
7664939	Sulfuric acid	8003138	Dichloropropene (matural)
7681494	Sodium fluoride	8003747	Pyrethrins
7681529	Sodium hypochlorite	8014757	Sulfuric acid
7697372	Nitric acid	9004664	Ferric desatur
7699458	Zinc bromide		Iron desatur
7705060	Ferric chloride	10022705	Sodium hypochlorite
7718548	Nickel chloride	10025873	Phosphorus oxychloride
7719122	Phosphorus trichloride	10025919	Antimony trichloride
7720787	Ferrous sulfate	10026116	Zirconium tetrachloride
7722647	Potassium permanganate	10028225	Zirconium tetrachloride
7723140	Phosphorus	10031531	Sulfuric acid, thalium(I) salt
7723020	Zinc sulfide	10039324	Sodium phosphate, dibasic
7723845	Chromic acid	10043013	Aluminum sulfate
7725284	Sodium phosphate, tribasic	10045893	Ferrous ammonium sulfate
7725954	Ferrous chloride	10045940	Mercuric nitrate
7726060	Lead chloride	10049055	Chromous chloride
7726113	Cupric sulfate	10099748	Lead nitrate
7726060	Silver nitrate	10101538	Chromic sulfate
7727394	Ammonium sulfamate	10101630	Lead oxide
7727394	Ammonium chromate	10101890	Sodium phosphate, tribasic
7727841	Arsenic acid	10102064	Uranyl nitrate
7727841	Calcium arsenate	10102188	Sodium selenite
7727854	Potassium bichromate	10102439	Nitric oxide
7727854	Calcium hypochlorite	10102440	Nitrogen(I) oxide
7727854	Zinc hydroxide	10102451	Nitrogen(IV) oxide
7727854	Zinc nitrate	10102484	Thalium(I) nitrate
7727854	Fluorine	10108642	Lead arsenate
7727854	Selenium	10124502	Cadmium chloride
7727854	Chlorine	10124502	Potassium arsenate
7727854	Ferrous sulfate	10140655	Sodium phosphate, tribasic
7727854	Sodium selenite	10192200	Ammonium bisulfite
7727854	Selenium nitrate	10196840	Ammonium sulfate
7727854	Hydrogen sulfide	10361894	Sodium phosphate, tribasic
7727854	Hydrochloric acid	10380297	Cupric sulfate ammoniated
7727854	Sulfur hydride	10415755	Mercurous nitrate
7727854	Ammonium thiosulfate	10421484	Ferric nitrate
7727854	Mercuric sulfide	10544126	Nitrogen dioxide
7727854	Lead fluoride	10588019	Nitrogen(V) oxide
7727854	Zinc fluoride	11096825	Sodium bichromate
7727854	Ferric fluoride		Polychlorinated Biphenyls (PCBs)
7727854	Antimony trifluoride	11097631	Polychlorinated Biphenyls (PCBs)
7727854	Arsenic trichloride	11104282	Polychlorinated Biphenyls (PCBs)
7727854	Lead arsenate	11115745	Polychlorinated Biphenyls (PCBs)
7727854	Potassium arsenate	11141165	Chromic acid
7727854	Sodium arsenite	12002018	Polychlorinated Biphenyls (PCBs)
7727854	Sodium phosphate, tribasic	12039520	Cupric acetoarsenite
7727854	Mercuric sulfide	12054487	Thalium(I) selenide
7727854	Mercurous nitrate	12125018	Nickel hydroxide
7727854	Hydrochloric acid	12125029	Ammonium fluoride
7727854	Selenium nitrate	12135761	Ammonium chloride
7727854	Ammonium bichromate	12672256	Ammonium sulfide
7727854	Cadmium bromide		Aractor 1248
7727854	Cobaltous bromide	12674112	Polychlorinated Biphenyls (PCBs)
7727854	Antimony trichloride	12674112	Aractor 1016
7727854	Chlorosulfonic acid	12710983	Polychlorinated Biphenyls (PCBs)
7727854	Thalium(I) chloride	13463393	Sulfur monochloride
7727854	Hydrogen phosphate		Nickel cyanide
7727854	Phosphine	13560991	Nickel tetracarbonyl
7727854	Ammonium vanadate	13597994	Beryllium nitrate
7727854	Vanadic acid ammonium salt	13746893	Zirconium nitrate
7727854	Camphene, octachloro-	13765190	Calcium chromate
7727854	Toraphene		Chromic acid, calcium salt

§ 302.5

CASEN	Hazardous Substance
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5548874	Ferrous ammonium sulfate
58182934	Lead stearate
6178272	2,4,5-T esters

(50 FR 13474, Apr. 4, 1985, as amended at 51 FR 34541, Sept. 29, 1986; 52 FR 45767, Dec. 22, 1986)

§ 302.5 Determination of reportable quantities.

(a) *Listed hazardous substances.* The quantity listed in the column "Final RQ" for each substance in Table 302.4 is the reportable quantity for that substance.

(b) *Unlisted hazardous substances.* Unlisted hazardous substances designated by 40 CFR 302.4(b) have the reportable quantity of 100 pounds, except for those unlisted hazardous wastes which exhibit extraction procedure (EP) toxicity identified in 40 CFR 261.24. Unlisted hazardous wastes which exhibit EP toxicity have the reportable quantities listed in Table 302.4 for the contaminant on which the characteristic of EP toxicity is based. The reportable quantity applies to the waste itself, not merely to the toxic contaminant. If an unlisted hazardous waste exhibits EP toxicity on the basis of more than one contaminant, the reportable quantity for that waste shall be the lowest of the reportable quantities listed in Table 302.4 for those contaminants. If an unlisted hazardous waste exhibits the characteristic of EP toxicity and one or more of the other characteristics referenced in 40 CFR 302.4(b), the reportable quantity for that waste shall be the lowest of the applicable reportable quantities.

(51 FR 34547, Sept. 29, 1987)

§ 302.5 Notification requirements.

(a) Any person in charge of a vessel or an offshore or an onshore facility shall, as soon as he has knowledge of any release (other than a federally permitted release or application of a pesticide) of a hazardous substance from such vessel or facility in a quantity equal to or exceeding the reportable quantity determined by this part in any 24-hour period, immediately

CASEN	Hazardous Substance
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13814245	Lead
13828830	Ammonium nitrate
13832846	Sac. Sulfolime
14017415	Calcium sulfonate
14216732	Nickel metal
14258452	Ammonium Oxalate
14307358	Lead chromate
14307438	Ammonium tartrate
14439975	Zinc ammonium chloride
14439986	Zinc ammonium chloride
14444812	Zinc ammonium sulfate
15489180	Nickel ammonium sulfate
15739607	Lead sulfate
15950860	2,2,4-Trichlorophenol
16731805	Sodium hydroxide
16752775	Acetic acid, N-[[methylcarbamoyl]imino]methyl ester
16871718	Zinc picolinate
16818188	Ammonium picolinate
16822958	Zinc ammonium picolinate
16833864	O-Guanylate, 3-diethyl-2-(3-methyl-3-oxobutyl)-
20816120	Seripropion
20820613	Ornithine
20820613	Ornithine tartrate
20820613	Ornithine
20859738	3,12-Naphthoquinone, (6S)-9-(5-oxo-10-(13-oxo-2,3-dimethyl-1-phenyl-1-propyl)acetyl)-7,8,10-tetrahydro-6,8,11-trimethyl-1-methylpropylbenzamide
23850245	3,5-Dichloro-N,N-dimethyl-2-propylbenzamide
25154545	Diuretic (mud)
25154556	Hexachlor (mud)
25155308	Sodium dodecylbenzene sulfonate
25187822	Tricouphane
25188154	2,4-D Esters
25188287	2,4-D Esters
25321144	Dibutylamine
25321225	Dibutylamine (mud)
25376458	Dar-nobutene
25376458	Toluene
25550587	Chlorophenol
26284552	Cyclic dodecylbenzene sulfonate
26471825	Barbitone, 2,4-diacetyl-5-methyl-
26471825	Toluene diisocyanate
26482229	Dichloroacene
26528137	Dichloroacene
26528236	Dichloroacene
27178870	Dodecylbenzenesulfonic acid
27322417	Tri-n-butylamine dodecylbenzene sulfonate
27774138	Vanadyl sulfate
28300745	Ammonium potassium tartrate
30535624	Paraldehyde
32534955	2,4,5-TP acid esters
33212659	beta - E-doulan
36478768	Urethyl male
37211055	Nickel chloride
39198184	3,3-Dimethyl-1-(methylthio) 2-butanone O-[[methylamino]carbonyl] oxime Thioglycol
42504481	Isopropylamine dodecylbenzene sulfonate
52628258	Zinc ammonium chloride
52652582	Lead stearate
53740166	Calcium arsenate
53487111	2,4-D Esters
53488218	Arctic 1242 Polychlorinated Biphenyl (PCBs)

INSERT HAZ MAT TRANSFER & STORAGE POINTS PLAN

APPENDIX A
INSTALLATION SPILL CONTINGENCY PLAN
EMERGENCY ASSISTANCE LISTING

FEDERAL

Environmental Protection Agency (404) 347-4062
Regional Response Team 24 hours
Atlanta, Georgia

Environmental Protection Agency (404) 347-3931
Region IV
Environmental Emergency Branch
345 Courtland Street
Atlanta, Georgia 30365

National Response Center (800) 424-8802
24 hours

STATE

Department of Health and Environment (901) 543-6695
Division of Solid Waste Management
2500 Mt. Moriah
Memphis, Tennessee 38115

Department of Health and Environment (901) 543-6695
Division of Water Pollution Control
2500 Mt. Moriah
Memphis, Tennessee 38115

Tennessee Emergency Management Agency (800) 262-3300
24 hours

LOCAL

Memphis Shelby County Health Department (901) 576-7653
Pollution Control
814 Jefferson Avenue
Memphis, Tennessee 38105

Shelby County Emergency Management Agency (901) 528-2780

Hazardous Material REACT Team (901) 320-5363
City of Memphis Fire Department
(Request thru DDMT, extension 6677 only)

DEFENSE LOGISTICS AGENCY

Office of Installation Services (AV) 284-6125
Office of Environmental Protection (DLA-WS/DEPO) (AV) 284-6967
Cameron Station, Virginia

Table 2. Cenozoic Geologic Units Underlying the Memphis Area - Continued

SYSTEM	SERIES	GROUP	STRATIGRAPHIC UNIT	THICKNESS (FEET)	LITHOLOGY AND ENVIRONMENTAL SIGNIFICANCE
Tertiary -Continued		Wilcox -Continued	Fort Pillow Sand ("1400-foot" sand)	210-280	Fine - to medium - grained sand; subordinate lenses of clay and lignite. Once used as second principal aquifer for Memphis; now reserved for future use. Presently supplies water to a few industrial wells.
		Paleocene	Old Breastworks Formation	200-250	Clay, fine grained sand, and lignite. Relatively impermeable lower confining bed for water in Fort Pillow Sand.

- E. SUBSURFACE.** The geologic formations underlying the loess consist primarily of unconsolidated sand, clay and gravel. Well-consolidated rocks of significant thickness occur at depths greater than 900 m. The Cenozoic units, which supply potable water for the Memphis area, are described in the stratigraphic column in Table 2. Structurally, DDMT is in the north central part of the Mississippi embayment, a geosyncline or broad through-like structure that plunges to the south. The dip of the geologic formations varies from 0 to 35 feet (ft) per mile.
- F. SOIL.** The Generalized Soil Associations Map compiled by the U.S. Soil Conservation Service (USSCS) (Lease et al., 1970) shows DDMT to be in the Memphis-Grenada-Loring Association, which is characterized by nearly level to sloping, well drained and moderately well drained, silty soil on broad uplands. The soil in this association developed in silty deposits more than 6 m deep. Prior to the construction of DDMT, the soil was classified as Memphis soil, which is well drained soil on the broader ridgetops and steeper hillsides. Memphis soil has a brown silty surface layer and subsoil. The construction of DDMT destroyed all of the Memphis soil, except in the northeast corner of Dunn Field and in the golf course area; these two areas retain the original Memphis silt loam. The construction areas have been classified as graded land, with silty materials. The soil in the graded land at DDMT varies from clay to sandy-silt. The permeability of the Memphis soil and graded land varies from 4.4×10^{-4} to 1.4×10^{-3} cm per second.
- G. GROUNDWATER.** The depth to seasonal high water tables in the loess varies from 1.5 m to greater than 5 m. The fluvial sands and gravels that underlie the loess are a source of water in many outlying suburban and county areas. Impermeable clay lenses in the sands and gravels could cause perched groundwater conditions. All potable water used at DDMT is purchased from the city of Memphis, which pumps more than 95 percent of its water from the Memphis Sand ("500-foot" Sand) and approximately 5 percent from the Fort Pillow Sand ("1,400-foot" Sand).
- H. GEOLOGICAL ASPECTS OF POTENTIAL MIGRATION.** The potential exists for the migration of contaminants via the surface storm drainage system at DDMT. Materials spilled in the warehouse area have the potential of being washed into the storm drainage system. Infiltration of spilled materials to the soil in the warehouse area is minimal, since the open soil areas are small and well drained by the storm drainage system. Data is available as to contaminants migrating via the storm drains, because there is an active National Pollutant Discharge Elimination System (NPDES) program to monitor the outflow at the discharge outlets for contaminants. There is a potential for contaminants to migrate through the loess into the three zones described below.

1. Fluvial Deposits. The fluvial deposits consist primarily of sand and gravel which underlie the loess (Table 2). These deposits supply water to many domestic wells in suburban and county areas. USAEHA reported a perched groundwater table in the Dunn Field area; however, discharge from the perched water table would go into the fluvial deposits.
2. Memphis Sand. The Memphis Sand is the primary aquifer for the City of Memphis water supply. The Memphis Sand is overlain by the Jackson Formation that is generally considered to be of low permeability and confines water in the Memphis Sand (Table 2). A USGS Water Resources Investigation Report (Parks and Lounsbury, 1976) indicates that there are permeable sandy zones in the Jackson Formation that could allow contaminants to migrate from the fluvial deposits into the Memphis Sand.
3. Surface Streams. Contaminants migrating into the fluvial deposits could be discharged into Cane or Nonconnah Creeks. No subsurface data was located for the Dunn Field area. Additional data on subsurface conditions, such as the local thickness and permeability of the geologic units and groundwater conditions, are needed to determine the subsurface potential for migration in this area.

The storm drainage system north of Lake Danielson (also called the Fire Reservoir) empties into the lake.

SECTION V

LEASES

Reportedly, there have been no industrial, agricultural, or grazing leases at DDMT. There are a number of DOD tenants on the installation, primarily engaged in administrative activities.

SECTION VI

LEGAL ACTIONS

Reportedly, there have been no legal actions at DDMT involving toxic/hazardous materials.

DEFENSE DEPOT

MEMPHIS, TENNESSEE

SPILL PREVENTION, CONTROL AND COUNTERMEASURE
(SPCC) PLAN

PART II OF SPCC

PART II

SPILL PREVENTION, CONTROL AND COUNTERMEASURE (SPCC) PLAN

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PART II

SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN

I. PURPOSE AND SCOPE OF THE PLAN

- A. This Oil & Hazardous Materials Spill Prevention, Control and Countermeasure Plan is prepared for the United States Defense Logistics Agency facility located at the Defense Depot Memphis, Tennessee.
- B. The purpose of the plan is to:
1. Identify and assess the potential for accidental discharges of oil or hazardous materials.
 2. Establish a program to reduce or eliminate the likelihood of an accidental discharge of oil or hazardous material, resulting from equipment or storage facility failure, from reaching the navigable waters, other surface water, ground water, drinking water supply, land surface or subsurface strata, or ambient air within the United States or under the jurisdiction of the United States.

II. **LEGISLATIVE BACKGROUND.** The SPCC Plan is prepared in accordance with Environmental Protection Agency (EPA), Title 40, Code of Federal Regulations (CFR), Part 112; 40 CFR 116; 40 CFR 117; 40 CFR 265; 40 CFR 300; and 40 CFR 302. Part 112, issued under the authority of Sections 311 (j) (1) (c), 311 (j) (2), and 501 (a) of the Federal Water Pollution Control Act (Public Law (PL) 92-500), establishes requirements for oil pollution prevention at non-transportation related onshore and offshore petroleum product facilities. Title 40 CFR 110, EPA regulations on Discharge of Oil, issued under the authority of the Water Quality Improvement Act of 1970, prohibits the discharge of oil into navigable waters and waters of the coastal contiguous zone in harmful quantities. Recent court decisions have held that the Federal Water Pollution Control Act's definition of "Navigable Waters" as "Waters of the United States" eliminates the traditional "navigability" limitation. Accordingly, streams heretofore considered non-navigable are now within the jurisdiction as "Waters of the United States". "Harmful quantities" of oil are defined 40 CFR 110 as discharged which violate applicable water quality standards, cause a visible sheen or a discoloration of the water surfaces, or cause a sludge or emulsion to be deposited beneath the water or on the shore line. In addition to 40 CFR 112, we have amended our plan to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of 40 CFR 265.

III. ADMINISTRATIVE REQUIREMENTS. In addition to the technical specifics that constitute the heart of this Plan, 40 CFR 112 and 40 CFR 265 specifies administrative procedures and/or requirements related to implementation deadlines and extensions, plan amendments, periodic review requirements and spill reporting procedures.

- A. PLAN PREPARATION AND IMPLEMENTATION.** The regulations require "Full Implementation" by 10 January 1975. They also provide, however, for time extensions for the preparation and implementation of a SPCC Plan beyond the time permitted in the regulations. The Regional Administrator may authorize an extension of time at the request of the owner or operator of the installation. Requests should be accompanied with full explanations of the cause for requesting an extension. [112.3 (f)]
- B. PLAN AMENDMENTS.** This plan must be amended "whenever there is a change in facility design, construction, operation or maintenance which materially affects the facility's..." spill potential. Amendments which reflect the above changes must be implemented no later than six (6) months after such change occurs. [112.5(a)] All such amendments must be certified by a Professional Engineer per 40 CFR 112.5(c).
- C. PERIODIC REVIEW.** This plan must be reviewed and evaluated at least once every three years after initial approval. If necessary, the plan must be amended within six months of the review. [112.5 (b)]
- D. SPILL REPORTING PROCEDURES.** Whenever Defense Depot has discharged more than 1,000 U.S. gallons of oil into the "Waters of the United States" or discharged oil in harmful quantities (simply stated, a visible sheen) into "Waters of the United States" in two spill events within any 12 month period, a report of same must be made to the Area Coordinator within 30 days. The required contents of this report are itemized in [112.4 (a)]. The Area Coordinator will forward the spill report to the EPA Regional Administrator in Atlanta, whereupon he has the authority, within certain appeal rights of the Defense Depot Memphis, to amend the plan (112.4). As soon as we have knowledge of any release of a hazardous substance in a quantity equal to or exceeding the reportable quantity determined by 40 CFR 302.4 in any 24 hour period, we will immediately notify the National Response Center (800) 424-8802 and the Emergency Management Agency (901) 528-2780.

IV. POTENTIAL SPILL SITES. The Defense Depot Memphis is located on a relatively flat 642 acre site and is served by a network of underground storm sewers and open drainage ditches or storm sewers maintained by the City of Memphis. The only surface waters on the Installation are Lake Danielson and a small golf course pond. The golf course pond is 0.1 acre and fed by runoff from the adjacent golf course and serves as a holding and dilution pond for a storm sewer outfall which drains about a third of the Defense Depot's storage buildings and surrounding areas. Runoff from these two bodies of water also discharges into open ditches. All storm water from Defense Depot Memphis discharges into Nonconnah Creek through unnamed ditches. Of the various oil and hazardous material storage and transfer points at Defense Depot Memphis, thirteen (13) have been identified and determined to be potential spill or hazardous material discharge locations with the possibility of the spill reaching navigable waters. The thirteen existing sites are identified in Table 1.

TABLE V-1
DEFENSE DEPOT MEMPHIS
FACILITY SITES INCLUDED IN SPCC PLAN

SITE NUMBER	STORAGE LOCATIONS
1	DRMO Outdoor Storage Area Concrete Hardstand
2	Building 308, Hazardous Material Area
3	Mogas, Diesel and Fuel Oil Storage Area
4	Building S873, Open P.O.L.
5	Building 68515, Flammable Liquid Holding Area
6	Building 835, Hazmat Warehouse
7	Building 737, Pesticide Storage Area
8	Building 319, Flammable Storage Area
9	Building 925, Flammable Liquid Storage Warehouse
10	Building S469, Electric Forklift Shop
11	Buildings 1086 and 1087, Spray Painting Operations
12	Building 1088, Care and Preservation
13	Building 865, Recoup

APPENDIX B

INSTALLATION SPILL CONTINGENCY PLAN NOTIFICATION RECALL LIST

<u>Functional Description</u>	<u>Name/Address</u>	<u>Phone Number</u>	
On-Scene Coordinator (OSC)	Mr. George Gillard 1052 Hale Road Memphis, TN	Home: Work: Beeper:	332-4504 775-4508 391-7224
Assistant On-Scene Coordinator (AOSC)	Ms. Jackie Hall 4416 Guildhall Drive Memphis, TN	Home: Work: Beeper:	377-2015 775-6605 391-7284 (ADAM 6-D)
Safety and Health Representative (SHR)	Ms. Cheryl Blas 533 Cairn Drive Ext. Cordova, TN	Home: Work: Beeper:	765-0727 775-6604 (ADAM 6-A)
Environmental Specialist (ES)	Mr. Robert Sanders 3575 Blackberry Bush Rd Apt # 3 Memphis, TN	Home: Work: Beeper:	795-9119 775-4003 325-2401
Industrial Hygienist (IH)	Mr. Alton Hughes 594 Berclair Memphis, TN	Home: Work: Beeper:	763-2074 775-4900 N/A
Facilities Engineer (FE)	Ms. Linda Boyd 4144 Village Road Memphis, TN	Home: Work: Beeper:	452-1133 775-6755 N/A
Response Team Leader (RTL)	Mr. Ben Williams 3797 Oak Lake Lane Memphis, TN	Home: Work: Beeper:	363-5678 775-6944 391-7248

APPENDIX B

**INSTALLATION SPILL CONTINGENCY PLAN
NOTIFICATION RECALL LIST
(Cont'd)**

<u>Functional Description</u>	<u>Name/Address</u>	<u>Phone Number</u>	
Assistant Response Leader (ARTL)	Mr. Carl Phillips 2885 Springview Road Memphis, TN	Home: Work: Beeper:	396-6073 775-6944 391-7285
Security Representative (SR)	Shift Lieutenant DDMT Security	Work:	775-6677
Director of Installation Services		Home: Work: Beeper:	
Assistant, Director of Installation Services		Home: Work: Beeper:	

APPENDIX C

INSTALLATION SPILL CONTINGENCY PLAN

EMERGENCY RESPONSE EQUIPMENT LIST

EMERGENCY EQUIPMENT: The following list of emergency response equipment and supplies is located in the Installation Spill Response Trailer, located adjacent to Building 873.

QTY	U/I	DESCRIPTION
8	EA	Air Packs
1	BX	Alcohol Pads, 81 pt. bottles
2	EA	Band Cutters
4	EA	Push Brooms
3	EA	Brooms
6	PR	Chemicals Cartridges (shelf life expired)
2	BX	Coveralls
2	BX	Chemical Resistant Gloves, 12 pair
14	EA	Chemical Apron
4	EA	Chairs
1	BX	Disposal Gloves
1	BX	Defense Systems Blue Prints
3	EA	First Aid Kits
2	EA	First Aid Stretchers
3	EA	Fire Hoses (50 ft.)
2	EA	Hazardous Spill Kits
12	EA	Hard Hats and Shields
2	EA	Hand Pumps
4	EA	Knives
2	TU	Lens Prep
1	EA	Mercury Spill Kit
3	EA	Non-Sparking Shovels
10	EA	Organic Vapor Respirators (Shelf Life Expired)
1	BX	Plastic Trash Bags
1	BX	Paper Towels
3	EA	Plastic Shovels
4	EA	Safety Glasses
1	EA	Tool Set
2	RO	Tape-Green
1	BX	Saranex Coveralls (lg & xlg)
4	EA	Trash Receptacles
5	EA	Water Tanks
1	BX	Absorbent Pulp - Oil & Water
1	BX	Absorbent Pillow - Aggressive Fluids
1	BX	Absorbent Sock - Aggressive Fluids
1	BX	Absorbent Sock - Oil & Water
1	BX	Absorbent Sock

1 EA Overpack Salvage Drum (95 gal)
1 EA Pail Plug n DIke (5 gal)
3 EA Kiddie Pools for Decontamination
2 RO Spill Barrier Tape
1 BG Rags
2 BX Cooling Pads
4 EA Decontamination Buckets
5 EA Hazardous Material Equipment Bags
2 EA Benches
2 RO Litmus Paper
2 BX Putty
2 EA Rakes
6 BG Absorbent
3 BG Sodium Bicarbonate (100 lbs)
1 BG Absorbent Mats (50 ea)
1 BX Level A Disposable Suits (XLG) 4 ea.
1 BX Level A Disposable Suits (LG) 4 ea.

Revised 5/94

APPENDIX D

INSTALLATION SPILL CONTINGENCY PLAN

SPILL RESPONSE CHECKLIST

CHECKED

BY: _____

DATE: _____

1. ON SCENE COORDINATOR (OCS) reported to the scene at _____ hours.

2. ASSISTANT OCS reported to the scene at _____ hours.

3. The discharged material is confirmed to be _____.

4. The NSN is _____.

5. The location of the spill is _____.

6. The amount of material involved in the spill is _____.

7. Weather conditions at commencement were:

Temperature: _____

Wind direction: _____

Wind speed: _____

Lighting conditions: _____

Moisture conditions: _____

8. The following personnel reported to the scene:

FIRE MARSHAL REP: _____ . TIME: _____

SAFETY/HEALTH REP: _____ . TIME: _____

SECURITY REP.: _____ . TIME: _____

SECURITY REP: _____ . TIME: _____

RESPONSE TEAM MEMBERS:

RESPONSE TEAM LEADER: _____ . TIME: _____

ASSISTANT RTL.: _____ . TIME: _____

MEMBERS: _____ . TIME: _____

9. Security perimeter established at the following location/s: (NOTE:) See guidelines for establishing perimeters and evacuation distances at the end of this Appendix).

10. Entry Control Point established at: _____

11. A personnel injury assessment was made by the SHR and _____ injured personnel have been identified. (SHR will provide as Attachment #1, a detailed listing of any injured personnel, extent of their injuries and their disposition.

12. An assessment of any affected utilities has been made with the following results: _____

13. An assessment of any fire or explosion hazard has been made with the following results:

14. PPE is available to commence operations for a level _____ entry.

15. The Response Team is properly dressed, equipped, and has been checked and is ready to commence operations. _____

16. The spill containment strategy is: _____

17. Containment operations began at _____ hours.

18. Containment operations ceased (all clear) at _____ hours.

SUMMARY NOTES AND COMMENTS:

NAME OF ON SCENE COMMANDER SIGNATURE OF ON SCENE COMMANDER

TITLE OF ON SCENE COMMANDER

RECOMMENDATIONS:

APPENDIX E
INSTALLATION SPILL CONTINGENCY PLAN (ISCP)
REPORTABLE QUANTITIES LISTING

SECTION V

FACILITY SPCC PLAN FOR SITE NO. 1 - DRMO OUTDOOR CONCRETE HARDSTAND STORAGE AREA

- A. GENERAL INFORMATION.** The DRMO concrete hardstand outdoor storage area is located adjacent to and south of Dunn Avenue and north of "B" street. It is 62 x 142', total area 8800 sq. ft. It is sloped to drain to one corner which has a concrete berm to contain possible spills. The berm has a 6" flex elbow drain which will allow any spilled liquids to be removed and prevent release to the environment. Material storage is currently divided into two separate locations, one for non-flammables and one for flammables. Maximum storage capacity of the hardstand area is approximately 25,000 gallons. However, it is customary to store all hazardous wastes and materials inside of Building 308 rather than outside in the weather. At any one time the materials possibly stored in the two areas are listed below.

Flammable

- | | |
|------------------------|--|
| 1. Acetone technical | 5. Toluene technical |
| 2. Isooctane | 6. Naptha aromatic |
| 3. N-Butyl acetate | 7. Alcohol 94.9 percent
volume denatured. |
| 4. Methyl ethyl ketone | |

Non-Flammable

- | | |
|---------------------------------|---------------------------------|
| 1. Cleaning compound solvent | 11. Trichloroethane 1,1,1. |
| 2. Calibrating fluid (aircraft) | 12. STP oil treatment |
| 3. Hydraulic fluid petro base | 13. Rifle bore cleaner |
| 4. De-icing defrosting fluid | 14. Lubricating oil |
| 5. Dry-cleaning solvent | 15. Lube oil engine |
| 6. Corrosion preventative | 16. Lube oil aircraft |
| 7. Cutting fluid | 17. Calibrating oil |
| 8. Foam liquid fire extinguish | 18. Corrosion removing compound |
| 9. Sodium hydroxide base | 19. Carbon removing compound |

Spill containment and clean up material is located in Bldg. 308 which is located approximately 100' east of the hardstand area.

Spills could occur during loading and off loading of drums from vehicles or when drums are being moved. A spill of this type would normally be noticed immediately since DRMO personnel are present for all unloading and moving operations. Corrective action should be begin immediately.

1. Inspection and Records. Inspection by operating personnel is performed as part of standing operating procedures, which include spill prevention procedures. Any operational abnormalities are reported to appropriate supervisory personnel.
2. Personnel Training & Spill Prevention Procedures. Operating personnel are properly instructed in preventing spills. The Chief, Defense Reutilization and Marketing Office, is responsible for personnel training in spill prevention procedures. Training is accomplished on the job. Emphasis is placed on spill prevention through proper operating procedures and improved operator awareness. A copy of the SPCC Plan, the ISC Plan and the SOP are kept in the Chief's office.

B. DESIGN AND OPERATING INFORMATION.

1. Facility Drainage. Drainage is to the nearest catch basin/storm drain. These drains can be blocked by sandbags and polyurethane plastic sheeting any time material is being handled.
2. Security. Security for the facility is adequate since it is located within fenced perimeter of a military reservation with 24 hour roving patrols. Lighting of the area is adequate.

C. RECOMMENDED MODIFICATIONS:

A fence enclosure should be provided to control access to this storage area so that illegal dumping can be controlled. A state-of-the-art conforming storage facility must be built so that wastes can be stored in an environmentally safe manner.

FACILITY SPCC PLAN FOR SITE NO. 2 - BUILDING 308, HAZARDOUS MATERIAL AREA

A. GENERAL INFORMATION. Building 308 is located 100' east of the hardstand area. It is a wood framed tin structure with a concrete floor, and a two foot tall concrete foundation surrounding the floor with the exception of a 12' cargo door in one end and an emergency door in the other. It is 45' x 96', total area is 4400 sq. ft. Spills will be contained by placing sandbags in front of the door openings. Spill containment and cleanup material is located inside the building. Types of materials stored will include flammables, corrosives, oxidizers and toxic material. Each hazard class is separated in accordance with DOD 4145.19 R-1, Storage and Materials Handling Manual.

**TABLE V-2
POTENTIAL SPILLS PREDICTION**

SOURCE	POTENTIAL TYPE OF FAILURE	POTENTIAL DIRECTION OF FLOW	POTENTIAL SPILL, GAL	SEC. CONTAINMENT
Bldg 308	Loading and off loading operation	Eastward To drain		Yes

Spills could occur during loading and off loading of drums from vehicles or when drums are being moved. A spill of this type would normally be noticed immediately, since DRMO personnel are present for all unloading and moving operations. Corrective action should be begin immediately.

1. Secondary Containment. Secondary containment consists of the two foot concrete wall which encloses the perimeter of the building with the exception of the twelve foot door and the emergency exit. While the containment is not complete, it is not expected that the largest anticipated spill will reach a storm drain because of the distance involved. Additional sand bags are used to form a protective berm around each separate storage area. The floors have been painted and sealed to prevent contamination from reaching the underlying ground.
2. Inspection and Records. Inspection is performed as part of standing operating procedures, which include spill prevention procedures. Any operational abnormalities are reported to appropriate supervisory personnel.

3. Personnel Training & Spill Procedures. Operating personnel are properly instructed in preventing spills. The Chief, Defense Reutilization and Marketing Office, is responsible for personnel training in spill prevention procedures. Training is accomplished on the job. Emphasis is placed on spill prevention through proper operating procedures and improved operator awareness. A copy of the SPCC Plan, the ISC Plan and the SOP are kept in the Chief's office.

B. DESIGN AND OPERATING INFORMATION.

1. Facility drainage.
 - a. Unloading areas. Drainage is to the nearest catch basin/storm drain. These drains can be blocked by sandbags and polyurethane plastic sheeting any time material is being handled.
 - b. Security. Security for the facilities is adequate since they are located within the fenced perimeter of a military reservation with 24 hour roving patrols. Lighting of the area is adequate.

C. RECOMMENDED MODIFICATIONS.

Provide a state-of-the-art conforming storage building to replace the existing structure. The building currently being utilized was never designed for storage of hazardous wastes.

**FACILITY SPCC PLAN FOR SITE NO. 3-MOGAS, DIESEL, & FUEL OIL STORAGE
AREA**

A. GENERAL INFORMATION. These sites are included in SPCC/ISCP because of the aggregate storage volume for DDMT.

TABLE V - 3

POTENTIAL SPILLS - PREDICTION AND CONTROL

Location Bldg. No.	Capacity (gal)	Fuel	Year Installed	Use	Type
257	18,000	Gasoline	1985	Vehicle refueling	Underground Tank
257	20,000	Gasoline	1985	Vehicle refueling	Underground Tank
257	1,000	Diesel	1992	Vehicle refueling	Above ground vault
359	1,000	Diesel	1993	Heating fuel	Above ground vault
756	1,000	Gasoline	1994	Vehicle refueling	Above ground vault

1. Inspection and Records. Inspection is performed as part of standing operating procedures, which include spill prevention procedures. Any operational abnormalities are reported to appropriate supervisory personnel.
2. Personnel Training & Spill Prevention Procedures. Operating personnel are properly instructed in preventing oil spills in accordance with the Oil Spill Prevention and Countermeasure Standing Operating Procedures. The Chief, Utilities Branch, Facilities Engineer Division, is responsible for the training of personnel in spill prevention procedures. Training is accomplished on the job. Emphasis is placed on spill prevention through proper operating procedures and improved operator awareness. A copy of the SPCC Plan, the ISC Plan and the SOP are kept in the Chief's Office.

B. DESIGN AND OPERATING INFORMATION.

1. Facility Drainage
 - a. Unloading Areas. Drainage is to the nearest catch basin/storm drain. These drains can be blocked by sandbags and polyurethane plastic sheeting any time oil is being unloaded.
2. Bulk Storage Tanks. There are currently two (2) underground storage tanks in operation. They are located at Building 257. These two tanks contain gasoline. The tank sizes are 18,000 and 20,000 gallons. They are monitored through a program of hydrostatically testing on a monthly basis. This method of testing is described as the "final test" in the National Fire Protection Association Manual #329.
3. Tank Truck Unloading Area. Loading and unloading operations shall follow standard procedures and meet the minimum requirements of the regulations established by the Department of Transportation. While no containment is provided in the unloading area, due to limited use, there have been no spills of any consequence, and any which do occur can be cleaned up with minimal likelihood of deleterious effects. A DDMT operator will be present during all transfer operations. DDMT personnel and truck driver check truck for complete disconnect and storage of transfer hoses prior to departure. The driver checks drains and outlets on the truck for leakage prior to departure.
4. Security. Security for the facilities is adequate since they are located within the fenced perimeter of a military reservation with 24 hour roving patrols. Lighting of the area is adequate.

C. RECOMMENDED MODIFICATION.

The current underground storage tank removal project will significantly reduce DDMT's potential for soil contamination.

FACILITY SPCC PLAN FOR SITE NO. 4 - BLDG S873 OPEN POL STORAGE

- A. GENERAL INFORMATION.** This site is included in the SPCC/ISCP due to the volume of combustible POL which is stored in this area. It is an open sided storage shed, 180 feet wide by 1400 feet long. The majority of the products stored under the shed are stored in 55 gallon drums, 4 drums to a pallet, and stacked 4 pallets high.

TABLE V-4

POTENTIAL SPILLS - PREDICTION AND CONTROL

SOURCE	POTENTIAL TYPE OF FAILURE	POTENTIAL SPILL GALLONS	SECONDARY CONTAINMENT
Bldg 873	Loading/ Unloading		Berm/sandbags

1. Secondary Containment. Secondary containment consists of the 6" concrete curb which partially encloses the perimeter of the building. While the containment is not complete, the placement of sandbags in strategic locations should complete the containment of spills.
2. Inspection and Records. Inspection is performed as part of standing operating procedures, which will include spill prevention procedures. Any operational abnormalities are reported to appropriate supervisory personnel.
3. Personnel, Training and Spill Prevention Management. Personnel assigned to this area receive indoctrination training and manual refresher training.

B. DESIGN AND OPERATING INFORMATION.

1. Facility Drainage. This area is drained by gravity flow storm drainage system.
2. Security. This area has controlled access with appropriate signs posted. Access is controlled thru Building T860, X6182.

- C. RECOMMENDED MODIFICATIONS.** Strong monitoring program by warehouse management. This particular facility was never designed for the proper storage of hazardous materials. Flooding occurs due to improper drainage in the area. Also, there needs to be improved lighting in the area.

D. MATERIALS STORED IN BLDG. 873. The following is a partial listing of materials stored in this area.

- a. Foam liquid fire extinguishing.
- b. Sodium hydroxide base.
- c. Trichlorotrifluorethane.
- d. Corrosion removing compounds.
- e. Carbon removing compounds.
- f. Engine lube oil.
- g. STP oil treatment.
- h. Acids.

Drainage of the building and surrounding grounds is toward side ditches along the east and west sides of the building and then north to storm drain inlets along the south side of "G" Street. The open nature of Building 873 allows water to soak the building floor slab during heavy rains. Any material on the slab would be carried out onto the crushed limestone or into the storm drainage system by the floor slab runoff.

**FACILITY SPCC PLAN FOR SITE NO. 5 - FREIGHT TERMINAL STORAGE BLDG. 689/5
"FLAMMABLE LIQUID AREA"**

A. GENERAL INFORMATION. This facility is included in the SPCC/ISCP due to the types and amounts of hazardous materials which will be stored in this area awaiting outloading. Material may be one of multiple hazards. Container size may be 1 pint to 55 gallons. Material is stored according to storage compatibility codes and DOT hazard. The following is a partial list of materials which could be stored at this site.

- | | |
|------------------------|-----------------------------------|
| a. Acetone technical | e. Toluene technical |
| b. Isooctane | f. Naptha aromatic |
| c. N-Butyl acetate | g. Alcohol 94.9 percent by volume |
| d. Methyl ethyl ketone | denatured. |

TABLE V-4

POTENTIAL SPILLS - PREDICTION AND CONTROL

SOURCE	POTENTIAL TYPE OF FAILURE	POTENTIAL SPILL, GAL.	DIRECTION OF FLOW	SEC. CONTAINMENT
Freight	Leaking container		None	Partial

This facility is located in the northwest corner of Building 689 and is accessed through a roll up metal cargo door on the inside and a pedestrian door on the outside. This facility may, at any one time, have stored within it, hazard classes of any and all types. No floor drains are provided for spill removal and the area has sealed wall/floor joints. A spill would normally be noticed immediately since DDMT personnel are present for all unloading and moving operations. Corrective action should begin immediately. The area is adjacent to storm sewer inlets in "L" Street. The storm sewer eventually discharges to an open ditch maintained by the City of Memphis.

- Secondary Containment. Secondary containment is partially provided.
- Inspection and Records. Inspection is performed as part of standing operating procedures, which include spill prevention procedures. Any operational abnormalities are reported to appropriate supervisory personnel.
- Personnel, Training and Spill Prevention Management. This area is normally staffed with one person assigned to Bulk POL Branch. Any individual during normal working hours who is assigned to work in this area has received indoctrination training and will receive annual refresher training.

B. DESIGN AND OPERATING INFORMATION.

1. Facility drainage. Drains are not provided in this facility. Liquid must be mechanically or manually removed.
2. Security. This area is closed during nonworking hours, but not locked. Doors are closed or lowered to prevent casual entry.

C. RECOMMENDED MODIFICATIONS. Recommend sufficient absorbent materials such as commercial spill kits as well as neutralizers be kept on hand for emergency situations. Also, sand bags should be kept in close proximity to block doorways thus containing spills inside.

FACILITY SPCC PLAN FOR SITE NO. 6 - HAZMAT BLDG. 835 WAREHOUSE

- A. **GENERAL INFORMATION.** This site is included in the SPCC/ISCP because of the volumes of various hazardous commodities which are stored in this area. Material in this area will be stored on wooden pallets and in pallet support sets. Materials stored on main transport aisles in each section may be stored in pallet racks. This is a 6 section hazardous materials warehouse. Storage area will consist of approximately 138,000 sq. ft.

TABLE V-5

POTENTIAL SPILLS - PREDICTION AND CONTROL

SOURCE	POTENTIAL TYPE OF FAILURE	POTENTIAL SPILL GALLONS	SECONDARY CONTAINMENT
Bldg. 835	Loading/ Unloading		Yes

This facility is a hazardous materials warehouse. The Department of Transportation (DOT) hazard classes which will be stored in this facility are as follows:

- Corrosive liquid (acids and bases)
- Flammable liquids (Class II and III)
- Flammable Solids
- Compressed Gas Flammable
- Flammable Solids Dangerous When Wet
- Compressed Gas Non-Flammable
- Oxidizing Material
- Poison B

These materials will be compatibly stored in warehouse, Bldg 835.

Spills could occur during loading and off loading of drums and other containers or when they are being moved. A spill of this type would normally be noticed immediately, since DDMT personnel are present for all unloading and moving operations. Corrective action should begin immediately.

1. Secondary Containment. Secondary containment is provided in this facility.
2. Inspection and Records. Inspection is performed as part of standing operating procedures, which include spill prevention procedures. Any operational abnormalities are reported to appropriate supervisory personnel.

3. Personnel, Training and Spill Prevention Procedures. Access to this area is limited to personnel assigned to Chemical Branch. All personnel have received indoctrination training involving spill control, clean up and prevention.

B. DESIGN AND OPERATING INFORMATION.

1. Facility Drainage. This facility is constructed on level ground. The drainage system is a gravity flow system with access to storm drains within 50 feet of the building on all sides. Secondary containment is provided.
2. Security. This area has controlled access with the appropriate signs posted. Access is controlled thru the Branch Office, X6197.

- C. RECOMMENDED MODIFICATIONS.** Keep sufficient amounts of absorbent material as well as neutralizing materials on hand to allow for fast response time regarding spills. Written standard operating procedures must be drawn up regarding inspections and methods of handling leakers located in the storage racks.

**FACILITY SPCC PLAN FOR SITE NO. 7 - BLDG 737
PEST CONTROL CHEMICAL STORAGE**

ENTOMOLOGY SHOP SPILL CONTINGENCY PLAN

1. AUTHORITY:

- a. Title 40 CFR Part 1510, Part 116, 117.3.
- b. Technical Information Memorandum No. 15.

2. PURPOSE OF PLAN: To provide procedures for cleaning up spill, decontamination and disposal of pesticides in the Entomology Shops, Bldg. 737.

3. STORAGE AREAS:

- a. Bldg. 737.
- b. Store all pesticides with labels plainly visible.
- c. Containers should be checked monthly to ensure that lids are tight and containers are not damaged.
- d. Incompatible pesticides such as herbicides and insecticides must be stored separately.
- e. Containers must be stored in well ventilated and dry areas.
- f. A complete inventory of the chemicals will be located on the outside of the doors at Bldg. 737.
- g. Containers found leaking or damaged will be separated from the undamaged containers.
- h. The damaged containers will be repackaged and the complete label will be duplicated.
- i. The content will be transferred, by pouring into a new container, using a wide mouth funnel or siphoning the contents into the new container with a mechanical pump. Never start siphon by mouth.
- j. Broken bags will be placed in heavy-duty plastic bags, sealed with twist ties and labeled.

4. **SPILL EMERGENCY PROCEDURES:**

- a. Quickly assess the spill situation to determine if personnel are involved.
- b. If personnel are involved, a trained rescuer, should quickly don necessary protective equipment and remove the injured to a safe location upwind from the spill.

EMERGENCY MEDICAL UNIT

1. DDMT Health Clinic
Duty Nurse or Doctor (Dr. Bobbie Haywood)
Duty phone: (901) 775-6262 or 6119
2. Southern Poison Center
848 Adams Avenue
Memphis, TN
(901) 528-6048
3. CHEMTREC (800-424-9300)
National Agriculture Chemical Association (N.A.C.A.) operator
4. Notification List in Case of a Spill
 - a. Entomology Supervisor
Mr. Jewell Edwards
Duty phone (901) 775-6560
Home phone (901) 396-6062
 - b. Emergency Telephone Numbers
Security Desk Sergeant (24 hour) (901) 775-6677
 - c. Spill Control Organization (Day Shift)
 - d. Facilities Engineer Trouble Office (Non-Duty Hours)
6677 (Duty Hours) 6571
 - e. Safety Office (Duty Hours) 6604

5. Spill Control Organization:

C. Michael Rust, Col. USA
Defense Depot Memphis
Memphis, TN 38114
Duty phone: (901) 775-4901
Home phone: (901) 382-2784

On Scene Coordinator

Darrell McMinn
775-4900

Jackie Hall
775-6605

City of Memphis Fire Department: Request thru X6677, 24 hour direct line.

Designated DDMT Environmental Coordinator:
Christine Kartman, Ph: 775-4510

EPA-Regional Response Team
EPA Region IV - Atlanta, GA
24 hour phone - 1-404-347-4062
Mr. Doug Lair
Chief, Environmental Emergency Branch
345 Courtland Street
Atlanta, GA 30365
Phone: 404-347-3931 (can be reached thru Ft. McPherson, GA (AV)
588-1110)

6. **SPILL EMERGENCY PROCEDURES:**

- a. Notify security - X6677, activate spill plan.
- b. Quickly assess the spill situation to determine if personnel are involved.
- c. If personnel are involved, a qualified rescuer should quickly don necessary protective equipment and remove the injured to a safe location upwind from the spill.

- d. If the spill is inside, move the person to the deluge shower or eye wash located in each room or the one located on the outside of the mixing room on the south side of Bldg. 737.
 - e. Flush contaminated eyes or remove contaminated clothing if necessary.
 - f. Open doors, windows and turn on the exhaust fan to enhance ventilation of the area.
 - g. Eliminate all sources of ignition, (e.g., pilot lights, electric motors, gasoline engines) in order to prevent the threat of fire or explosion.
 - h. Identify the pesticides by formulation, percent of active ingredient and manufacturers name and address.
 - i. Carry the victim to the Health Clinic or have the nurse on duty to report to scene of spill if victim cannot be moved.
7. **SITE SECURITY:** Secure the spill site from entry by unauthorized personnel by roping off the area and posting warning signs.
8. **CONTAINMENT AND CONTROL:**
- a. Bldg. 737 - The floors in the insecticide and herbicide rooms are sloped to the center of the rooms. The insecticide room will hold 304.5 gallons and the herbicide room will hold 217.42 gallons.
 - b. For liquid pesticide - vermiculite absorbent material will be used.
 - c. For dry pesticide - cover with polyethylene or plastic tarpaulin and secure with sandbags.
9. **CLEAN-UP:**
- a. Adequate cleanup of spilled pesticides is essential in order to remove any health or environmental hazards. When cleaning up pesticide spills, it is advisable not to work alone, make sure the area is properly ventilated, and that appropriate protective equipment is used by all personnel.
 - b. Each employee is issued his own personal safety equipment listed in the spill containment kit.
 - c. Dry spills, (dust, wettable powders, granular formulations) should be picked up.

- d. Immediately cover powders, dust, or granular materials to prevent them from becoming airborne. This can be done by placing a polyethylene or plastic tarpaulin over the spilled material. Weight the ends of the tarp, especially the end facing into the wind. Begin clean-up operations by systematically rolling up the tarp while simultaneously sweeping up the spilled pesticide, using a broom, shovel, or dust pan. While sweeping, avoid brisk movements in order to keep the dry pesticide from becoming airborne. If indoors, a cover may not be necessary. When practical, light sprinkling with water may be used instead of a cover. A shop vacuum will be used to clean-up spilled dusts wettable powders and granules from hard surface floors or areas when available.
- e. Collect the pesticide and place it in heavy-duty plastic bags. Properly secure and label the bags identifying the pesticide and possible hazards. Place the bags in a secure area for later disposal.
- f. Liquid spills should be cleaned up by placing the absorbent material, vermiculite or clay absorbent, over the spilled pesticide. Work the absorbent into the spill using a broom or other tool to force the absorbent into close contact with the spilled pesticide. Collect all spent absorbent material and place into a properly labeled leakproof container. After spilled emulsifiable concentrates have been absorbed onto absorbent, water and additional absorbent should be used to remove the concentrated pesticide prior to applying decontaminating solution.
- g. Contaminated soil should be removed to a depth of at least three inches below the wet surface line and placed in properly labeled leakproof drums for disposal.

10. DECONTAMINATION:

- a. Decontamination solutions can be used for decontaminating surfaces and materials where spills of dust, granular, wettable powder, or liquid pesticides have occurred. However, the bulk of the spilled pesticides should be cleaned-up or removed prior to applying any decontaminating solution and allow one to six hours reaction time before the decontaminated material is removed. If a decontamination solution is used, allow the same length of time before using an absorbent material to remove the decontamination solution.
- b. Depending on the location of the spill and the pesticides spilled, chlorine bleach, caustic soda (lye sodium hydroxide) or lime can be used to effectively decontaminate most spill areas. Many pesticides, especially the organic phosphate pesticides, decompose when treated with lye or lime. Fewer pesticides are decomposed by bleach (Sodium Hypochlorite).

- c. Dry decontaminates should be spread thinly and evenly over the spill area. Then using a watering can, lightly sprinkle the area with water to activate the decontaminate. Liquid decontaminates should be pre-mixed and applied with a watering can to the spill area. Decontaminates should be applied in appropriate amounts.
- d. The preceding procedures must be repeated until all the spilled pesticide is removed. Clean any spilled pesticides from the outside of contaminated container. Clean all equipment and tools used in spilled decontaminate and rinse water and place them in labeled leakproof containers. Clothing and gloves that cannot be decontaminated must be placed in leakproof containers for proper disposal. Tests have shown that laundering will not totally remove pesticides from clothing.
- e. Porous materials, such as wood, may not be adequately decontaminated. If contamination is great enough to warrant, they must be removed and replaced with comparable new materials.

11. DISPOSAL:

- a. All contaminated materials including cloth, soil, wood, etc., that cannot be effectively decontaminated as described in this guide, must be removed and placed in a sealed leakproof drum and labeled.
- b. All hazardous waste disposal will be coordinated with the Environmental Coordinator to be turned into DRMO.

PESTICIDE DECONTAMINANTS

Depending on the particular pesticide, chlorine bleach, caustic soda (lye, sodium hydroxide) or lime can be used to effectively decontaminate most spills. Many pesticides especially the organophosphate pesticides, decompose when treated with lye or lime. Fewer pesticides are decomposed by bleach (sodium hypochlorite). Other pesticides cannot be effectively decontaminated and should only be treated with detergent and water to assist in removal. Some examples of common pesticides that can be decontaminated are listed below:

Use Lye or Lime for:

Atrazine
Propoxur
Captan
Carbaryl
Temephos
Naled
2,4,5,-T
Malathion
Acephate
Sodium Fluoride
TCA
Rotenone
Silvex
Cyanazine
Dalapon
Dichlorvos
Dimethoate
EPN

Use Chlorine Bleach for:

Calcium cyanamide
Calcium cyanide
Chlorpyrifos
Fonophos
Merphos
Lethane

Do not use any decontamination chemicals for these pesticides:

Alachlor
Chloramben
Chlorinated
hydrocarbons
Diurons
2,4-D
Maneb
Methoxchlor
Picloram
Toxaphene
Trifluralin

The decontaminating solution should be applied to cover the contaminated area. An absorbent may be placed over the spill area to insure the decontaminant remains in contact with the spill area.

WARNING: There is a slight potential for creating toxic by-products when using these procedures. In critical situations, samples of affected components (soil, sediment, water, etc.) should be taken and sent to a laboratory for analysis in order to determine if decontamination was successful.

Lye or Lime: Pesticides amenable to treatment using lye or lime may be decontaminated when mixed with an excess quantity of either of these materials. These materials can be used in either the dry form or in solution. A 10% solution of lye or lime can be made as follows:

Mixing Directions: Mix 0.75 pounds of lye or lime in 3.5 quarts of water to make 1 gallon of 10% solution.

CAUTION: Caustic soda (lye) can cause severe eye damage to persons not properly protected. Protect against contact by wearing unventilated goggles, long-sleeved work clothes with coveralls, neoprene gloves, and chemical-resistant apron. An approved respirator should also be worn. Do not use lye on aluminum surface.

Bleach Treatment: Certain pesticides can be degraded by treatment with bleach (sodium hypochlorite). In general, one gallon of household bleach, which contains approximately 5% sodium hypochlorite, should be used per pound or gallon of pesticide spilled. If bleaching powder is used, first mix it with water (one gallon of water per pound of bleach) and add a small amount of liquid detergent. For safety purposes, a preliminary test must be run using small amounts of bleach and the spilled pesticide. The reaction resulting from this test must be observed to make sure reaction is not too vigorous. Do not store in close proximity to, or mix chlorine bleach with, amine-containing pesticides. Co-mingling of these materials can cause a violent reaction resulting in fire. Calcium hypochlorite is not recommended as a decontaminating agent because of the fire hazard.

APPENDIX A
PESTICIDE DECONTAMINANTS

PESTICIDE DECONTAMINANTS

Depending on the particular pesticide, chlorine bleach, caustic soda (lye, sodium hydroxide) or lime can be used to effectively decontaminate most spills. For other decontamination/degradation options, refer to Reference 12. Many pesticides especially the organophosphate pesticides, decompose when treated with lye or lime. Fewer pesticides are decomposed by bleach (sodium hypochlorite). Other pesticides cannot be effectively decontaminated and should only be treated with detergent and water to assist in removal. Some examples of common pesticides that can be decontaminated are listed below:

Use Lye or Lime for:

Atrazine
Propoxur
Captan
Carbaryl
Temephos
Naled
2,4,5,-T
Malathion
Acephate
Sodium Fluoride
TCA
Rotenone
Silvex
Cyanazine
Dalapon
Dichlorvos
Dimethoate
EPN

Use Chlorine Bleach for:

Calcium cyanamide
Calcium cyanide
Chlorpyrifos
Fonophos
Merphos
Lethane

Do not use any decontamination chemicals for these pesticides:

Alachlor
Chloramben
Chlorinated
hydrocarbons
Diurons
2,4-D
Maneb
Methoxchlor
Picloram
Toxaphene
Trifluralin

USE

A practical guide for applying decontaminants is as follows:

Percent Active Ingredient

1-10

Amount of Decontaminant Needed

Use an amount of decontaminant equal to the quantity of pesticide spilled.

11-79 Use an amount of decontaminant equal to 1.5 times the quantity of pesticide spilled.

80-100 The amount of decontaminant used should be equal to twice the quantity of spilled pesticide.

WARNING: There is a slight potential for creating toxic by-products when using these procedures. In critical situations, samples of affected components (soil, sediment, water, etc.) should be taken and sent to a laboratory for analysis in order to determine if decontamination was successful.

Lye or Lime: Pesticides amenable to treatment using lye or lime may be decontaminated when mixed with an excess quantity of either of these materials. These materials can be used in either the dry form or in solution. A 10% solution of lye or lime can be made as follows:

Mixing Directions: Mix 0.75 pounds of lye or lime in 3.5 quarts of water to make 1 gallon of 10% solution.

CAUTION: Caustic soda (lye) can cause severe eye damage to persons not properly protected. Protect against contact by wearing unventilated goggles, long-sleeved work clothes with coveralls, neoprene gloves, and chemical-resistant apron. An approved respirator should also be worn. Do not use lye on aluminum surface.

Bleach Treatment: Certain pesticides can be degraded by treatment with bleach (sodium hypochlorite). In general, one gallon of household bleach, which contains approximately 5% sodium hypochlorite, should be used per pound or gallon of pesticide spilled. If bleaching powder is used, first mix it with water (one gallon of water per pound of bleach) and add a small amount of liquid detergent. For safety purposes, a preliminary test must be run using small amounts of bleach and the spilled pesticide. The reaction resulting from this test must be observed to make sure reaction is not too vigorous. Do not store in close proximity to, or mix chlorine bleach with, amine-containing pesticides. Co-mingling of these materials can cause a violent reaction resulting in fire. Calcium hypochlorite is not recommended as a decontaminating agent because of the fire hazard.

APPENDIX B
REPORTABLE QUANTITIES
FOR MAJOR PESTICIDES

The following list is the reportable quantity (RQ) for many pesticides. Spills of pesticides that may enter waterways in quantities equal to or exceeding the RQ must be reported to the base/installation spill coordinator, the Coast Guard at (800) 442-8802, or to the appropriate EPA regional representative.

Spills involving mixtures of pesticides appearing on the list require reporting only when one or more of the materials in the mixture spilled equal or exceeds the RQ indicated for the specific pesticide and enters or threatens navigable water as defined in 40 CFR 117. The percentage of active ingredients in the specific pesticide product spilled and specific gravities of these materials, including carriers and/or diluents, should be used for determining RQs for each component. Refer to the complete EPA list of hazardous substances (Reference 1) for RQs for additional substances. Specific examples of calculations for determining reportable quantities are contained in this appendix.

The chart provided below can be used to convert percent active ingredients for emulsifiable concentrates to the approximate pounds of actual pesticide per gallon. This chart is provided for convenience and should be used only for purposes of providing initial estimates of spill pesticide. It is not intended as a supplement to label information indicating pounds actual pesticide per gallon.

Conversion table for Active Ingredients in

Emulsifiable Concentrates (EC)

<u>Percent Active Ingredient</u>	<u>lbs/gal</u>
10-12	1
15-20	1.5
25	2
40-50	4
60-65	6
70-75	8
80-100	10

List of Reportable Quantities (RQ) for Major Pesticides

Major pesticides including diluents and carriers appearing on the EPA list of hazardous substances have been extracted and are provided below. In general, a spill requires reporting to EPA or the National Response Center when the amount of active ingredient spilled equals or exceeds the RQ for the specific pesticide as indicated below. Users of the following table should be aware that the EPA lists of hazardous substances and RQs are subject to change.

The table also presents information on the Superfund Amendments and Reauthorization Act (SARA) Section 302 Extremely Hazardous Substances (EHS), the presence of any of which, in sufficient quantities, requires certain emergency planning activities to be conducted. The Threshold Planning Quantity (TPQ) for these substances is shown under the column "Section 302 TPQ." EHS RQ or the reportable quantities of Extremely Hazardous Substances are subject to reporting under Section 304 of Title III. If a final RQ has not been assigned under CERCLA to a chemical listed under Section 302, a statutory RQ of 1 pound applies for Section 304 reporting. The EHS column lists the 1 pound statutory RQ for EHSs not listed under CERCLA. SARA Section 313 Toxic Chemicals, emissions or releases of which must be reported annually as part of SARA Title III's community right-to-know provisions. Inerts and pesticides subject to Section 313 are indicated with an "X."

Pesticide	SARA			CERCLA	
	Section 302 TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Waste Number	Pounds
Acetaldehyde				U001	1000
Acrolein	500		X	P003	100
Aldicarb	100/10,000			P070	1
Aldrin	500/10,000		X	P004	1
Amitrole				U011	10
Aluminum phosphide	500			P006	100
4-Aminopyridine				P008	1000
Aroclor 1016					1
Aroclor 1221					1
Aroclor 1232					1
Aroclor 1242					1
Aroclor 1248					1

Pesticide	SARA			CERCLA	
	Section 302 TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Waste Number	Pounds
Aroclor 1254					1
Azinphos-ethyl	100,10,000	1			
Azinphos-methyl	100/10,000				1
BHC - alpha					10
BHC - beta					1
BHC - delta					1
BHC - gamma	1,000/10,000		X	U129	1
Bromadiolone	100/10,000	1			
Cacodylic acid				U1361	1
Captan			X		10
Carbaryl					100
Carbofuran	10/10,000				10
Carbophenothion	500	1		U011	10
Carbon disulfide	10,000		X	P022	100
Chloramben			X		
Chlordane	1,000		X	U036	1
Chlorfenvinfos	500	1			
Chlormephos	500	1			
Chlormequat chloride	100/10,000	1			
Chorobenzilate				U038	10
Chlorophacinone	100/10,000	1			
Chlorothalonil			X		
Chloroxuron	500/10,000	1			
Chlorpyrifos					1
Coumatetralyl	500/10,000	1			

Pesticide	SARA			CERCLA	
	Section 302 TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Waste Number	Pounds
Coumaphos					10
Crimidine	100/10,000	1			
Cyanophos	1,000	1			1
2, 4-D acid			X	U240	100
2, 4-D salts and esters				U240	100
DDD				U060	1
DDE					1
DDT				U061	1
Demeton	500	1			
Demeton-5-methyl	500	1			
Diallate			X	U062	100
Diazinon					1
Dicamba					1,000
Dichlbenil					100
Dichlone					1
Dichlorvos	1,000		X		10
Dicofol					10
Dicrotophos	100	1			
Dieldrin				P037	1
Dimefox	500	1			
Dimethoate	500/10,000			P044	10
Dimetilan	500/10,000	1			
Dinoseb	100/10,000			P020	1,000
Dinoterb	500/10,000	1			
Diphacinone	10/10,000	1			

Pesticide	SARA			CERCLA	
	Section 302 TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Waste Number	Pounds
Diquat					1,000
Disulfoton	500			P039	1
Diuron					100
Endosulfan	10/10,000			P050	1
Endothall				P088	1,000
Endrin	500/10,000			P051	1
Endrin aldehyde					1
EPN	100/10,000	1			
Ethion	100				10
Ethoprophos	1,000	1			
Ethylene dibromide			X	U067	1
Ethylene oxide	1,000		X		10
Famphur				P097	1,000
Fenamiphos	10/10,000	1			
Fenitrothion	500	1			
Fensulfothion	500	1			
Fluoroacetamide	100/10,000			P057	100
Fluometuron					
Fonofos	500	1			
Formothion	100	1			
Fuberidazole	100/10,000	1			
Guthion					1
Heptachlor		1	X	P059	1
Heptachlor epoxide					1
Isodrin				P060	1

Pesticide	SARA			CERCLA	
	Section 302 TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Waste Number	Pounds
Kelthane (dicofol)			X		10
Kepone				U142	1
Lindane	1,000/10,000		X	U129	1
Malathion					100
Maleic hydrazide				U148	5,000
Maneb			X	U114	
Mephosfolan	500	1			
Methidathion	500/10,000	1			
Methyl bromide	1,000		X	U029	1,000
Metolcarb	100/10,000	1			
Methomyl	500/10,000			P066	100
Methoxychlor				U247	1
Methyl parathion	500/10,000			P071	100
Mevinphos	500				10
Mexacarbate					1,000
Monocrotophos	10/10,000	1			
Naled					10
Nicotine	100			P075	100
Norbormide	100/10,000	1			
Oxamyl	100/10,000	1			
Paraquat	10/10,000	1			
Parathion	100		X	P089	10
PCNB			X	U185	100
Pentachlorophenol				U242	10
Phorate	10			P094	10

Pesticide	SARA			CERCLA	
	Section 302 TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Waste Number	Pounds
Phosfolan	100/10,000	1			
Phosmet	10/10,000	1			
Phosphamidon	100	1			
Pronamide				U192	5,000
Prothoate	100/10,000	1			
Pyrethrins					1
Silvex				U233	100
Sodium arsenate					1
Sodium arsenite					1
Sodium fluoroacetate	10/10,000			P058	10
Strychnine and salts	500			P108	10
Sulfotep	500			P108	1,000
2,4,5-T acid				U232	1,000
2,4,5-T amines					1,000
2,4,5-T esters					1,000
2,4,5-T salts					1,000
TDE				U060	1
Terbufos	100	1			100
Tetraethyl pyrophosphate (TEPP)	100			P111	10
Thiram				U244	10
Triamiphos	500/10,000	1			
Trichloronate	500	1			
Trichlorfon			X		100

Pesticide	SARA			CERCLA	
	Section 302 TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Waste Number	Pounds
Warfarin concentration > 0.3%	500/10,000			P001	100
Warfarin concentration > 0.3%	500/10,000			U248	100
Warfarin, sodium	100/10,000	1			
Zinc phosphide concentration > 10%	500			P122	100
Zinc phosphide concentration > 10%	500			U249	100

Pest Management Plan, DDMT-WO 1 Dec 86, 4 May 88, 94

SPILL CONTINGENCY KIT

1. Set of Instructions
2. Plastic Waste Containers, 18 Gal. Capacity 4 Ea.
3. Drum Plug Wrench 1 Ea.
4. Dust Pan 2 Ea.
5. Brooms 2 Ea.
6. Chlorinated Lime Tech. TYII
7. Plastic Bags
8. Absorbent (Vermiculite) or Clay

Pest Management Plan, DDMT-WO 1 Dec 86, 4 May 88, 94

The following is a list of protective equipment that would be used in the event of a chemical spill:

- | | | |
|-----|---|--------|
| 1. | Rubber Apron | 6 Ea. |
| 2. | Unvented Goggles | 6 Pr. |
| 3. | Respirators and Pesticide Cartridges | 6 Ea. |
| 4. | Rubber Boots | 6 Pr. |
| 5. | 100% Cotton Coveralls | 10 Pr. |
| 6. | Faceshield | 5 Ea. |
| 7. | Rubber Gloves (Long) | 6 Pr. |
| 8. | Gas Mask and Cannisters | 7 Ea. |
| 9. | Full Facepiece Respirator and Cartridges | 4 Ea. |
| 10. | Rainwear Jacket and Overalls | 6 Pr. |
| 11. | Self Contained Breathing Apparatus (SCBA) | 2 Ea. |

FACILITY SPCC PLAN FOR SITE NO. 8 - BLDG 319 FLAMMABLE STORAGE BLDG 319

- A. GENERAL INFORMATION.** This site is included in the SPCC/ISCP because of the low flash point assigned to the material stored in this facility. The assigned flash point range is less than 100 degrees farenheit, making this material Class I Flammable. Materials stored in this facility may be contained in metal or glass. The storage requirements for Class I Flammables are outlined in NFPA #30, Flammable and Combustible Liquids Code and DOD 4145.19 R-1.

NOTE: A cinder block locked vault has been constructed within Building 319 for the storage of toxic poisons and low grade radioactive materials. This vault is located in Section 6.

Building

Section 1	High Grade Alcohols Access controlled by Medical
Section 2	DRMO EXCESS STORAGE AREA
Section 3-6	Mixed Commodities Acetates, Adhesives, Varnishes, Paints, Xylene, Toluene, Methyl Ethyl Ketone, Methyl Isobutyl Ketone, Alcohols, Petroleum Ether, Flammable Aerosols, Ammonia Inhalers, Resins, Flammable Insecticides
Vault Storage	Potassium Cyanide, Sodium Cyanide, Silver Cyanide, Phostoxin, Smoke Detectors, Coleman Lantern Mantles

The facility has six sections, 49' long x 60' wide.

Plans are to store 55 gallon drums of highly flammables as well as compressed gases (aerosols) in this building.

FACILITY SPCC PLAN FOR SITE NO. 9 - BUILDING 925 FLAMMABLE STORAGE

- A. **GENERAL INFORMATION.** This site is included in the SPCC/ISCP because of the volumes of various hazardous commodities stored in this area. Material in this area is stored on wooden pallets in 55 gallon drums. This is a three (3) section warehouse. Each section measures 120 feet wide by 360 feet long.

TABLE V-8

POTENTIAL SPILLS - PREDICTION AND CONTROL

SOURCE	POTENTIAL TYPE OF FAILURE	POTENTIAL RATE SPILL. GAL. GAL/MIN	DIRECT. OF FLOW	SEC. CONT.
Bldg. 925	Unloading/ Loading	Unknown	S/W	Yes

This facility is a flammable liquid warehouse. The Department of Transportation (DOT) hazard classes stored in this facility are:

SECTION I

Flammable Liquid - 1B
Methanol
Ethanol
Isopropanol

SECTION II

Flammable Liquid - 1B
Naptha
Xylene
Toluene
Cyclohexylamine
Ethylacate
Iso Octane

SECTION III

Flammable Liquid - 1B
Acetone
Methyl Ethyl Ketone - Methyl Isobutyl Ketone

2. Security. This area has controlled access with the appropriate signs posted. Access is controlled thru the Branch Office, Ext. 6006.

- C. **RECOMMENDED MODIFICATIONS.** Increase the sprinkler system density to allow for the storage of 55 gallon drums two (2) high. This would double the storage capacity of this facility.

FACILITY SPCC PLAN FOR SITE NO. 10 - BLDG S469 ELECTRIC FORKLIFT SHOP

A. GENERAL INFORMATION. This site is located on J Street just west of Building 5360. It is a steel framed tin structure with a concrete floor. It is included in the SPCC/ISCP because of the low pH value assigned to the sulfuric acid used in the reworking of batteries in this area. Virgin sulfuric acid is stored as well as one 55 gallon drum of waste sulfuric acid which has been generated by the reworking of the aforementioned batteries.

TABLE V-10

POTENTIAL SPILLS - PREDICTION AND CONTROL

SOURCE	POTENTIAL TYPE OF FAILURE	POTENTIAL SPILL. GAL.	SECONDARY CONTAINMENT
Bldg. S469	Unloading/ Loading		Sandbags/Berm

Spills could occur during loading and off loading of drums from vehicles or when drums are being moved. A spill of this type would normally be noticed immediately. Corrective actions should begin immediately.

1. Secondary Containment. Secondary containment consists of sandbags placed in strategic locations completing the berm or catchment area.
2. Inspection and Records. Inspection is performed as part of standing operating procedures, which will include spill prevention procedures.
3. Personnel, Training and Spill Prevention Management. Personnel assigned to this area receive indoctrination training. Refresher training given annually.

B. DESIGN AND OPERATING INFORMATION.

1. Facility Drainage. This area is drained by gravity flow storm drainage system located on the south side of the building.
2. Security. This facility is located inside the fenced and guarded installation perimeter.

C. RECOMMENDED MODIFICATIONS: Recommend a supply of Soda Bicarbonate be kept on hand to neutralize any spilled sulfuric acid. Also, a containment area should be designed at the acid adjusting area.

**FACILITY SPCC PLAN FOR SITE NO. 11 - BLDGS. 1086 and 1087 SPRAY
PAINTOPERATIONS**

- A. GENERAL INFORMATION.** These sites are included in SPCC/ISCP because of the collection of waste solvents, solvent coated rags and paint booth filters generated in these processes. Additionally, coatings are stored in these areas which are flammable.

Spills could occur during loading and off-loading of materials or wastes from vehicles or when containers are being handled. A spill of this type would normally be noticed immediately. Corrective actions should be taken within a few minutes.

1. Secondary Containment. Secondary containment consists of sandbags placed in strategic locations completing the berm or catchment area.
2. Inspection and Records. Inspection is performed as part of standing operating procedures, which will include spill prevention procedures.
3. Personnel, Training and Spill Prevention Management. Personnel assigned to this area receive indoctrination training. Refresher training given annually.

B. DESIGN AND OPERATING INFORMATION.

1. Facility Drainage. This area is drained by gravity flow storm drainage system located on the south side of the building.
2. Security. This facility is located inside the fenced and guarded installation perimeter.

- C. RECOMMENDED MODIFICATIONS:** Recommend a supply of sorbent materials be kept on hand in order to respond to spills quickly. A containment or spill pan must be utilized for secondary containment of waste solvents at each work site.

FACILITY SPCC PLAN FOR SITE NO. 12 - BLDG. 1088 CARE AND PRESERVATION

A. GENERAL INFORMATION. This area is considered a potential spill site because of the collection of waste sandblast grit, paint, and metals involved in the sandblasting operation. The blasting operation removes paint and debris from metals stored outside in the elements which could be coated with metal-based coatings thereby generating hazardous wastes.

1. Secondary Containment. There is no secondary containment provided at the sandblast operation. However, all waste materials are properly containerized and labeled when generated at the baghouse.
2. Inspection and Records. the waste products are inventoried and all containers examined on a weekly basis to ensure proper storage.
3. Personnel, Training and Spill Prevention Management. The personnel responsible for using this process are aware of the potential for generation of hazardous wastes. Proper equipment is available and is used during the blasting process. Standard Operating Procedures have been developed and are strictly adhered to by all personnel. Good housekeeping procedures are emphasized as well as prompt disposal of wastes following analyses.

B. DESIGN AND OPERATING INFORMATION.

1. Facility Drainage. The Care and Preservation area is surrounded by gravel on all sides.
2. Security. This facility is located inside the fenced and guarded installation perimeter.

C. SITE MODIFICATIONS: This area has been reworked to prevent pollution emissions.

FACILITY SPCC PLAN FOR SITE NO. 13 - BLDG. 865 RECOUP

A. GENERAL INFORMATION. Building 865 is a concrete constructed building used for DDMT's Recoup Operations. The building is protected by a wet sprinkler system. There are 3 individual storage bays to allow for proper chemical segregation. Spills inside the building can be controlled and cleaned up using material stored in the building. Each hazard class is separated in accordance with DOD 4145.19 R-1, Storage and Materials Handling Manual.

POTENTIAL SPILLS - PREDICTION AND CONTROL

SOURCE	POTENTIAL TYPE OF FAILURE	POTENTIAL SPILL. GAL.	DIRECTION OF FLOW	SECONDARY CONTAINMENT
Bldg. 865	Type of failure Loading and off loading operations		Bldg Bermed	Yes

Spills could occur during loading and off-loading of materials or wastes from vehicles or when containers are being handled. A spill of this type would normally be noticed immediately. Corrective actions should begin immediately.

1. Secondary Containment. This building has no floor drain, so any spilled product will flow to the center of the floor area and will have to be either manually or mechanically removed.
2. Inspection and Records. Inspection is performed as part of standing operating procedures, which will include spill prevention procedures. Any operational abnormalities are reported to appropriate supervisory personnel.
3. Personnel, Training and Spill Prevention Management. Operating personnel are properly instructed in preventing spills. Training is accomplished on the job. Emphasis is placed on spill prevention through proper operating procedures and improved operator awareness.

B. DESIGN AND OPERATING INFORMATION.

1. Facility Drainage.
 - a. Unloading areas. Drainage is to the nearest catch basin/storm drain. These drains can be blocked by sandbags and polyurethane plastic sheeting during spill incidents.
 - b. Security. This area is closed and locked during nonworking hours.

C. RECOMMENDED MODIFICATIONS: Recommend sufficient absorbent materials as well as neutralizers be kept on hand for emergency situations.

DEFENSE DEPOT
MEMPHIS, TENNESSEE

SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN
INSTALLATION SPILL CONTINGENCY PLAN

PART III OF SPCC

APPENDIX F

INSTALLATION SPILL CONTINGENCY PLAN

EMERGENCY MEDICAL ASSISTANCE LISTING

St. Joseph Hospital 220 Overton Avenue	577-3675
St. Francis Hospital 5959 Park Avenue	765-2180
Methodist Hospital Central 1265 Union Avenue	726-7600
Baptist Hospital 899 Madison Avenue	522-5511
Eastwood Hospital 3000 Getwell Avenue	369-8600
Regional Med 877 Jefferson Avenue	575-7100
Veterans Administration Hospital 1030 Jefferson Avenue	523-8990
Methodist Hospital South 1300 Wesley Drive	346-3711

Ambulance service is provided by the Memphis Fire Department. Ambulance requests must be made by DDMT Security.

HAZARDOUS MATERIALS SPILL RESPONSE TEAM MEMBERS

REGULAR BUSINESS HOURS

1. George Gillard, **Spill Team Leader**
1052 Hale Road
Memphis, TN 38116
332-4504
2. Nathaniel Houston, Alt. Spill Team Leader
487 Jenson Road
Memphis, TN 38109
785-8209
3. Carl G. Phillips
2885 Spring View St.
Memphis, TN 38129
358-5021
4. Henry Jeffries
3106 Riney
Memphis, Tn 38127
353-9794
5. Benjamin Williams
3797 Oak Lake Lane
Memphis, TN 38118
363-5678
6. Sam Williams Jr.
1686 Mary Dr.
Memphis, TN 3811
743-3307
7. Jewell (Buddy) Barber
1575 Whitewater
Memphis, TN 38115
683-4855
8. Patrick D. Harris
670 Leacreast Dr.
Memphis, Tn 38109
785-9335; 785-6297
9. James Beattle
1655 Millwalk Dr. #2
Memphis, TN 38116
396-7893

PART III
INSTALLATION SPILL CONTINGENCY PLAN (ISCP)
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INSTALLATION SPILL CONTINGENCY PLAN (ISCP)

I. AUTHORITY:

- A. Code of Federal Regulation, Title 40 Part 1510.
- B. DLAM 6050.1, Chapter #2
- C. DDMT-W IOM 26 May 1986, Subject: Hazardous Waste Minimization Program - Hazardous Spill Reporting.

II. PURPOSE AND SCOPE.

A. Purpose.

- 1. The ISCP shall be developed for the purpose of providing the most accurate data possible to assist Defense Depot Memphis Tennessee (DDMT) personnel in the proper response to and the reporting of a fuel, oil or hazardous material discharge.
- 2. The ISCP shall identify the individual and organizational responsibilities of those parties whose involvement in the discovery, evaluation, containment, mitigation, and documentation of a fuel, oil or hazardous material discharge is deemed necessary.
- 3. The ISCP shall contain the emergency recall list of names, addresses, and the telephone numbers of those individuals who shall have 24 hour recall responsibilities in a fuel, oil or hazardous material discharge incident and the names and telephone numbers of outside emergency response organizations.
- 4. The ISCP will specify the criteria of a fuel, oil or hazardous material discharge incident for reporting such an incident to non-DDMT lines of authority.

B. Scope.

- 1. The ISCP shall apply to the DDMT property, its personnel and resources; tenant activities at DDMT; and contractors providing services to DDMT who are operating within the boundaries of DDMT.
- 2. A spill or discharge of fuel, oil or hazardous material/substance/waste, or a material thought to be of this nature is covered by this ISCP. The material which gives rise to a spill or discharge need not be federal property for this ISCP to apply.

III. FUNCTIONAL DESCRIPTIONS AND RESPONSIBILITIES.

- A. **On Scene Coordinator (OSC).** The OSC shall be an individual selected by the Commanding Officer, DDMT, from DDMT personnel, who possesses the widest range of knowledge, skills, and abilities related to oil and hazardous material spill incident management. The OSC shall have the authority to obligate and coordinate the resources of the installation in the management to conclusion of a spill or discharge incident. The OSC may be either military or civilian. The OSC shall be available on a 24 hour recall basis and is therefore subject to recall during non-regular working hours, including weekends and holidays. The OSC shall remain in charge of all spill related activities until such time as relieved by the Commanding Officer, DDMT.
- B. **Assistant On Scene Coordinator (AOSC).** the AOSC will possess knowledge, skills and abilities commensurate to the OSC and will act as OSC until such time as the designated OSC arrives at the scene. Upon the arrival of the OSC, the AOSC becomes second in command. The AOSC may be either military or civilian.
- C. **Fire Marshall (FM).** The FM may serve as either the OSC or AOSC. The FM shall be the DDMT Fire Marshall or designate, and is responsible for consulting with the OSC for the coordination and dispersal of fire team personnel and equipment used in spill incident management. The FM or the designate shall be available on a 24 hour recall basis.
- D. **Safety and Health Representative (SHR).** The SHR shall be either the DDMT Safety and Health Manager or designate from the DDMT Safety, Health and Environmental Office. this individual may also serve in any of the capacities previously described. The SHR shall be responsible for consulting with the OSC and providing prudent information regarding the proper selection of personal protective equipment to be worn by remedial action personnel, air quality data, and coordinating the efforts of emergency medical assistance. A SHR will be available on a 24 hour recall basis.
- E. **Response Team Leader.** The Response Team Leader shall be responsible for maintaining the proper quantities and conditions of spill response supplies and equipment (Appendix C) in the Installation Spill Response Vehicle. This individual is responsible for receiving spill response instructions from the OSC and coordinating those instructions with members of the Response Team. The Response Team Leader shall ensure that the members of the team are properly trained and qualified to perform their assigned tasks. The leader will ensure the availability of no less than 5 qualified, trained team members. This individual or designate will be available on a 24 hour recall basis.
- F. **Response Team Leader (Alternate).** This person shall be an alternate to the Response Team Leader as necessary.

- G. **Response Team.** The Response Team shall consist of no less than 5 qualified, trained hazardous spill responders including the Team Leader plus at least four qualified alternate responders to fill in when needed. The team shall be drawn from the Recoupment Function within the Directorate of Distribution.
- H. **Security Representative.** The Security representative shall be selected from the DDMT Security Office. Normally, this individual will be the Shift Lieutenant on duty at the time of the incident. The Security representative shall be responsible for consulting with the OSC for the coordination of pedestrian and vehicular traffic, evacuation and security of the affected area, and the coordination and dispersal of security personnel used in spill incident management. The Security representative will establish a communications command post at the DDMT Security Office until such time as a communications command post can be established at the scene. Security personnel will, upon arrival at the incident site, cordon off an area of 300 feet radius, and evacuate all personnel from within that area. They must avoid being downwind of the incident site.
- I. **Facilities Engineer (FE).** The FE shall be the DDMT Facilities Engineer and may, in addition, serve as either the OSC, AOSC, or FM. The FE shall be responsible for consulting with the OSC for the coordination of installation engineering data, i.e., storm and sanitary sewer systems, and gas, water, and electrical lines and systems. The FE shall also be responsible for having earth moving equipment and operators available to provide assistance during spill incident management. The FE shall be available on a 24 hour recall basis.
- J. **Public Affairs Officer (PAO).** The PAO shall be the DDMT PAO and is responsible for consulting with the OSC to ensure that information contained in any news or press release is factual.

IV. EXECUTION OF THE ISCP.

A. Discovery and Notification.

1. All personnel who observe fuel, oil, or hazardous material discharges shall immediately report such discharges to the Security Desk Sergeant, ext. 6677, and provide the following information:
 - a. Purpose of the call.
 - b. Name of caller.
 - c. Location of the incident.
 - d. Presence of injured personnel.
 - e. Description of material discharged.
 - f. Quantity of material discharged.
2. Execution of the ISCP shall be contingent upon the time of day (shift) when the incident is reported. Two execution plans are necessary;

- a. Plan A.; 0730-1600 hours Mon.-Fri.
 - b. Plan B.; 1600-2400 hours Mon.-Fri. and
0000-2400 hours Sat.-Sun. and
Holidays
3. The Security Desk Sergeant shall determine the appropriate Plan, either A or B, and then contact the OSC or, if unavailable, contact the AOSC. The OSC or the AOSC shall then determine whether the notification/recall procedure should be activated. The notification/recall procedure is found at Table 1 (Plan A) or Table 2 (Plan B). The Security Desk Sergeant shall make an entry in the Security Desk Blotter to reflect that contact was made with the recalled party and the time that contact was made. Appendix B lists the names and telephone numbers of persons who shall be notified/recalled.
 4. When directed by the OSC, the Security Desk Sergeant shall notify environmental protection agencies at the Federal, State, and local levels (see Appendix A for a listing of agencies and their telephone numbers).
 5. When reporting to an outside agency or office per paragraph 4 above, the Security Desk Sergeant shall be prepared to transmit the following information;

**TABLE 1, PLAN A: NOTIFICATION / RECALL PROCEDURES
0730 - 1600 HOURS: MONDAY through FRIDAY**

TIME CALL RECEIVED: _____ BY: _____, Security Police

CALLER INFORMATION DATE STARTED: _____ DATE ENDED: _____

INJURED PERSONNEL: YES _____ NO _____ NUMBER INJURED: _____

DESCRIPTION OF MATERIAL: _____

QUANTITY OF MATERIAL: _____

AREA SECURED TIME: _____ AREA RELEASED TIME: _____

WEATHER INFORMATION WINDS/DIRECTION: _____ AT _____ KNOTS
TEMPERATURE: _____ WIND CHILL: _____
HEAT INDEX: _____

PERSONNEL CONTACTED (Enter the time notified and time arrived)

<u>Functional Description</u>	<u>Name</u>	<u>Phone Number</u>	<u>Time Notified</u>	<u>Time Arrived</u>
ON SCENE COMMANDER	George Gillard	6944 / ADAM 11 BRAVO	_____	_____
ASST O/S COORDINATOR	Jackie Hall	6604 / ADAM 6 DELTA	_____	_____
SAFETY & HEALTH	Paul Blake	6969 / ADAM 6	_____	_____
ENVIRONMENTAL SPEC	Robert Sanders	4003 / ADAM 11 FOXTROT	_____	_____
FIRE	Charles Wallis	6745 / ADAM 9	_____	_____
	Boyd Kelly	6745 / ADAM 9 ALPHA	_____	_____
	Jim Kemp	6745 / ADAM 9 BRAVO	_____	_____
SECURITY OFFICER ON SCENE	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
RESPONSE TEAM LEADER (RTL)	Ben Williams	6944 / ADAM 10 (Beeper 391-7248)	_____	_____
ALTERNATE RTL	Carl Phillips	(Beeper 391-7285)	_____	_____
ENVIRONMENTAL OFFICER	Christine Kartman	4510	_____	_____
COMMANDING OFFICER	Eric Holladay	6411	_____	_____
DEPUTY COMMANDER	Ernie Gunn	6412	_____	_____
SECURITY POLICE CHIEF	Darryl Lumpkin	6191	_____	_____
CSO	Armando Quinn	6301	_____	_____
DIR, INSTALLATION SVCS	Martha Gault	4904	_____	_____
PUBLIC AFFAIRS OFFICER	George Dunn	6753	_____	_____
DISASTER OFFICER	Cynthia VanNausdall	4383	_____	_____

MEMPHIS HAZARD TEAM CALLED: YES _____ NO _____ DATE: _____ TIME: _____
TIME RESPONDED: _____ TIME DEPARTED: _____

DAY LIST

**TABLE 2, PLAN B: NOTIFICATION / RECALL PROCEDURES
1600 - 0730 HOURS: MONDAY through FRIDAY
0001 - 2400 HOURS: SATURDAYS, SUNDAYS and HOLIDAYS**

TIME CALL RECEIVED: _____ BY: _____, Security Police

CALLER INFORMATION DATE STARTED: _____ DATE ENDED: _____

INJURED PERSONNEL: YES _____ NO _____ NUMBER INJURED: _____

DESCRIPTION OF MATERIAL: _____

QUANTITY OF MATERIAL: _____

AREA SECURED TIME: _____ AREA RELEASED TIME: _____

WEATHER INFORMATION WINDS/DIRECTION: _____ AT _____ KNOTS
TEMPERATURE: _____ WIND CHILL: _____
HEAT INDEX: _____

PERSONNEL CONTACTED (Enter the time notified and time arrived)

<u>Functional Description</u>	<u>Name</u>	<u>Phone Number</u>	<u>Time Notified</u>	<u>Time Arrived</u>
ON SCENE COMMANDER	George Gillard	332-4504 (Beeper 391-7224)	_____	_____
**ASST O/S COORDINATOR	Jackie Hall	377-2015	_____	_____
**SAFETY & HEALTH	Cheryl Blas	756-0727	_____	_____
**ENVIRONMENTAL SPEC	Robert Sanders	325-2401	_____	_____
FIRE	Charles Wallis	377-6833	_____	_____
	Boyd Kelly	872-7257	_____	_____
	Jim Kemp	358-7175	_____	_____
SECURITY OFFICER ON SCENE	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
**RESPONSE TEAM LEADER	Ben Williams	363-5678 (Beeper 391-7248)	_____	_____
**ALTERNATE RTL	Carl Phillips	353-7986 (Beeper 391-7285)	_____	_____
ENVIRONMENTAL OFFICER	Christine Kartman	(Beeper 391-7235)	_____	_____
**COMMANDING OFFICER	Eric Holladay	753-7188	_____	_____
**DEPUTY COMMANDER	Ernie Gunn	452-1133	_____	_____
**SECURITY POLICE CHIEF	Darryl Lumpkin	755-1574 (Beeper 391-7256)	_____	_____
**CSO	Armando Quinn	754-5172	_____	_____
**DIR, INSTALLATION SVCS	Martha Gault	761-1124	_____	_____
**PUBLIC AFFAIRS OFFICER	George Dunn	794-5734	_____	_____
**DISASTER OFFICER	Cynthia VanNausdall	368-4230	_____	_____

**MEMPHIS HAZARD TEAM CALLED: YES _____ NO _____ DATE: _____ TIME: _____
TIME RESPONDED: _____ TIME DEPARTED: _____

**NOTIFY AFTER COORDINATOR ASSESSES SPILL AND INDICATES WHO TO CALL.
AS OF 7 FEB 95.

NIGHT LIST

- a. Date and time of discharge or discovery.
- b. Location of discharge.
- c. Substance discharged.
- d. Quantity discharged and quantity entering the water.
- e. Waters affected or threatened by the discharge.
- f. Party responsible for the discharge.
- g. Cause of discharge.
- h. Actions being taken to mitigate the effects of the discharge.
- i. Name, address, and telephone numbers of the person making the contact.

6. In the event that the individuals (OSC, AOSC, FM or Response Team Leader) cannot be reached, and the Director, Office of Installation Services; Deputy Commander, DDMT; or Commander, DDMT cannot be reached, the Security Desk Sergeant will promptly report the incident to the Hazardous Material React Team, City of Memphis Fire Department (see Appendix A).

B. Evaluation and Initiation of Action

1. Upon arrival at the scene, the OSC will receive a description of the events leading up to the current from available sources. If necessary, the OSC will dispatch a reconnaissance team to assess the situation. The checklist provided at Appendix D will be used to record names, dates, times, locations, etc., to ensure that a proper evaluation has been conducted prior to the initiation of any containment or cleanup actions.
2. If the OSC is not immediately available, then the next most senior authority present shall assume responsibility until the OSC arrives. The line of authority is OSC, AOSC, FM, Response Team Leader, and Alternate Response Team Leader.
3. Classification of the spill.
 - a. Oil/Fuel
 - (1) Minor - less than 10 gallons.
 - (2) Medium - 10 to 100 gallons.
 - (3) Large - more than 100 gallons.
 - b. Hazardous Substance. If the material discharged is equal to or greater than the reportable quantity (RQ) listed for that material in Appendix E, the spill must be reported to EPA Region IV, National Response Center, (Appendix A) within 24 hours of the discharge.
4. Determining the response capability. The OSC may use the following information in evaluating the installation's response capability:

INCIDENT WITHIN THE CAPABILITY OF

- a. Minor spills or DDMT Spill Response
 leaks confined to
 DDMT

- b. Medium/Large spills DDMT Spill Response Team,
 or leaks that may City of Memphis, Shelby County,
 or have left the State of Tennessee,
 Depot Federal EPA and DLA HQ.

C. Containment and Countermeasure.

- 1. The OSC, the AOSC, the FE, and the FM will consult to determine which, if any, utilities must be shut down to reduce further danger and to enhance the containment and cleanup process.

- 2. The OSC, the AOSC, the FE, and the FM shall review the charts, diagrams, descriptions, engineering drawings and information relevant to the site where the discharge has occurred.

- 3. Consideration will be given to the extent of containment and countermeasure features already in place.

- 4. If necessary, the FE, with instructions from the OSC, will activate earth moving equipment and operators to provide additional containment protection.

D. Mitigation, Cleanup, and Disposal.

1. Mitigation

- a. The mitigation of the spill drainage incident shall be appropriate for the type of material discharged. The Emergency Response Equipment List is provided at Appendix C. Generally, the following processes apply:
 - (1) Acids Neutralize with a basic solution and absorb. (Sodium bicarbonate)
 - (2) Bases Neutralize with an acidic solution and absorb.

 - (3) Poisons Absorb with sand.
 - (4) Oxidizers Absorb with an inorganic absorbent material. Oil Dry (vermiculite)
 - (5) Flammable Absorb with an inorganic absorbent material. Oil Dry (vermiculite)
 - (6) Fuel/Oil Absorb with oil dry or calcine clay

b. References sources which may be consulted to provide specific mitigation information include:

- (1) Material Safety Data Sheets, FEDSTD 313C.
- (2) Emergency Response Guidebook, DOT P5800, latest edition.
- (3) Dangerous Properties of Industrial Materials Irving Sax.
- (4) Merck Index.

2. Cleanup

- a. Cleanup procedures will be determined by the OSC and supervised by the Response Team Leader. Guidance pertaining to personal protective equipment, health hazards, and safe operating procedures will be provided by the SHR.
- b. Cleanup operations will not commence until adequate protection has been provided to individuals involved in this phase of the incident. If adequate protection cannot be provided, the OSC may request outside assistance from a source listed in Appendix A.

3. Disposal.

- a. Disposal assistance will be obtained from the local Defense Reutilization and Marketing Office (DRMO) in accordance with procedures in DOD 4160.21-M, Defense Utilization and Disposal Manual.
- b. If the disposal procedure is beyond the capability of the DRMO, assistance will be sought from the U.S. Army Environmental Hygiene Agency (USAEHA) with coordination from DLA HQ, Cameron Station, Virginia (DLA-WS/DEPO). USAEHA and DLA will obtain the services of an outside contractor.
- c. All waste material will be processed in accordance with Federal, State, Local, and DOD/DLA regulations.

E. Documentation.

1. Regardless of the need to document the spill incident to outside agencies and organizations, a complete record of spill incidents will be developed by the generating organization in accordance with paragraph I.C. of this ISCP and will be forwarded to the DDMT Safety, Health and Environmental Office.

2. The requirements to submit an incident report to Federal, State, and DOD/DLA agencies are identified in;
 - a. Code of Federal Regulations, Title 40 Part 112.
 - b. Code of Federal Regulations, Title 40 Part 117.
 - c. Code of Federal Regulations, Title 40 Part 264.56
 - d. Tennessee Rules 1200-1-11-.06(6)(g).
 - e. DLAR 1000.17.
3. The spill checklist required by paragraph IV.B.1 and enclosed at Appendix D will serve as the internal record for spill documentation. A copy of the spill checklist will be forwarded to the Commanding Officer, Defense Depot Memphis, for review and comment.

V. EXECUTION OF THE EMERGENCY EVACUATION PLAN.

A. Evacuation Plan: This plan provides directions for the orderly, safe evacuation of employees of the Defense Depot, Memphis, Tennessee (DDMT); tenant activities at DDMT; and contractors providing services to DDMT who are operating within the boundaries of DDMT. The initial response to any emergency event will be to protect human health and the environment.

1. Responsibilities: In the event of a fire, explosion, hazardous material or hazardous waste released into the environment which could threaten human health or the environment, or other related emergency which poses a hazard to persons working at DDMT, total or partial evacuation, as determined by the On-Scene-Coordinator (OSC), (defined in paragraph III. A above), will take place when so ordered by the Depot Commander or other competent authority delegated by the Commander. The evacuation for all or part of the Depot will be under the direction of the Command Security Officer (CSO) or the delegated security representative(s) (defined in paragraph III. H above).

B. Evacuation Procedures:

1. In the event an evacuation is ordered, personnel will comply as follows:
 - a. **Employees will:**
 - (1) Listen and heed instructions as broadcasted, issued by Security personnel or Area Supervisor(s).
 - (2) Adhere to Fire Evacuation Plan diagrams posted on bulletin boards of each building, if possible.
 - (3) Proceed to the nearest exit(s) and depart from the building or the depot, as directed. If a normal exit is blocked due to the emergency, use the next nearest exit(s).

- (4) If departure from the depot is not required, proceed to a safe assembly area at least 250 feet from buildings and work areas and remain there until notified it is safe to return to the work area.
- (5) Assume responsibility for their visitors and ensure their safe evacuation.

b. Area Supervisors will:

- (1) Upon notification of an evacuation, relay the message to all personnel concerned.
- (2) Assume responsibility for persons reporting to them and ensure their safe evacuation.
- (3) Assist in the safe evacuation of handicapped persons in their area(s).
- (4) Ensure their area of responsibility is clear before leaving the area.
- (5) Join their employees wherever they have assembled, provided accountability, if possible, and remain with them until notified that it is safe to return to the work area.

c. Security Personnel will:

- (1) Use common sense and good judgment in directing or redirecting the egression of personnel from work areas to assembly areas or to exits from the depot, as dictated by the emergency.
- (2) Notify, if necessary, and provide assistance to dependents of military personnel residing in government housing and visitors and employees of recreation, club, and Hobby Shop facilities in their evacuation.
- (3) Open and/or close primary and alternate perimeter gates for evacuation of personnel and vehicles, as dictated by the emergency.
- (4) Direct traffic from employee parking area(s) as required.
- (5) Ensure all vehicles egressing from the depot yield to incoming emergency vehicles.

- (6) Stop all incoming commercial vehicles and control the turnaround or progress of egressing vehicles from the depot.
- (7) Maintain security of area(s) affected by the emergency.

- C. **Evacuation Drills:** In order to provide reasonable assurance the Emergency Evacuation Plan is effective, unannounced evacuation drills will be conducted at least semi-annually under the direction of the Safety, Health and Environmental Office, DDMT-DW. The drills will be in conjunction with DDMT Supplement 1 to DLAR 4100.5, 1 Sep 82, Fire Prevention and Protection Program, paragraphs IV. D. 5 and V.A.
- D. **Amendments to the Evacuation Plan:** The Office of Command Security, DDMT-I will review this plan annually, or more frequently, if necessary, and amend it accordingly, to ensure it remains accurate and current.

VI. TRAINING REQUIREMENTS.

- A. The ISCP will be activated under simulated conditions by DDMT-DE, Safety, Health and Environmental Office, no less than once every six (6) months (two times during a calendar year) to determine its applicability and effectiveness. A full review and critique of the simulated incident will be developed and become an attachment to the DDMT-DE copy of the Plan maintained in their office.
- B. Each individual who has a responsibility outlined in the Plan will be fully knowledgeable of those responsibilities. When an individual has subordinates for whom he/she is responsible, that individual will ensure that all subordinates are fully knowledgeable of this Plan and appropriately skilled to fulfill their responsibilities.
- C. All individuals who has responsibilities for the satisfactory accomplishment of this Plan shall receive annual documented hazardous waste management, training in accordance with Federal, State, and DOD/DLA regulation. Hazardous waste management training will be provided through locally developed training programs or accredited professional development training and seminars at off-site locations.

DDM-DE

27 JUN 1994

SUBJECT: SURVEY OF HAZARDOUS MATERIALS IN STORAGE AT DDMT

TO: DDMT

THE FOLLOWING IS A LISTING OF HAZARDOUS MATERIALS STORED AT THE DEPOT BY BUILDING LOCATION:

HAZARDOUS CHEMICALS IN BUILDING

873/1

1. Inspection penetrant
2. Hydraulic fluid
3. Lube oils
4. Greases
5. Desiccant
6. Ethylene glycol
7. Cleaning compound engine gas path
8. Perchloroethylene
9. Cleaning compound solvent
10. Cleaning aircraft solvent
11. AAF extinguishing agent
12. Trichloroethylene
13. Fog oil
14. 111 Trichloroethane
15. Bore cleaner rifle

873/2

1. Hydraulic fluid
2. Grease aircraft
3. Lubricating oil
4. Cleaning compound solvent
5. Diatomaceous earth
6. Perchloroethylene
7. Urea
8. anti-icing fluid
9. Desiccant
10. Dry cleaning compound
11. Inspection penetrant
12. Ion exchange compound
13. Trichlorotrifluoroethane
14. Cutting fluid
15. Freon cleaning agent
16. Ethylene glycol
17. Sodium Hexametaphosphate
18. Trichloroethylene
19. Charcoal activated, powdered
20. Corrosive preventative
21. Steam cleaning compound
22. Compound cleaning aircraft surfaces
23. North east corner temporary packing for flammables
24. Petroleum
25. Rifle bore cleaner
26. Monoethanolamine

873/3

1. Lube oil
2. Hydraulic fluid
3. Cutting fluid
4. Grease
5. Damping fluid
6. Antifoam compound
7. Perchloroethylene
8. Disinfectant, food services
9. Trichlorotrifluorethane
10. Inspection penetrant
11. Cleaning compound surfaces aircraft surfaces
12. Leak detection compound oxygen system
13. Anti freeze
14. 1,1,1, trichloroethane
15. Corrosion preventative
16. Dry cleaning solvent
17. Cleaning compound gas engine path
18. Wire pull lubricant

873/4

1. Lubricating oils
2. Greases
3. Hydraulic fluid
4. Ethylene glycol
5. Dampening fluid (silicone)
6. Inspection penetrant
7. Dry chemical extinguishing agent
8. Fog oil
9. Cleaning compound hi pressure
10. Cleaning compound engine
11. Trichlorotrifluoroethane
12. Brake fluid
13. Cleaning compound solvent
14. Lubricating oil compressor
15. Insulating oil electrical
16. Petrolatum technical
17. Lube oil machine tool
18. Heat transfer fluid
19. Rifle bore cleaner
20. Urea
21. Cutting fluid
22. Pinair M-5575
23. Malathion
24. Power steering fluid

873/4

25. Cleaner aircraft surfaces
26. Silicon
27. Inspection penetrant
28. 1.1.1. Trichloroethane

873/5

1. Lubricating oil
2. Hydraulic fluid
3. Lubricating greases
4. Inspection penetrant
5. Lube oil refrigerator compressor
6. Inhibitor icing
7. Disinfectant food services
8. Fog oil
9. Ethylene glycol
10. Dry cleaning solvent
11. Foam, liquid fire extinguisher
12. Ion exchange compound
13. Aluminum sulfate
13. Trichloroethylene
14. Trichlorotrifluoroethane
15. Cleaning compound aircraft surfaces
16. Cleaning compound solvent
17. Grease aircraft
18. Malathion
19. Carbon removing compound
20. 1.1.1. Trichloroethane
21. Charcoal
22. Sodium metasilicate
23. Cutting fluid

873/6

1. Perchloroethylene
2. Lubricating oil
3. Dry cleaning solvent
4. Cleaning compound solvent
5. Hydraulic fluid
6. Cleaner lubricant
7. Fog oil
8. Desiccant, activated
9. Deicing fluid
10. Wire pulling lubricant
11. Compound rust removing
12. Hydrochloric acid

13. Corrosion removing compound
14. Carbon removing compound
15. Hydrofluoric acid
16. Hydrofluorsilic acid
17. Sulfuric acid
18. Ferric chloride
19. Phosphoric acid
20. Ammonia hydroxide
21. Trichlorotrifluoroethane
22. Trichloroethane
23. Turco fluoro-check emulsifier
24. Cleaner aircraft surfaces
25. Desealing compound alkaline
26. Naled insecticide
27. Cleaning compound alkali
28. Cleaning compound fuel tank and bilge
29. Monoethanolamine
30. Sodium hypochlorite
31. Kathon fp 1.5
32. Urea
33. Lipophilie

1. Methyl ethyl ketone
2. Acetone technical
3. Naphtha aromatic
4. Morpholine
5. Dischlor methane
6. Toluene technical
7. Calibrating fluid
8. Cleaning compound
9. Cyclohexylamine
10. Naphtha aliphatic
11. Petroleum naphtha
12. Anti foaming agent
13. Ethyl acetate technical
14. Naphtha solvent
15. Isopropyl alcohol
16. Methyl alcohol
17. Methanol
18. Ethyl alcohol
19. Methyl isobutyl ketone

949

1. Ration supplement, flameless heaters
2. Instant cold compress (contains ammonium nitrate & water)

689/5

1. Any listed item/chemical may be found in this area it is a shipping area.

690/5

1. Any listed item/chemical may be found in this area it is a shipping area.

670/5

1. Any item/chemical may be found in this area it is a shipping area.

308

1. Potassium hydroxide
2. Activator, potassium hydroxide
3. Ammonia hydroxide
4. Sodium hydroxide (canister)
5. Iron agent no #1
6. Corrosion removing compound
7. Acid muria
8. Etching solution
9. Toner dispersant kit
10. Compound cleaning
11. Sodium borohydride
12. Mercury lamp
13. Poison
14. Moulding plastic
15. Lubricating solid film
16. Coating compound
17. Plat solution
18. Toluene
19. Calcium hydroxide
20. Compound insulating
21. Soldering flux
22. Malathion insecticide
23. Paint primer
24. Sulfuric acid
25. Inspection penetrant
26. Battery mercury
27. Sodium fluoride
28. Solution stain

29. Corrosion inhibitor
30. Thermometer
31. Hydrochloric acid
32. Polyurethane
33. Absorbent (pcb) contaminated
34. Potassium cyanide
35. Trichloroethylene
36. Potassium
37. Trichlorerfluoroethane
38. Insulating compound
39. Cyanide
40. Plastic molding kit
41. Oil
42. Dioxane
43. Calcium hypochlorite
44. Trioxide

NOTE: Any item may be found in this building it is a hazmat waste location.

835/1

1. Methyl macralate
2. ORMD Flammable liquid (ethanol blue dye)
3. Pramitol
4. Ethyl alcohol
5. Sterno fuel bars
6. Methyl ethyl ketone
7. Isopropyl alcohol
8. Paint related material (lubricant, solid film, ecalube)
9. Cleaner rifle bore
10. Corrosion preventative
11. Ethanol
12. Methanol
13. Xylene
14. Naphtha petroleum
15. Benzoin tincture compound
16. Acetone
17. Cleaning compound solvent
18. Toluene-methyl-isobutyl (ketone mixture)
19. Denatured alcohol
20. Amyl acetate
21. Toluene
22. Cage/insulating compound
23. Methyl, isobutyl ketone
24. Ammonia inhalant solution
25. Biogenic 377c (potassium, hydroxide limonene)
26. Naphthalene

835/2B

1. Methyl ethyl ketone
2. Coal tar solution
3. Cleaning compound solvent
4. Sodium hydrosulfate
5. Naphtha aliphatic
6. Lithographic blanket (roller wash)
7. Petroleum naphtha
8. Bromax (weed killer)
9. N-Butyl acetate
10. Toluene
11. Naphtha aliphatic
12. Insulating varnish
13. Toluene methyl isobutyl ketone (mixture)
14. Acetone
15. Xylene

835/2A

1. Carbaryl insecticide
2. Deglazing solvent
3. Insecticide lindane powder
4. Rodenticide bait
5. Iron exchange compound
6. Sodium silicofluoride
7. Baygon insecticide
8. Dursban
9. Combat roach bait
10. Lindane dust 1%
11. Roach and ant spray
12. Malathion
13. Dichlorvos
14. Balan
15. Wasp stopper
16. Prometone
17. Gramoxone
18. Dalpone #85
19. Diazinone
20. Rat bait
21. Simazine
22. Diquate
23. Ant killer

835/3

1. Sulfuric acid
2. Nitric acid
3. Acetic acid
4. Sodium hexametaphosphate
5. Ammonium hydroxide
6. Hydrochloric acid
7. Sodium hypochlorite
8. Sulfamic acid
9. Carbon removing compound (methylene chloride phenol)
10. Sodium bisulfate
11. Sulfur technical
12. Ortholidine
13. Phosphoric acid
14. Hydrofluosilic acid
15. Sodium hydroxide
16. Kathen fp 1.5
17. Boric acid
18. AQ-701 (engine coolant corrosion inhibitor)
19. Ammonium Thiocyanate
20. Oxalic acid
21. Zinc chloride

835/4

1. This is a packing area any chemical in warehouse #835 may be found in this area.

835/5

1. Paper photo
2. Lubricating oil
3. Grease
4. Fire extinguishers
5. Silicone compound
6. Calcium chloride, anhydrous
7. Toner solution
8. Antisetting compound
9. Compound cleaning
10. Desiccant
11. Penetrating oil
12. Coder hydraulic fluid
13. Diatomaceous earth
14. Rug and room deodorant
15. Disinfectant detergent
16. Cleaning and lubricating compound
17. Fire extinguishers

835/5

18. CO2 cyclinders
19. Fungicide
20. Rifle bore cleaner
21. Freon #22
22. Oxygen bottles
23. Brake fluid
24. Insulating oil
25. Sodium bicarbonate
26. Silicon compound
27. Calcium chloride
28. Cutter insect repellent
29. Talcum powder
30. Calcium carbonate
31. Disodium phosphate
32. Nitrobenzene sulfonic acid sodium salt
33. Calcium hydroxide

NOTE: Some of these items are aerosol cans.

835/6

1. Potassium superoxide
2. Decontaminating agent stb
3. Ammonia nitrate
4. Calcium hypochlorite
5. Sodium nitrate
6. Ammonia nitrate
7. Chorium trioxide technical
8. Oxidizing material n.o.s. (sodium chlorate barium peroxide)
9. Sodium sulfite
10. Sodium nitrate
11. Potassium superoxide
12. Potassium permanganate
13. Hydron peroxide
14. Decontaminating agent (stb)

HAZARDOUS STORAGE COMPATIBILITY CODE

1. Number of Characters: Two (2).
2. Type of Code: Alpha/numeric.
3. Hazardous Storage Compatibility Codes identify specific detailed data for all hazardous NSNs. These codes are used in the locator basic record to be used during the Receiving, Storage and Shipping process.
4. The following codes are assigned:

<u>CODE</u>	<u>DEFINITION</u>	<u>ABBREVIATED DEFINITION</u>
A1	Radioactive Material, regulated.	RADIOACTIVE REGULATED
B1	Corrosive, organic base.	CORROSIVE ORG BASE
B2	Corrosive, inorganic base.	CORROSIVE INORG BASE
C1	Corrosive, organic acid.	CORROSIVE ORG ACID
C2	Corrosive, inorganic acid.	CORROSIVE INORG ACID
E1	Explosive, Class A.	EXPLOSIVE CLASS A
E2	Explosive, Class.	EXPLOSIVE CLASS B
E3	Explosive, Class.	EXPLOSIVE CLASS C
F1	Flammable/Combustible Liqd Class Ia	FLAM/COMB LIQUID IA
F2	Flammable/Combustible Liqd Class Ib	FLAM/COMB LIQUID IB
F3	Flammable/Combustible Liqd Class Ic	FLAM/COMB LIQUID IC
F4	Flammable/Combustible Liqd Class II	FLAM/COMB LIQUID II
F5	Flammable/Combustible Liqd Class IIIa	FLAM/COMB LIQUID IIIA
F6	Flammable/Combustible Liqd Class IIIb	FLAM/COMB LQD IIIB
G1	Compressed Gas, flammable, toxic/ poison A.	FLAM GAS TOXICPOISON
G2	Compressed Gas, flammable, non-toxic	FLAM GAS NON TOXIC
G3	Compressed Gas, non-flammable, toxic, poison A	NONFLAMGAS TOXPOISON
G4	Compressed Gas, non-flammable, non-toxic.	NONFLAM GAS NONTOXIC
G5	Chlorine	CHLORINE
G6	oxygen/oxidizer.	OXYGEN/OXIDIZER
G7	Acetylene.	ACETYLENE
J1	Irritant.	IRRIATANT
L1	Low Hazard.	LOW HAZARD
M1	Magnetic Material	MAGNETIC MATERIAL
N1	Non-hazardous	NON HAZARDOUS
P1	Toxic Chemical, pesticide, herbicide	TOXIC CHEM HERBICIDE
P2	Toxic Chemical, pesticide, non-herbicide.	TOXIC CHEM PESTICIDE
R1	Reactive Chemical, oxidizer.	REACTIVE CHEM OXIDIZER
R2	Reactive Chemical, reducer	REACTIVE CHEM REDUCER
R3	Water Reactive Chemical.	WATER REACTIVE CHEM
R4	Pyrophoric Reactive Chemical.	PYROPHORIC REACTCHEM
S1	Multiple Hazardous Chemical.	MULTIPLE HAZARDOUS
T1	Toxic Chemical, carcinogen	TOXIC CARCINOGEN

HAZARDOUS STORAGE COMPATIBILITY CODE con't

<u>CODE</u>	<u>DEFINITION</u>	<u>ABBREVIATED DEFINITION</u>
T2	Toxic Chemical, bioaccumulative.	TOXIC BIOACCUMULATIV
T3	Acute Toxic Chemical.	ACUTE TOXIC CHEMICAL
T4	Chronic Toxic Chemical.	CHRONIC TOXIC CHEM
T5	Toxic Chemical, etiologic agent.	TOXIC ETIOLOGIC AGNT
X1	Variable Hazardous.	VARIABLE HAZARDOUS

Appendix 5-2

Correspondence Concerning Fire Support Agreements

FEDERAL BUREAU OF INVESTIGATION
COMMUNICATIONS SECTION
ALEXANDRIA, VIRGINIA 22304

MAR 22 1974

RE: **Installation Engineering, Fire Protection Support Agreement**
COMMUNICATIONS SECTION

TO: **COMMUNICATIONS SECTION, 15 MARCH 1974, SUBJECT AS ABOVE.**
FROM: **COMMUNICATIONS SECTION, 15 MARCH 1974, SUBJECT AS ABOVE.**
SUBJECT: **Installation Engineering, Fire Protection Support Agreement.**
Reference is made to the above captioned subject matter. The following information is being furnished for your information: [The rest of the body text is illegible due to heavy noise and poor scan quality.]

THE COMMANDER

TO: **COMMUNICATIONS SECTION, 15 MARCH 1974, SUBJECT AS ABOVE.**
FROM: **COMMUNICATIONS SECTION, 15 MARCH 1974, SUBJECT AS ABOVE.**
SUBJECT: **Installation Engineering, Fire Protection Support Agreement.**

/S/ PECK

L. B. PECK
MAJ, USAF
Director of Installation Services

COMMUNICATIONS SECTION

COMMUNICATIONS SECTION, USAF
COMMUNICATIONS SECTION

MFR: DBAH-W'S ASKED FOR COPY OF Support Agreement
for Fire Protection

Attachment 6

Closure Plan

CLOSURE PLAN

This Attachment is submitted in accordance with the requirements of 40 CFR 270.14(b)(13), 270.14(b)(15-18), 264.110-264.115, and 264.178; and Tennessee Hazardous Waste Management Rules 1200-1-11-.07(5)(a)13 and .06(9) and (10).

Closure Plan

This plan identifies all steps that will be necessary to completely close the hazardous waste management unit located at the DRMO. The design of this unit is not conducive to partial closure; therefore, no partial closure of the unit is contended.

DRMO-Memphis will maintain an on-site copy of the approved closure plan and of all revisions to the plan. Revisions will be made whenever any modifications are made to the existing equipment, structures, instruments or procedures related to the management of the facility.

Closure Performance Standard

This closure plan is designed to: ensure that the DRMO facilities will not require further maintenance and controls; minimize and eliminate threats to human health and the environment; and prevent escape of hazardous waste, hazardous waste constituents, or waste decomposition products to the ground or surface waters or to the atmosphere.

Partial and Final Closure Activities

Partial closure of the container storage operation is not planned. However, in the event that future circumstances or decisions force DRMO-Memphis to discontinue hazardous waste container storage activities, the procedures for final closure will be followed. These procedures are discussed in the following sections.

Maximum Waste Inventory

At a maximum, there will be 154,440 gallons of hazardous wastes in 55-gallon drums and smaller containers in storage during the operational life of the storage building.

Schedule for Closure

Memphis Depot Memphis is an integral part of the defense system of the United States; it is not anticipated that closure will occur. However, a closure date of 2036 can be estimated.

Time Allowed for Closure

Within 30 days after the receipt of the final volume of hazardous wastes, final closure activities will be initiated. Table 6-1 presents an estimated schedule for closure which gives an estimate of the total time required to close the facility and the time required for intervening closure activities.

Notification of intent to close will be sent to the Tennessee Department of Health and Environment, Division of Solid Waste Management, 180 days before beginning final closure. Final closure will be supervised and certified by an independent registered professional engineer.

Extensions for Closure Time

No extension for closure time is anticipated. If, however, an extension would be necessary to properly close the HWSF, then a petition will be sent to the Department of Health and Environment amending the closure schedule listed in Table 6-1. This petition will demonstrate:

- (i) The need for more than 180 days to close the facility.
- (ii) There is a reasonable likelihood that a person other than the owner/operator will recommence operation of the site.
- (iii) Closure would be incompatible with continued operation.
- (iv) All steps have and will be taken to prevent threats to human health and the environment from the unclosed but inactive facility.

Inventory, Disposal, Removal, or Decontamination of Equipment

Upon formal notification to proceed with facility closure, no additional hazardous property will be accepted at the storage facilities. Furthermore, all hazardous waste/property remaining in inventory will be removed in accordance with a contractual agreement to a state and/or EPA-approved TSD facility or recycling site(s). If this process cannot be accomplished within the allotted time for closure, the hazardous property will be transferred to an operational DRMO with a valid TSD permit. After the final inventory of waste has been removed, the hazardous waste storage unit (HWSU) will be inspected for loose items; i.e., papers, pallets, or empty containers. These items will be removed and properly disposed of.

Trained personnel wearing appropriate protective (rubber gloves, rubber boots, and coveralls) will remove and clean up all visible signs (spots on the floor) of contamination. Then a pressurized wash water will be used to wash the walls and floors of each room,

closet, and hall (walls and floors). All washings will be collected in a portable container and the wash water analyzed per the Waste Analysis Plan, Attachment 2. If the analysis indicates that the wash is hazardous, then it will be drummed and disposed of as hazardous waste. If the analysis shows no evidence of contamination, the wash will be either discharged in accordance with DDMT's NPDES permits or agreements with Memphis Utility Department; or the wash water disposal will be in compliance with applicable regulations. The load/unload area and catch basin will be cleaned in the same manner after the equipment decontamination has taken place.

The samples of the wash water will be analyzed for specific conductance, total organic carbon (TOC), and total organic halogens (TOX). The wash water will be considered hazardous if:

1. The specific conductance exceeds that of the wash water before washing the facility, or;
2. The TOC concentration exceeds concentration of the wash water before use, or;
3. The TOX concentration exceeds concentration of the wash water before use.

All equipment which has come into contact with hazardous waste will be decontaminated at closure or shipped off-site to a permitted hazardous waste disposal site. The equipment, forklifts, and hand tools will be decontaminated on the load/unload area of the storage building. Equipment, where applicable, will be triple rinsed and the wash water collected.

The facility is totally enclosed to prevent contamination of the surrounding soil even if there is an accidental spill inside the building. Outside the building there are loading/unloading areas. These are designed to contain a spill, preventing hazardous wastes from reaching the surrounding soil. If such an accident occurs involving release of hazardous waste in the building on a loading/unloading area or on the soil, this would call for activating the contingency plan; any hazardous waste discharge to the soil would be thoroughly cleaned up. Thus, at closure there would be no reason to sample or clean up soil.

Facility decontamination procedures will be conducted by trained personnel. The services of these personnel will be obtained at the time of closure notification with contractual procedures established by DOD. Dod will prescribe requirements for decontamination and will require the contractor to provide all necessary equipment and protective clothing to safely effect decontamination.

Closure of Containers

The removal of waste containers previously discussed in Section will be verified by an independent registered professional engineer. All containers will be sealed and labeled prior to shipment in accordance with Rule 40 CFR Sections 261 and 262. Manifests for container removal will be maintained by DRMO-Memphis or by the Defense Reutilization and Marketing Service, Federal Center, 74 N. Washington Avenue, Battle Creek, MI 49017-3092.

Table 6-1

Estimated Closure Schedule

ACTIVITY	DAYS
1. Receipt of final volume of hazardous waste	0-10
2. Conduct final drum inventory inspect and repack drums (if needed), prepare waste manifest, prepare drums for shipment	0-15
3. Removal/disposal of final waste inventory	15-45
4. Solvent wash and decontamination of drum storage areas	45-50
5. Removal, manifesting, and disposal of solvent washing	50-85
6. Soil sampling and analysis	80-110
7. Removal, manifesting and disposal of contaminated soil	110-140
8. Accounting of all wastes shipment manifests	170
9. Completion of closure and certification submittal to the State of Tennessee Department of Health and Environment, Division of Solid Waste Management	180

Attachment 7
Facility Description

FACILITY DESCRIPTION

General Description

In 1980, the Department of Defense (DOD) designated the Defense Logistics Agency (DLA) as the responsible organization for the disposal of hazardous materials/wastes with the exception of eight specific types of hazardous materials/wastes. DLA then delegated this mission to the Defense Reutilization and Marketing Service (DRMS). DRMS is organized into 5 Defense Reutilization and Marketing Regions (DRMRs) and 217 Defense Reutilization and Marketing Offices (DRMOs) and Off-Site Branches (OSBs). The DRMOs and OSBs are the field level activities responsible for accepting hazardous materials/wastes from DOD generators and for disposing of these items in an approved manner. The DRMO located at the Fort Campbell Military Reservation is one of these designated collection sites. This permit application is submitted for the proposed hazardous waste storage facility (HWSF) at the DRMO.

The Defense Depot is located in the southern portion of the City of Memphis, Tennessee, in Shelby County (see Appendix 7-1). It is one of six principal distribution depots in the Defense Logistics Agency integrated wholesale distribution system. Its mission is the receipt, storage, maintenance, inventory, and issue of clothing, textiles, general supplies and subsistence, and medical supplies. Its major function is the distribution of those commodities to all military activities in the South Central Region, consisting of the States of Texas, Oklahoma, Arkansas, Louisiana and Tennessee, plus the overseas support for all military activities in the Caribbean area, including South America.

The street and mailing address for DRMO-Memphis is:

**Defense Reutilization and Marketing Office
Defense Distribution Depot Memphis
2163 Airways Blvd.
Memphis, Tennessee 38114**

The location of the proposed hazardous waste storage facility (HWSF) at the DRMO is indicated on Figure 701 and on the map of the Defense Depot included as Appendix 7-2. DRMO-Memphis will accept expired shelf-life items and spill residue from clean-up operations at the Defense Depot. the DRMO may also accept waste from the DOD activities and other Federal agencies that have a Memorandum of Understanding with DLA/DRMS.

The point of contact for the hazardous waste management activities at DRMO-Memphis is:

Mr. Ronald C. Fleck
Chief, DRMO
Defense Distribution Depot Memphis, Tennessee 38114
(901) 775-4895

Topographic Map

Appendix 7-3 is a topographic map of the DDMT. The boundaries of the DRMO and the location of the storage facilities are indicated. Appendix 7-4 is a topographic map showing 1000 feet around the DDMT.

General Requirements

Land Uses

Land use on and surrounding the DDMT is indicated on the land use plan included as Appendix 7-5.

Hazardous Waste Management Facility Boundary

The HWSF will be situated 200 feet south of the closest boundary of DDMT.

Wind Rose

A wind rose of meteorological data is included on the Regional Plan (Appendix 7-1).

Access Control

The DDMT is surrounded by a six-foot-high chain-link fence topped with three strands of barbed wire. All gates are either locked or manned at all times. The police chief and his staff perform 24-hour security surveillance through periodic inspections of all secured facilities (to include limited access storage area).

Injection and Withdrawal Wells

There are no known injection or withdrawal wells on DDMT property. The Depot obtains its water supply from the City of Memphis.

Buildings, Treatment, Storage, Disposal Areas, and Other Structures

The DRMO complex is located near the northern boundary of the Defense Depot. All buildings and structures on the DRMO property, including the proposed site of the new hazardous waste storage facility are shown on the map in Appendix 7.2. Building plans for the proposed facility will be forthcoming.

Recreation Areas

A recreation area, including a golf course, is located in the southeastern corner of the DDMT in the area of Lake Danielson.

Runoff Control System

Storage bays will be separated by concrete walls and surrounded by a six-inch concrete berm. The loading/unloading areas will be equipped with containment berms and catch basins. The catch basins will be equipped with a manual valve to allow any collected precipitation to be drained into the storm culvert. This design will eliminate the possibility of runoff from the storage facility.

Storm, Sanitary and Process Sewers

A new six-inch sanitary sewer line will be constructed at the facility. This pipe will join the existing eight-inch line which runs eastward and connects with a line running northeast, eventually emptying into the city sewer system (see Appendix 7-6, Building Plans, and Appendix 7-7, Sanitary Sewer System).

The storm drainage system for Defense Depot Memphis is shown in Appendix 7-8. Drainage in the area of the hazardous waste facilities is to the south to a storm culvert. The flow pattern is northeast until it empties into a city storm sewer off base.

Storm drainage on the northern boundary flows into city ditches or small unnamed creeks. These creeks flow north into Cane Creek, which flows southwest into Nonconnah Creek. Nonconnah Creek flows into Lake McKeller, which empties directly into the Mississippi River.

Loading and Unloading Areas

Two loading/unloading areas will be provided at the storage facility, one on the south side and one on the north side. The northern dock will be 520 square feet in size and will be equipped with a ramp approximately 50 feet long by eight feet wide. Both loading docks will be equipped with containment berms and catch basins with manual valves.

Fire Control Facilities

A new ten-inch water line will be installed for the storage facility and will provide water for the sprinkler system.

The storage facility will be equipped with one Class B and one Class C fire extinguisher.

In addition, two fire hydrants are located near the storage building.

Surface Water

Surface waters on the Defense Depot include Lake Danielson and a small pond. The storm drainage system immediately to the north of Lake Danielson empties into the lake. Water and bottom samples are collected and analyzed for contaminants on a regular basis. The DRMO is approximately 2,000 feet north of the lake.

Flood Control/Drainage Barriers

Drainage from the area around the DRMO generally flows south to a storm drain, which flows northeast to the northern boundary of DDMT. The facility is not located in the 100-year floodplain. The storage building will be completely enclosed, which will eliminate drainage into the facility.

Location Information

Seismic Considerations

Tennessee is not listed as a political jurisdiction which must demonstrate compliance with 40 CFR 264.18(a).

Floodplain Standard

The Defense Depot Memphis is not located in a 100-year floodplain as shown on the Federal Emergency Management Agency, Flood Insurance Rate Map, included in Appendix 7-9.

Traffic Information

Hazardous materials may be transported from any warehouse on DDMT to the DRMO. The longest distance traveled is not more than 3/4 of a mile over improved hard surface roadways. Approximately four tractor trailer loads are delivered to the DRMO each week. The routes used for shipments arriving at and leaving the DRMO HWSF are shown on Figure 7-2.

Only vehicles belonging to military personnel and a few visitors are allowed on DDMT property. Employee parking lots are provided outside the fenced area.

Traffic Control

Stop signs and yield signs are used for traffic control on the DDMT.

Access Road Surfacing

Roads on the DDMT are asphalt surface.

Load-Bearing Capacity

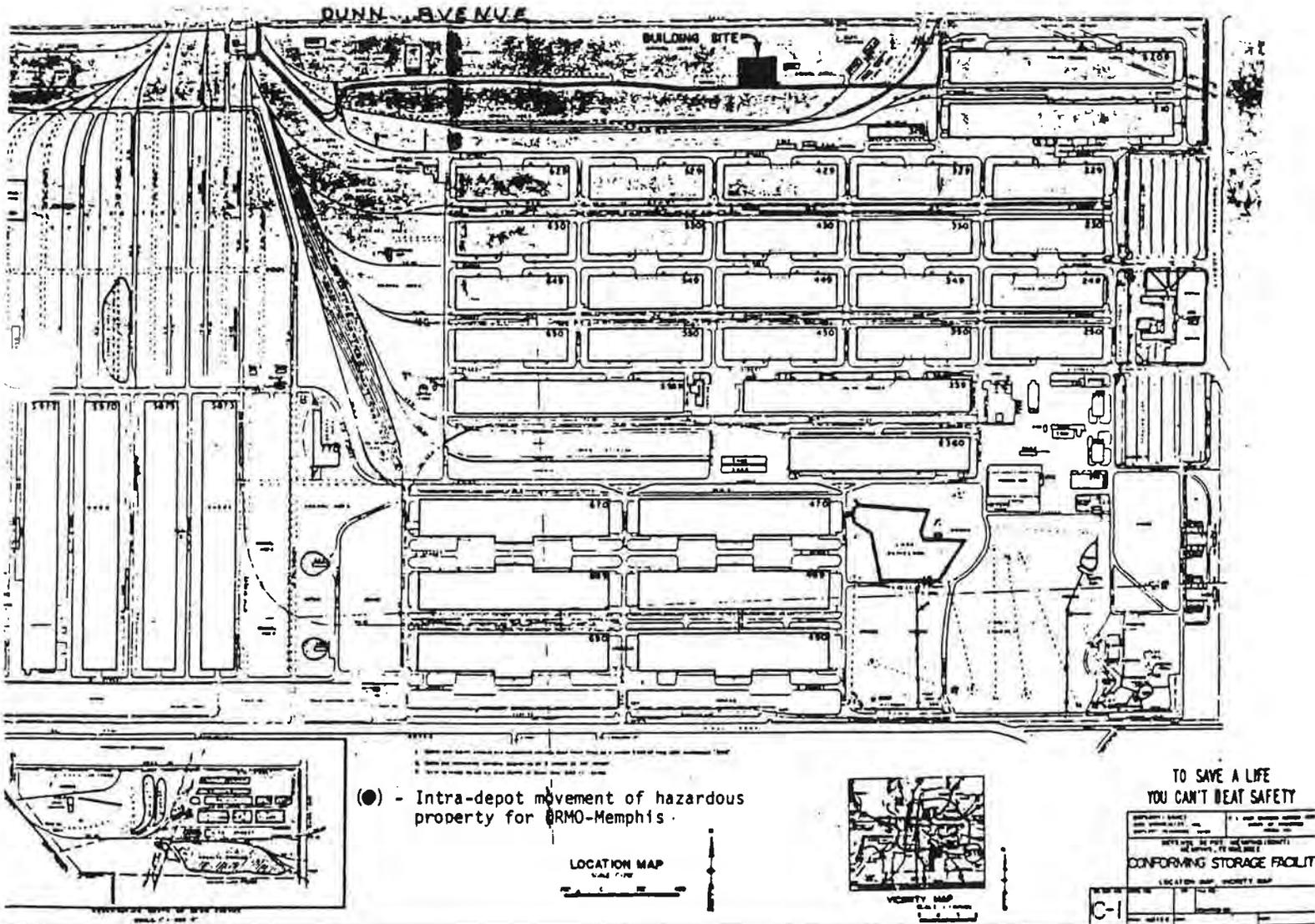
The roads on DDMT are adequate to support various combinations of traffic, including military vehicles and tractor trailers. The single axle load for the streets at the DRMO is 8,000 pounds.

Traffic Control Signals

See Attachment 7.

Figure 7-2

Routes for Shipments Arriving at and Leaving the DRMO HWSF



● - Intra-depot movement of hazardous property for DRMO-Memphis.

LOCATION MAP

SCALE 1:1000



VICINITY MAP

SCALE 1:10000

TO SAVE A LIFE
YOU CAN'T BEAT SAFETY

DEPARTMENT OF DEFENSE MEMPHIS, TENNESSEE	U.S. ARMY MEMPHIS, TENNESSEE
MEMPHIS, TENNESSEE CONFORMING STORAGE FACILITY	
LOCATION MAP VICINITY MAP	
C-1	

Attachment 8
Container Management

Containers

DRMO-Memphis will be responsible for providing guidance to hazardous waste generators for packaging requirements in accordance with DOT regulations (49 CFR Subchapter C - Hazardous Materials Regulations). No leaking or damaged containers will be accepted for storage unless they have been repackaged and rendered totally enclosed and non-leaking. Table 8-1 lists the applicable Department of Transportation (DOT) packaging requirements for some of the chemicals listed in Appendix 1-1, Attachment 1 which may be stored at the HWSF. It should be noted that 49 CFR Section 173.7 (U.S. Government Material) describes packaging requirements for the Department of Defense; containers may be of equal or greater strength and efficiency than DOT requirements. (Refer to Appendix 8-1 for DOT and military container specifications.)

Description of Containment System

Basic Design Parameters, Dimensions, and Materials of Construction

The hazardous waste storage unit (HWSU) at DRMO-Memphis will have perimeter walls constructed of heavy concrete masonry unit and a roof to prevent accumulation of precipitation. The building contains rooms (approximately 20 feet by 30 feet) and storage closets. There are also exterior load/unload areas. Attachment 9 contains the construction drawing plans. The building design incorporates the following design features.

- a. Curbs around the whole facility to retain spills.
- b. The floor of each module is depressed two inches from the corridor. Under the storage racks, the floor is depressed another six inches. There are ramps with maximum slope of eight percent leading into them.
- c. The closets have depressed sides.
- d. Doors to the module and closets are two-hour fire-rated.

Floors areas for storage and loading/unloading operations will be smooth concrete designed to accommodate rack, shelf, and bulk storage, as well as fully loaded 4,000 pound forklift truck axle loads. All floor surfaces are to be flat except for ramp areas. The exterior load/unload area and the interior load/unload area are designed to support an H-20 (40,000 pounds) wheelbase load.

The building floors and load/unload slab are sealed to prevent chemicals leaking through them. The floor will be coated with a two component chemical resistant epoxy sealant. The sealant specifications are in Attachment 9, Appendix 9-1. All concrete joints have internal chemical resistant water stop and joint sealer. The specification for the joints are also shown in Attachment 9, Appendix 9-1.

The epoxy sealant coating is applied on curbs and partition walls to a minimum height of six inches above the finished floor. Underneath the concrete will be a vapor barrier.

Doorways will have raised thresholds as appropriate. The building will collect a spill within itself; the load/unload area will collect a spill in the adjoining catch basin.

Description of How Design Promotes Drainage or How Containers are Kept from Contact with Standing Liquids in Containment System

Figure 8-1 shows the various storage aids planned for this facility. The storage racks can store three tiers high, shelving is two feet deep and various lengths; and storage cabinets used for small sensitive items or water reactives.

Where racks are used, the bottom tier is raised high enough to inspect for spills. Drums (containers) are placed on pallets to facilitate movement before being placed on the racks. This keeps the containers, in the event of a spill, from coming in contact with a spill.

Capacity of the Containment System Relative to the Number and Volume of Containers to be Stored

See Table 8-2 for containment capacity of the building. This demonstrates that the spill containment system will contain more than 10 percent of the maximum storage capacity.

Provisions for Preventing or Managing Run-On

The HWSU will be completely enclosed on all four sides and covered with a roof. The floor of this facility will be composed of concrete and the building will not be located in a 100-year floodplain. The building entrance thresholds are raised to prevent run-on, and the surrounding area graded to drain away from the facility. In view of these facts, no run-on into the building's containment system is expected.

A sealed concrete spill containment area outside is designed to control a spill during loading/unloading operations.

All rainwater runoff will flow through a catch basin to a storm drainage system. The outlet has a valve which is closed before hazardous property is handled outside. The valve is interconnected to the entry cargo door with an electric relay so that it will sound an alarm horn if the valve is not closed when the door is opened.

If a spill collects in catch basin, that material will either be pumped into another container and processed as the original container would have been by the receiving personnel. Identification of the waste will be the same as the container it came from, or the material will be minor and it will be removed using absorbent material.

Table 8-1

Description of Containers to Be Used to Store
Hazardous Wastes at DRMO-Memphis

Flammable Liquids Not Specifically Provided For [49 CFR 173.119]

Hazardous waste to be stored at DRMO-Memphis that fall within this broad category of hazardous materials include:

Styrene Monomer
Naphtha
Petroleum Distillates
PD-680
Aromatic Solvents
Acetylene
Denatured Alcohol

Ketones
Alcohols
Glycol Ethers
POLS
Flammable Liquids, N.O.S.
2-Propanol
Insecticide Liquid, N.O.S.

Approved containers to be used for storage of this material include:

<u>DOT Container Code</u>	<u>Applicable DOT Regulatory Section</u>	<u>Container Description</u>
5A; 5C	178.81; 178.83	Steel barrels or drums without removable heads
5B	178.82	Steel barrels or drums without removable heads
5M	178.90	Monel drums
17C	178.115	Single-trip steel drums without removable heads
17E	178.116	Single-trip steel drums without removable heads
6D	178.102	Cylindrical steel overpack, straight sided, for inside plastic container
2S	178.35	Polyethylene containers

Table 8-1 (continued)

Description of Containers to Be Used to Store
Hazardous Wastes at DRMO-Memphis

Corrosive Liquids Not Specifically Provided For [49 CFR 173.245]

Hazardous waste to be stored at DRMO-Memphis that fall within this broad category of hazardous materials include:

Sodium Hypochlorite
Sulfuric Acid
Nitric Acid
Hydrochloric Acid
Ferric Chloride
Ammonium Hydroxide

Sodium Hydroxide
Potassium Hydroxide
Fluoboric Acid
Diethylene Triamine
Corrosive Liquids, N.O.S.
Acetic Acid

Approved containers to be used for storage of this material include:

<u>DOT Container Code</u>	<u>Applicable DOT Regulatory Section</u>	<u>Container Description</u>
5B	178.82	Steel barrels or drums without removable heads
5M	178.90	Monel drums
17C	178.115	Single-trip steel drums without removable heads
17E	178.116	Single-trip steel drums without removable heads
17F	178.117; 178.118	Single-trip steel drums with removable heads
6D	178.102	Cylindrical steel overpack, straight sided, for inside plastic container
2S	178.35	Polyethylene containers
2SL	178.35a	Molded or thermoformed polyethylene containers
2U	178.24	Molded or thermoformed polyethylene containers having rated capacity of over 1 gallon, removable head containers, etc.

Table 8-1

Description of Containers to Be Used to Store
Hazardous Wastes at DRMO-Memphis

Hazardous Materials to Be Stored at
DRMO-Memphis Which Are Specifically
Regulated by DOT

<u>Hazardous Material</u>	<u>DOT Container Code</u>	<u>Applicable DOT Regulatory Section</u>	<u>Container Description</u>
Sulfuric Acid	15A, 15B, 15C 16A, 19A, or 19B	178.168, 178.169, 178.170, 178.185 178.190, 178.191	Wooden boxes with inside glass containers, not over 1-gallon capacity each (3-gallon capacity when only one container per box).
	33A	178.150	Polystyrene cases (non-reusable container) with inside glass bottles not over 5-pint capacity each. Not more than four 5-pint bottles in one outside packaging.
	1H, 15P, 22C	178.13, 178.182 178.198	Metal crate with an inside polyethylene carboy, or glued plywood or wooden box, or plywood drum [178.198-2(a)] with inside specification 2T or 2TL [178.21, 178.27] polyethylene container.
	6D, 37M	178.102, 178.134	Cylindrical steel overpacks with an inside specification 2S, 2SL, or 2T (178.35, 178.35a, 178.21) polyethylene container. Overpack of 30-gallon capacity must be constructed of at least 16-gauge steel throughout when used for sulfuric acid 93% or greater concentration.
	16D	178.187	Wirebound wooden overwrap, with an inside specification 2T, 2TL, 2S, or 2SL [178.21, 178.27, 178.35, 178.35a] polyethylene container.

Table 8-1 (continued)

Description of Containers to Be Used to Store
Hazardous Wastes at DRMO-Memphis

Hazardous Materials to Be Stored at
DRMO-Memphis Which Are Specifically
Regulated by DOT

<u>Hazardous Material</u>	<u>DOT Container Code</u>	<u>Applicable DOT Regulatory Section</u>	<u>Container Description</u>
Sulfuric Acid (Continued)	21P	178.225	Fiber drum overpack with an inside specification 2T or 2U [178.21, 178.24] polyethylene container not over 15-gallon capacity.
	34	178.19	Polyethylene container without overpack, not over 30-gallon capacity.
	1A, 1K	178.1, 178.14	Carboys in boxes.
	1D, 1M	178.4, 178.17	Glass carboys in boxes or expanded polystyrene packagings.
Hydrochloric Acid	12A, 12B	178.210, 178.205	Fiberboard boxes with inside containers of polyethylene, or other non-fragile plastic material resistant to the lading (bags are not authorized), not over 1-gallon capacity each, or not more than one of 3-gallon capacity, suitably cushioned to prevent movement. Gross weight must not exceed 65 pounds.
	6D, 37M	178.102, 178.134	Cylindrical steel overpacks with inside specifications 2S, 2SL, 2T, 2TL, or 2U (178.35, a, 178.21, 178.24) polyethylene container.

Table 8-1 (continued)

Description of Containers to Be Used to Store
Hazardous Wastes at DRMO-Memphis

Hazardous Materials to Be Stored at
DRMO-Memphis Which Are Specifically
Regulated by DOT

<u>Hazardous Material</u>	<u>DOT Container Code</u>	<u>Applicable DOT Regulatory Section</u>	<u>Container Description</u>
Hydrochloric Acid (continued)	37P	178.133	Steel drums constructed of at least 24-gauge metal for drums exceeding 1-gallon capacity, with polyethylene liner (non-reusable container). Not authorized for transportation by air.
	16D	178.187	Wirebound wooden overwrap, with inside specification 2T, 2TL, 2S, or 2SL (178.21, 178.27, 178.35, or 178.35a) polyethylene container.
	12C	178.206	Fiberboard boxes with inside 5-gallon nominal capacity polyethylene bottles having minimum wall thickness of 0.015 inch and constructed with screw-type closures. Gross weight not over 65 pounds.
	15A, 15B, 15C, 16A, 19A, 19B	178.168, 178.169, 178.170, 178.185, 178.190, 178.191	Wooden boxes with inside glass, earthenware, polyethylene or other non-fragile plastic containers resistant to the lading (bags are not authorized), not over 1-gallon each, except that inside containers not over 3-gallons each are authorized when only one is packed in each outside box.
	1A, 1K	178.1, 178.14	Carboys in boxes. Not authorized for transportation by aircraft.

Table 8-1 (continued)

Description of Containers to Be Used to Store
Hazardous Wastes at DRMO-Memphis

Hazardous Materials to Be Stored at
DRMO-Memphis Which Are Specifically
Regulated by DOT

<u>Hazardous Material</u>	<u>DOT Container Code</u>	<u>Applicable DOT Regulatory Section</u>	<u>Container Description</u>
Hydrochloric Acid (Continued)	21P	178.225	Fiber drum overpack with inside spec. 2T, 2S, 2SL, or 2U polyethylene container.
	22C	178.198	Plywood drum [178.198-2(b)], with inside spec. 2TL polyethylene container not over 5-gallon capacity.
Potassium Hydroxide, Sodium, Hydroxide	15A, 15B, 15C 16A, 19A, 19B	178.168, 178.169, 178.170, 178.185 178.190, 178.191	Wooden boxes with inside glass or earthenware containers not over 2 gallons each, or with metal containers, not over 5 gallon each.
	5	178.80	Metal drums. Openings must not exceed 2.3 inches in diameter.
	1H	178.13	Metal crate with inside polyethylene container spec. 2% (178.21).
	12B	178.205	Fiberboard box with inside metal containers. Not more than four 1-gallon or six 1-quart containers per box. Maximum gross weight 65 pounds. Must meet test requirements of 178.210-10.
Nitric Acid	33A	178.150	Polystyrene case (non-reusable container) with inside glass bottles not over 5-pint capacity each. Not more than four 5-pint bottles in one outside packaging.

Table 8-1 (continued)

Description of Containers to Be Used to Store
Hazardous Wastes at DRMO-Memphis

Hazardous Materials to Be Stored at
DRMO-Memphis Which Are Specifically
Regulated by DOT

<u>Hazardous Material</u>	<u>DOT Container Code</u>	<u>Applicable DOT Regulatory Section</u>	<u>Container Description</u>
Nitric Acid - 80% or greater concentration with no significant quantity of sulfuric or hydrochloric acids	42B	178.107	Aluminum drums.
Nitric Acid - 90% or greater concentration	15A, 15B, 15C, 16A, 19A, 19B	178.168, 178.169, 178.170, 178.185, 178.190, 178.191	Wooden boxes with inside glass bottles not over 5-pints capacity each, individually enclosed in tightly closed metal cans and cushioned therein with appropriate fire-resistant cushioning material.
Nitric Acid - less than 90% concentration	15A, 15B, 15C, 16A, 19A, 19B	178.168, 178.169, 178.170, 178.185, 178.190, 178.191	Wooden boxes with inside glass bottles not over 5 pints capacity each, individually enclosed in tightly closed metal cans and cushioned therein with appropriate fire-resistant cushioning material.
Nitric Acid - less than 72% concentration	1A, 1K	178.1, 178.14	Straight-sided carboys in boxes.
	1D, 1M	178.4, 178.17	Glass carboys in boxes, or expanded polystyrene packaging. Pressure in the carboy may not exceed 10 pounds per square inch gauge at 130°F (55°C). If package is vented, there may be no significant release of contents to the environment.

Table 8-1 (continued)

Description of Containers to Be Used to Store
Hazardous Wastes at DRMO-Memphis

Hazardous Materials to Be Stored at
DRMO-Memphis Which Are Specifically
Regulated by DOT

<u>Hazardous Material</u>	<u>DOT Container Code</u>	<u>Applicable DOT Regulatory Section</u>	<u>Container Description</u>
Nitric Acid	12R	178.212	Paper-faced expanded polystyrene board boxes with inside glass bottles not over 5 pints capacity each. Not more than six 5-pint bottles shall be packed in one outside shipping container.

Table 8-2

Storage and Containment Capacity Calculations

There are two size rooms:

15 large rooms, approximately 20 x 30

12 small rooms (closets), approximately 11 x 4

<u>Room</u>	<u>Spill Containment Capacity -- Gallon</u>	<u>Storage Capacity-- Gallon</u>	<u>10 Percent of Storage Capacity -- Gallon</u>
Large	1,825	9,240	924
Small	165	1,320	132

NOTE: Spill capacity is greater than 10 percent of storage capacity. Largest container envisioned is 55 gallons.

Calculation of containment supply:

Large Room: 2 depressed areas x 29.67 feet x 4 feet x .67 feet below room hall floor + 11.33 feet x 29.67 feet x .17 below hall = 212 cubic feet x 7.48 gallon/cubic foot = 1,585 gallons.

Small Room: 11 feet x 4 feet x .5 = 22 cubic foot x 7.48 gallon/cubic feet = 165 gallon.

Large rooms can store 7 pallets along a wall, each pallet can hold 4 drums attached 3 high on racks, two racks to a room. Each drum holds 55-gallons, this rooms holds 9,240 gallons.

Small rooms: 2 pallets, 4 drums per pallet, 3 high -- each drum holds 55 gallons, this room holds 1,320 gallons.

All spills on the load/unload area will be immediately cleaned up to prevent having to pond rainwater and subsequent testing the accumulation in the catch basin. If in a rare instance this does happen, the wastewater mixture will be tested to determine if it is hazardous waste based on knowledge of the split material.

How Accumulated Liquids Can be Analyzed and Removed to Prevent Overflow

The only liquids to accumulate in the building are spills of stored wastes. To prevent the build-up, the spills will be immediately cleaned up and processed as appropriate in accordance with the Contingent Plan. Because all wastes are properly identified before acceptance, the use of operation logs or container labels/markings for identification should not present a problem.

Containers Without Free Liquids

All containerized wastes, regardless of whether they contain free liquids, will be stored in the HWSF.

Test for Free Liquids

Because all storage areas are equipped with secondary containment devices, all containers will be handled as if they contain free liquids and, therefore, will not be tested for the presence of free liquids.

Requirements for Ignitable or Reactive Wastes and Incompatible Wastes

- (1) Attachment 7 demonstrates compliance with 40 CFR 264.176. Containers holding ignitable and reactive wastes will be stored in separate bays. The facility is located approximately 200 feet south of the nearest property line of Defense Depot Memphis.
- (2) Containers holding hazardous wastes that are incompatible with any waste or other materials stored nearby in other containers will be separated and protected by means of a berm [40 CFR 264.117(c)].

The identity and characteristics of all hazardous wastes are identified at the time they are received (refer to Section 2), allowing the DRMO to store the wastes compatibly. Storage according to compatibility will serve as a precaution to prevent reactions which could: (i) generate extreme heat, pressure, fire, explosions, or violent reactions; (ii) produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment; (iii) produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions; (iv) damage the structural integrity of the device or facility; or (v) threaten human health through other means [40 CFR 264.17(b) and (c)]. Appendix 8-2 presents a summary of potentially incompatible waste materials/waste components and the adverse consequences which could result from mixing one group with another.

Figure 8-1

Storage Aids

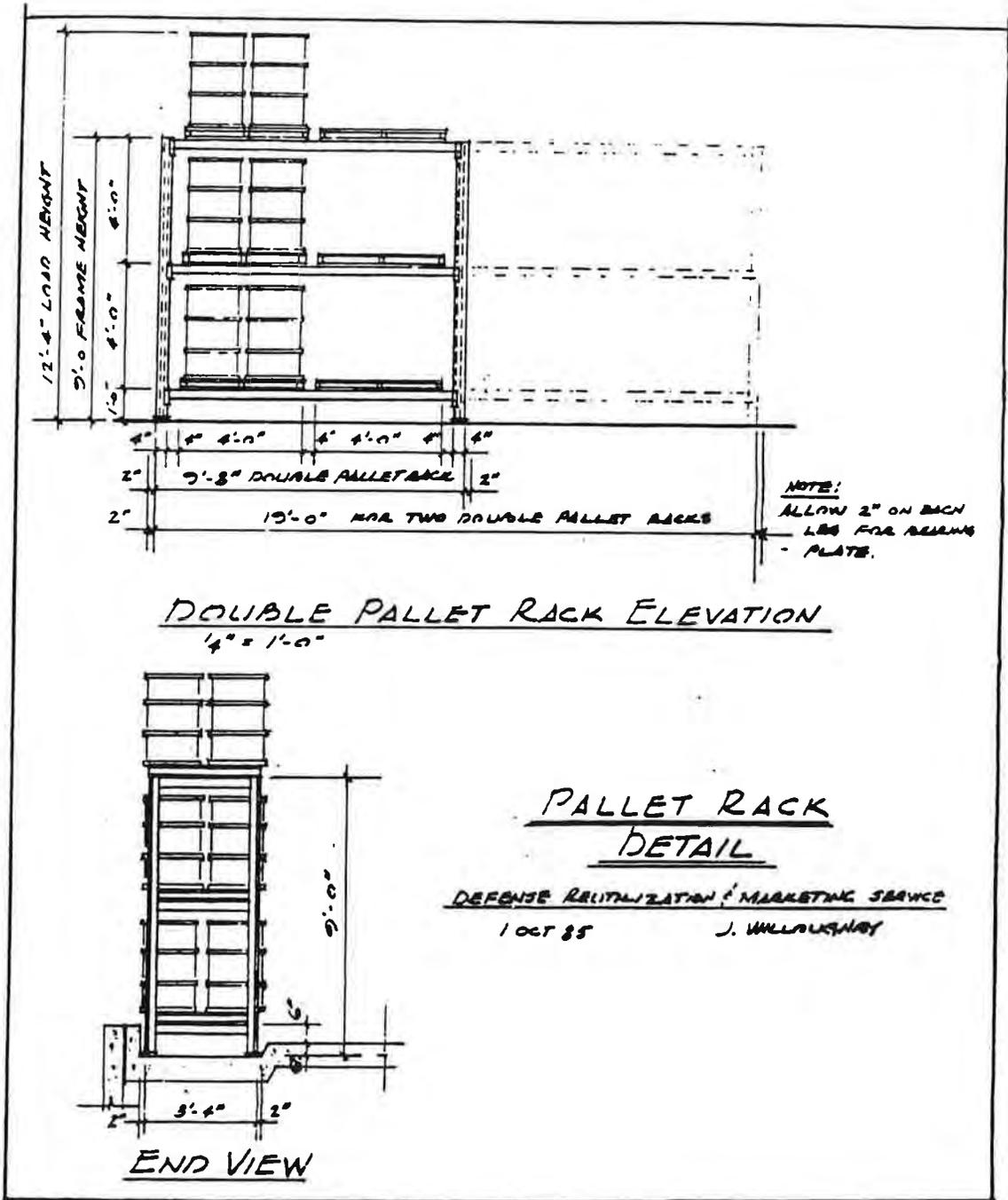


Figure 8-1 (continued)



- (3) Hazardous wastes will not be placed in unwashed containers that previously held incompatible waste or material [40 CFR 264.177(a)]. Any leaking containers will be repackaged in accordance with DOT regulations (40 CFR) using new, unused containers.

Appendix C-1 indicates the hazardous characteristics of the wastes based upon material safety data sheets and OSHA data sheets for chemicals which have been submitted to DRMO-Memphis. These lists are representative of hazardous materials and wastes which may be stored at the HWSF.

Container Management

No leaking or damaged containers will be accepted for storage at DRMO-Memphis. If a container holding hazardous wastes should begin rusting or leaking during storage at the facility, its contents will be transferred to another container which will be compatible with the requirements of Tennessee Hazardous Waste Management Rule 1200-1-11-.06(11), Use and Management of Containers. Containers holding waste will be kept closed during storage, except when sampling is being performed. A container will not be opened, handled, or stored in a manner which may cause it to be ruptured or otherwise damaged.

Drums will be stored on wooden pallets and will be placed in a bay or on the pad using a forklift. Aisle space will be provided to allow movement of a forklift or a hand truck in the event a drum must be removed from the area. Space will also be maintained in order to inspect all containers for deterioration caused by corrosion or other factors. A maximum of four drums (55-gallon size) will be stored on each wooden pallet and will be stacked not more than three containers high.

Table 8-1 lists the DOT packaging requirements for some of the chemicals listed in Appendix 1-1 which will be stored at the HWSF. DRMO-Memphis will provide packaging guidance to hazardous waste generators in accordance with 49 CFR, Subchapter C, Part 173.

APPENDIX 8-1

**Department of Transportation and
Corresponding Military Container Specifications**

CONTAINER SPECIFICATIONS

Explanation of Column Headings

- DOT Specification -** refers to the DOT specification container number contained in 49 CFR Part 178.
- DOT Section -** refers to the specific reference section in 49 CFR Part 178 where information on container construction, capacities, etc. can be found.
- Federal and Military Specifications -** refers to the Federal/Military specification container which may be used as substitute for the DOT specification container. If the word "none" appears, there is no Federal/Military specification container substitute for the DOT specification container and the DOT specification container must be used.
- DOT Title of Specification -** refers to the noun description of the DOT specification container contained in 49 CFR Part 178.

DOT Spec.	DOT Section	Federal and Military Specifications	DOT Title of Specification
1A	178.1	PPP-B-585, PPP-B-B-621	Boxed carboys.
1B	178.2	none	Boxed lead carboys.
1C	178.3	none	Carboys in kegs.
1D	178.4	PPP-B-621, PPP-B-601	Boxed glass carboys.
1E	178.7	MIL-D-112	Glass carboys in plywood drums.
1EX	178.6	MIL-D-112	Glass carboys in plywood drums.
1H	178.13	none	Polyethylene carboys in low carbon steel of equivalent metal crates.
1K	178.5	none	Glass carboys cushioned with expandable polystyrene in wooden wire bound box outside container.
IX	178.5	PPP-B-601, PPP-B-621	Boxed carboys, 5 to 6-1/2 gallons, for export only.
2A	178.20	MIL-C-38756	Inside containers; metal cans, pails and kits.
2C	178.22	PPP-B-636, Type CF-DW 275	Inside containers, corrugated fiberboard carton.
2D	178.23	UU-S-48	Inside containers, duplex paper bags.
2F	178.25	PPP-C-96	Inside metal containers and liners.
2G	178.26	MIL-C-3955, MIL-C-12804	Inside containers, fiber cans and boxes.
2J	178.28	PPP-B-1055	Inside containers, waterproof paper bags for linings.
2K	178.29	none	Inside containers, paper bags for lining.
2L	178.30	none	Lining for boxes.
2M	178.31	none	Waterproof paper lining.
2N	178.32	none	Inside containers, metal can.
2P	178.33	none	Inside nonrefillable metal containers.
2Q	178.33A	none	Inside nonrefillable metal containers.
2R	178.34	none	Inside metal containers, metal tubes.
2S	178.35	MIL-D-40030, Styles A&B	Polyethylene containers.
2SL	178.35A	PPP-C-569	Molded or thermoformed polyethylene container.

DOT Spec.	DOT Section	Federal and Military Specifications	DOT Title of Specification
2TL	178.27	none	Polyethylene container.
2T	178.21	none	Polyethylene container.
2U	178.24	none	Molded or thermoformed polyethylene containers having rated capacity of over 1 gallon, removable head containers, etc.
3A	178.36	MIL-C-7905, MIL-C-11732	Seamless steel cylinders, or 3AX; seamless steel cylinders of capacity over 1,000 pounds water volume.
3AA	178.37	RR-C-901, MIL-C-11732, MIL-C-7905	Seamless steel cylinders made of definitely prescribed steels or 3AAX; seamless steel cylinders made of definitely prescribed steels of capacity over 1,000 pounds water volume.
3B	178.38	none	Seamless steel cylinders.
3BN	178.39	none	Seamless nickel cylinders.
3C	178.40	none	Seamless steel cylinders.
3D	178.41	none	Seamless steel cylinders.
3E	178.42	none	Seamless steel cylinders.
3A 480X	178.43	none	Seamless steel cylinders.
3HT	178.44	none	Inside containers, seamless steel cylinders for aircraft use made of definitely prescribed steel.
4	178.48	none	Forge-welded steel cylinders.
4A	178.49	none	Foreg-welded steel cylinders.
4AA 480	178.56	MIL-C-11733	Welded steel cylinders made of definitely prescribed steels.
4B	178.50	RR-C-910	Welded and brazed steel cylinders.
4BA	178.51	none	Welded or brazed steel cylinders made of definitely prescribed steels.
4B-240 -ET	178.55	none	Welded and brazed cylinders made from electric resistance welded tubing.
4B-240 -FLW	178.54	none	Welded or welded and brazed cylinders with fusion-welded longitudinal seam.

DOT Spec.	DOT Section	Federal and Military Specifications	DOT Title of Specification
4BW	178.61	none	Welded steel cylinders made of definitely prescribed steels with electric arc welded longitudinal seams.
4C	178.52	none	Welded and brazed steel cylinders.
4D	178.53	none	Inside containers, welded steel for aircraft use.
4DA	178.58	none	Inside containers, welded steel for aircraft use.
4DS	178.47	none	Inside containers, welded stainless steel for aircraft use.
4E	178.68	RR-C-910	Welded aluminum cylinders.
4L	178.57	none	Welded cylinders, insulated.
5	178.80	PPP-P-704, Type I, Class 8 and 12	Steel barrels or drums.
5A	178.81	PPP-D-700, Type I	Steel barrels or drums.
5B	178.82	PPP-D-729, Type I; PPP-D-705, Type I; Class 8 & 12	Steel barrels or drums.
5C	178.83	PPP-D-700, Type II	Steel barrels or drums.
5D	178.84	PPP-D-700, Type III	Steel barrels or drums, lined.
5F	178.85	none	Steel drums.
5H	178.87	none	Steel drums or drums, lead-lined.
5K	178.88	none	Nickel barrels or drums.
5L	178.89	MIL-C-1283, 5 gal cans	Steel barrels or drums.
5M	178.90	none	Monel drums.
5P	178.92	none	Lagged steel drums.
5X	178.91	none	Steel drums, aluminum-lined.
6A	178.97	PPP-D-736	Steel barrels or drums.
6B	178.98	PPP-D-736	Steel barrels or drums.
6C	178.99	none	Steel barrels or drums.
6D	178.102	none	Cylindrical steel overpack, straight sided for inside plastic container.

DOT Spec.	DOT Section	Federal and Military Specifications	DOT Title of Specification
6J	178.100	none	Steel barrels or drums.
6K	178.101	none	Steel barrels or drums.
6L	178.103	none	Metal container for fissile radioactive material.
7A	178.350	none	General packaging, Type A.
8	178.59	MIL-C-3701	Steel cylinders with approved porous filling for acetylene.
8AL	178.60	MIL-C-3701	Steel cylinders with approved porous filling for acetylene.
9	178.63	none	Inside containers, seamless or welded or brazed steel cylinders.
10A	178.155	none	Wooden barrels and kegs (tight).
10B	178.156	none	Wooden barrels and kegs (tight).
10C	178.157	none	Wooden barrels and kegs (tight).
11A	178.160	NN-K-231	Wooden barrels and kegs (slack).
11B	178.161	NN-K-231	Wooden barrels and kegs (slack).
12A	178.210	none	Fiberboard boxes.
12B	178.205	PPP-B-636, Type CF or SF	Fiberboard boxes.
12C	178.206	PPP-B-636, Type CF or SF	Fiberboard boxes.
12D	178.207	none	Fiberboard boxes.
12E	178.208	none	Fiberboard boxes.
12H	178.209	none	Fiberboard boxes.
12P	178.211	none	Fiberboard boxes, nonreusable containers for one inside plastic container greater than 1 gallon capacity, etc.
12R	178.212	none	Paper-faced expanded polystyrene board boxes, nonreusable containers.
13	178.140	none	Metal kegs.
13A	178.141	none	Metal drums.
14	178.165	none	Wooden boxes, nailed.

DOT Spec.	DOT Section	Federal and Military Specifications	DOT Title of Specification
15A	178.168	PPP-B-621, Styles 1, 2, 2-1/2, 3, 6, and 7	Wooden boxes, nailed.
15B	178.169	PPP-B-621, Styles 1, 2, 2-1/2, 3, 6, and 7	Wooden boxes, nailed.
15C	178.170	PPP-B-621, Styles 1, 2, 2-1/2, 3, 6, and 7	Wooden boxes, nailed.
15D	178.171	PPP-B-621, Styles 1, 2, 2-1/2, 3, 6, and 7	Wooden boxes, nailed.
15E	178.172	none	Wooden boxes, fiberboard lined.
15L	178.176	none	Wooden boxes with inside containers for desensitized liquid explosives.
15M	178.177	none	Wooden boxes, metal lined, with inside containers for desensitized liquid explosives.
15P	178.182	none	Glued plywood, or wooden box for inside containers.
15X	178.181	None	Wooden boxes for two 5 gallon cans.
16A	178.185	PPP-B-585	Plywood or wooden boxes, wirebound.
16B	178.186	PPP-B-585	Wooden boxes, wirebound.
16D	178.187	PPP-B-585	Wooden wirebound overwrap for inside containers.
17C	178.115	PPP-D-704; Type I, Class 4 and 11	Steel drums.
17E	178.116	PPP-D-729; PPP-D-705, Type I and II; PPP-P-704, Type I, Class 3 & 9.	Steel drums.
17F	178.118	none	Steel drums
17H	178.118	PPP-D-729, Type IV; PPP-D-705, Type V; PPP-P-704, Type II, Class 8.	Steel barrels or drums.
17X	178.119	none	Steel barrels or drums.
18B	178.193	none	Wooden kits.
19A	178.190	PPP-B-601	Wooden boxes, glued plywood, cleated.

DOT Spec.	DOT Section	Federal and Military Specifications	DOT Title of Specification
19B	178.191	none	Wooden boxes, glued plywood, nailed
21P	178.225	none	Fiber drum, overpack for inside plaster container.
21C	178.224	none	Fiber drums.
22A	178.196	none	Wooden drums, glued plywood.
22B	178.197	none	Wooden drums, glued plywood.
22C	178.198	none	Plywood drum for plastic inside container.
23F	178.214	PP-B-636, Type CF & SF	Fiberboard boxes.
23G	178.218	none	Special cylindrical fiberboard box for high explosives.
23H	178.219	PPP-B-636, Type SF	Fiberboard boxes.
28	178.9	none	Metal jacketed lead carboys.
28A	178.186	none	Metal jacketed lead carboys.
29	178.126	PPP-T-495, Type I	Marking tubes.
31	178.15	none	Jugs in tubs.
32A	178.146	MIL-C-3082, Style C	Metal cans, riveted or locked seamed.
32B	178.147	none	Metal cases, welded or riveted.
32C	178.149	none	Metal trunks.
32D	178.148	none	Metal boxes for old and worn-out motion picture film no longer exhibitable.
33A	178.150	none	Polystyrene cases, nonreusable containers.
34	178.19	MIL-D-43703	Reusable molded polyethylene container for use without overpack, removable head not authorized.
34B	178.12	none	Aluminum carboys.
36A	178.230	PPP-B-35	Lined cloth bags (triplets).
36B	178.233	PPP-B-35	Burlap bags, lined.
36C	178.234	PPP-B-35	Burlap bags, paper lined.
37A	178.131	PPP-D-705; PPP-P-704, Type II, Class 1,3,&5.	Steel drums.

DOT Spec.	DOT Section	Federal and Military Specifications	DOT Title of Specification
37B	178.132	none	Steel drums.
37C	178.135	none	Steel drums.
37K	178.130	none	Steel drums.
37M	178.134	none	Cylindrical steel overpack, straight sided for inside plastic container; nonreusable containers.
37P	178.133	PPP-C-1337	Steel drums with polyethylene liner.
40	178.66	none	Inside containers, non-refillable seamless or welded or brazed steel cylinders.
41	178.67	none	Inside containers, non-refillable seamless or welded or brazed steel cylinders.
42B	178.107	none	Aluminum drums.
42C	178.108	none	Aluminum barrels or drums**.
42D	178.109	none	Aluminum drums.
42E	178.136	none	Aluminum drums.
42F	178.110	none	Aluminum barrels or drums.
42G	178.111	none	Aluminum drums.
42H	178.112	none	Aluminum drums, removable head containers not authorized.
43A	178.18	none	Rubber drums.
44B	178.236	none	Multiwall paper bags.
44C	178.237	none	Multiwall paper bags.
44D	178.238	none	Multiwall paper bags.
44E	178.239	none	Multiwall paper bags.
44P	178.241	none	All plastic bags.
45B	178.240	none	Bags, cloth and paper, lined.

Source: DLAM 4145.3 (CH-4) Attachment 2, 6 November 1981

APPENDIX 8-2

Incompatible Wastes

APPENDIX 8-2

Incompatible Wastes

The mixing of a Group A waste with a Group B waste may have the potential consequences as noted.

Group 1-A

Acetylene sludge
Alkaline caustic liquids
Alkaline cleaner
Alkaline corrosive liquids
Alkaline corrosive battery fluids
Caustic wastewater
Lime sludge and other corrosive alkalies
Lime wastewater
Lime and water
Spent caustic

Group 1-B

Acid sludge
Acid and water
Battery acid
Chemical cleaners
Electrolyte, acid
Etching acid liquid or solvent
liquid cleaning compounds
Pickling liquor and other corrosive acids
Sludge acid
Spent acid
Spent mixed acid
Spent sulfuric acid

Potential consequences: Heat generation, violent reaction.

Group 2-A

Aluminum
Beryllium
Calcium
Lithium
Magnesium
Potassium
Sodium
Zinc powder & other reactive metals & metal hydrides

Group 2-B

Any waste in Group 1-A or 1-B

Potential consequences: Fire or explosion; generation of flammable hydrogen gas.

Group 3-A

Alcohols
Water

Group 3-B

Any concentrated waste in Groups 1-A or 1-B
Calcium
Lithium
Metal hydrides
Potassium
Sodium
SO₂Cl₂, SOCl₂, PCl₃, CH₃SiCl₃, and other water-reactive wastes

Potential consequences: Fire, explosion, or heat generation; generation of flammable or toxic gases.

APPENDIX 8-2 (Continued)

Incompatible Wastes

The mixing of a Group A waste with a Group B waste may have the potential consequences as noted.

Group 4-A

Alcohols
Aldehydes
Halogenated hydrocarbons, reactive
organic compounds & solvents
Unsaturated hydrocarbons

Group 4-B

Concentrated Group 1-A or 1-B wastes
Group 3-A Wastes

Potential consequences: Fire, explosion, or violent reaction.

Group 5-A

Spent cyanide & sulfide solutions

Group 5-B

Group 1-B Wastes

Potential consequences: Generation of toxic hydrogen cyanide or hydrogen.

Group 6-A

Chlorates & other strong oxidizers
Chlorine
Chlorites
Chromic acid
Hypochlorites
Nitrates
Nitric acid, fuming
Perchlorates
Permanganates
Peroxides

Group 6-B

Acetic acid & other organic acids
Concentrated mineral acids
Group 2-B wastes
Group 3-A wastes
Group 5-A wastes & other flammable &
combustible wastes

Potential consequences: Fire, explosion, or violent reaction.

SOURCE: "Laws, Regulations and Guidelines for Handling of Hazardous Waste," California Department of Health. February, 1975

ATTACHMENT 9
DESIGN DRAWINGS

APPENDIX 9-1

Sealant and Joint Sealer Specifications

SECTION 7CI

CAULKING AND SEALANTS

Index

- | | |
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| 1. Applicable Publications | 9. Backstop Material |
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| 8. Primer | |

1. **APPLICABLE PUBLICATIONS:** The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1.1 Federal Specifications (Fed. Spec.):

TT-C-00598C & Am-1.	Caulking Compound, Oil and Resin Base Type (for Building Construction).
TT-S-00227E & Am-3.	Sealing Compound: Elastomeric Type, Multi-Component (for Caulking, Sealing, and Glazing in Buildings and Other Structures).
TT-S-00230C & Am-2.	Sealing Compound: Elastomeric Type, Single Component (for Caulking, Sealing, and Glazing in Buildings and Other Structures).
TT-S-000154A.	Sealing Compound: Silicone Rubber Base (for Caulking, Sealing, and Glazing in Buildings and Other Structures).
TT-S-001657.	Sealing Compound-Single Component, Butyl Rubber Based, Solvent Release Type (for Buildings and Other Types of Construction).

2. **GENERAL REQUIREMENTS:** Caulking or sealant shall be provided in joints as indicated or specified. The joint design, shape, and spacing shall be as indicated. Mixing shall be in accordance with instructions provided by the manufacturer of the sealants.

3. **SUBMITTALS:**

- 3.1 Certificates of Compliance: Certificates of compliance stating that the caulking and sealants conform to the specified requirements shall be submitted in accordance with the **SPECIAL CLAUSES**. Certified laboratory test reports showing that the caulking and

sealants have been tested within the last 12 months and meet the requirements of the applicable specification shall be submitted.

- 3.2 Descriptive Data: Manufacturer's descriptive data including backstop material, primer and sealer shall be submitted. Descriptive data for elastomeric sealants shall include shelf life, curing time, and mixing instructions for two component sealants.
- 3.3 Samples: Five cartridges or 2 quarts of each caulking and sealant specified herein shall be submitted. The sample containers shall include the same information on the label as specified herein for containers delivered to the job.
4. ENVIRONMENTAL REQUIREMENTS: The ambient temperature shall be within the limits of 40 and 90 degrees F when caulking and sealants are applied.
5. DELIVERY AND STORAGE: Materials shall be delivered to the job in the manufacturer's original unopened containers. The containers shall include the following information on the label: supplier, name of material, formula or specification number, lot number, color, date of manufacture, mixing instructions, shelf life, and curing time when applicable at the standard conditions for laboratory tests. Caulking compound or components outdated as indicated by shelf life shall not be used. Materials shall be carefully handled and stored to prevent inclusion of foreign materials or exposure to temperatures exceeding 90 degrees F. Sealant tape shall be handled and stored in a manner that will not deform the tape.
6. MATERIALS: Materials shall conform to the respective specifications and other requirements specified. Each container brought to the job site with a different sealant formulation shall be marked for the intended use. For each intended use, the color shall be one of the manufacturer's standard colors as selected by the Contracting Officer.
 - 6.1 No. 1 Caulking Compound: No. 1 caulking compound shall conform to Fed. Spec. TT-C-598, Type 1.
 - 6.2 No. 2 Sealant: No. 2 sealant shall be a two-component, elastomeric type compound conforming to Fed. Spec. TT-S-227, Type II, Class [A]. The compound shall be supplied in premeasured kit form for on-the-job mixing.
 - 6.3 No. 4 Sealant: No. 4 sealant shall be a one-component, elastomeric type compound to Fed. Spec. TT-S-230, Types II, Class [A] or Fed. Spec. TT-S-1543, Class [A].
7. SEALER: Sealer for use with No. 1 caulking compound shall be aluminum paint.
8. PRIMER: Primer for Nos. 2 and 4, sealant shall be as recommended by the sealant manufacturer. primer shall have been tested for durability with the sealant to be used and on samples of the surfaces to be sealed.
9. BACKSTOP MATERIAL: Backstop material shall be resilient urethane or polyvinyl-chloride foam, closed-cell polyethylene foam, closed-cell sponge of vinyl or rubber, polychloroprene tubes or beads, polyisobutylene extrusions, oilless dry jute, or rope yarn. Backstop material shall be nonabsorbent, nonstaining, and compatible with the sealant used. Tube or rod stock shall be rolled into the joint cavity.

10. **BOND-PREVENTIVE MATERIALS:** Bond-preventive material shall be pressure-sensitive adhesive polyethylene tape, aluminum foil or wax paper. At the option of the contractor, backstop material with bond breaking characteristics may be installed in lieu of bond-preventive materials specified.

11. **SURFACE PREPARATION:**

11.1 General: The surfaces of joints to be sealed shall be dry. Oil, grease, dirt, chalk, particles or mortar, dust, loose rust, loose mill scale, and other foreign substances shall be removed from all joint surfaces to be sealed. Oil and grease shall be removed with solvent and surfaces shall be wiped with clean cloths.

11.2 Concrete and Masonry Surfaces: Where surfaces have been treated with curing compounds, oil, or other such materials, the materials shall be removed by sandblasting or wire brushing. Laitance, efflorescence and loose mortar shall be removed from the joint cavity.

11.3 Steel Surfaces: Steel surfaces to all in contact with sealant shall be sandblasted or, if sandblasting would not be practical or would damage adjacent finish work, the metal shall be scraped and wire brushed to remove loose mill scale. Protective coatings on steel surfaces shall be removed by sandblasting or by a solvent that leaves no residue.

12. **JOINT SYMBOL:** The joint symbol indicating the type of joint on the drawings and the sealant to be used are tabulated below. Where joints are indicated on the drawings to be caulked and joint type and sealant is not listed, sealant type shall be Nos. 2 or 4 and sealant form shall be either bulk or cartridge.

12.1 Bulk Sealants:

<u>Joint Shape Symbol</u>	<u>Sealant</u>	<u>Sealant Form</u>	<u>Figure</u>
MJA	2 or 4	Bulk or cartridge	57
TJD	2 or 4	Bulk or cartridge	62
MJG	2 or 4	Bulk or cartridge	67
MJL	1	1 or cartridge	81
MJN	2	Bulk or cartridge Strips	83
MJO	2 or 4	Bulk or cartridge	84
FRW	2	Bulk or cartridge	87

13. APPLICATION:

- 13.1 Paper Masking Tape: Paper masking tape shall be placed on the finish surface on one or both sides of a joint cavity to protect adjacent finish surfaces from primer or compound smears. Masking tape shall be removed within 10 minutes after joint has been filled and tooled.
- 13.2 Bond-Preventive Materials: Bond-preventive materials for Nos. 2 and 4 sealant shall be installed on the bottom of the joint cavity and other surfaces indicated to prevent the sealant from adhering to the surfaces covered by the bond-preventive materials. The materials shall be carefully applied to avoid contamination of adjoining surfaces or breaking bond with surfaces other than those covered by the bond-preventive materials.
- 13.3 Backstops: The back or bottom of joints constructed deeper than indicated shall be packed tightly with backstop material to provide a joint of the depth indicated. Where necessary to provide a backstop for caulking compound, the joint shall be packed tightly with rope yarn.
- 13.4 Primer: Primer shall be used on concrete masonry units, wood, or other porous surfaces in accordance with instructions furnished with the sealant. Primer shall be applied to the joint surfaces to be sealed. Surfaces adjacent to joints shall not receive primer.
- 13.5 No. 1 Caulking Compound: Compound shall be gun-applied with a nozzle of proper size to fit the width of joint indicated and shall be forced into grooves with sufficient pressure to expel air and fill the groove solidly. Caulking shall be uniformly smooth and free of wrinkles and shall be left sufficiently convex to result in a flush joint when dry. One coat of sealer shall applied over joint after compound has dried sufficiently to develop a surface skin so as not to deform the surface of the joint.
- 13.6 Nos. 2 or 4 Sealant: Compound shall be gun-applied with a nozzle of proper size to fit the width of joint indicated and shall be forced into grooves with sufficient pressure to expel air and fill the groove solidly. Sealant shall be uniformly smooth and free of wrinkles. Joints shall be tooled slightly concave after sealant is installed. When tooling white or light-color sealant, dry or water-wet tool shall be used.

14. CLEANING: The surfaces adjoining the caulked and sealed joints shall be cleaned of smears and other soiling resulting from the caulking and sealing application as work progresses.

15. QUALITY CONTROL: The Contractor shall establish and maintain quality control for operations under this section to assure compliance with contract requirements and maintains records of his quality control for materials, equipment, and construction operations including, but not limited to the following:

15.1 Preparatory Inspection: (To be conducted prior to commencing work.)

- (a) Check materials against samples, tests and requirements.
- (b) Assure that materials are in sealed containers with proper identification on label.

(c) Check storage facilities.

15.2 Initial Inspection: (To be conducted after a representative sample of the work is complete.)

(a) Check joint for shape, size and condition prior to application. See that proper sealer is used for joint design as indicated on drawing.

(b) Assure that the correct type of primer, backup material, sealer and compound is being used in proper areas.

(c) Check for protection of adjacent areas.

(d) Check application to assure proper size, shape, neatness, correct applicator, and proper installation of backup material.

(e) Check overall appearance of finished joint and see that adjoining surfaces are cleaned.

15.3 Follow-up Inspection: (To be conducted daily to assure compliance with results of initial inspection.)

(a) Check items mentioned in preparatory and initial inspections.

(b) Damage or defects.

ATTACHMENT 10

PREPAREDNESS AND PREVENTION REQUIREMENTS

APPENDIX 10-1

**Storage Operations (Warehousing) at the Defense Reutilization and
Marketing Offices DRMS-M 4160.5, Enclosure 12
Basic Compatibility Groups**

Equipment Requirements

Internal and external communications, emergency and fire control equipment are discussed in this attachment and in Attachment 5, the Contingency Plan.

Aisle Space Requirement

Aisle space requirements are addressed in Attachment 8 and following sections.

Prevention Procedures, Structures, and Equipment

See the Contingency Plan, Attachment 5.

Unloading Operations

Hazardous wastes are brought to the DRMO in many types of vehicles, from pick-up trucks, forklifts to semi-tractor trailers. The drivers of these vehicles turn off their engines and either wait in their vehicles or are escorted to a safe area such as the office area or another building with a designated reception area.

All containers, when loaded or unloaded will be sealed; containers will be stored on wooden pallets approximately four feet by four feet. The pallets with wastes can easily be lifted onto or off of trucks and storage racks using a forklift. The racks system will be similar to the type shown in Figure 8-1, Attachment 8. The forklifts used with the hazardous waste storage handling will be designed as 'DY', 'EE', or 'EX', per 29 CFR 1910.178, 4,000 pound capacity with extended reach. The forklifts allow personnel to stack at any height on the racks from floor level to the third tier with equal ease. See storage rack design Figure 8-1, Attachment 8.

Movement will be minimized by having the wastes taken directly to their storage location after the inspection procedures described in Attachment 1, the Waste Analysis Plan determine if the DRMO will accept the waste. These procedures involve coordinating with the turn-in activity, checking documents (defense turn-in document), and labelling/marketing of the containers. Through these methods, DRMO personnel determine if the item is a Group I or Group II item and assign a storage location. Turn-ins of Group II items originating from off the installation are subjected to the waste verification testing program in the Waste Analysis Plan, Attachment 1. No person works alone unless he has a two-way radio for emergency communication. In the event of a spill, spill response materials and equipment are available as discussed in Attachment 5.

Runoff

The HWSF and load/unload slab are sealed against runoff in several ways. The concrete will have a two component chemical resistant epoxy sealer and each storage area has a curb around it for spill containment. All concrete joints have an internal chemical resistant water stop and joint sealer. The building will collect a spill within itself; the load/unload area will collect a spill in the adjoining catch basin.

All rainwater runoff from the load/unload area will flow through a catch basin to a storm drainage system. The outlet has a valve which is closed when hazardous property is handled outside. The valve remains closed until the hazardous waste is removed from the load/unload area and an inspection for leaked or spilled hazardous property is completed and confirmed that no spill residue is visible. If there was a spill, the contingency plan would be activated and the valve would remain closed until completion of the spill clean-up. The valve remains open at all other times to prevent accumulation of precipitation. The valve is interconnected to the entry cargo door with an electric relay so that it will sound an alarm horn if the valve is not closed when the door is opened.

The daily inspection of the load/unload area when in use and the immediate spill clean-up will prevent the mixing of rainwater and hazardous waste which might lead to the runoff of HW.

Water Supplies

The water supply for the HWSF is from the City of Memphis. No wells are in the area. The design of the storage facility eliminates the likelihood of surface water or ground water contamination.

Equipment and Power Failure

This facility will only store containerized waste; no automatic waste feed systems will exist. In the event of a brief power interruption, all storage activities will cease until power can be restored.

Personnel Protection Equipment

A description of available protective equipment at the DRMO is presented in Attachment 5. The use of protective equipment is covered in the Personnel Training Program (Attachment 4). The information in these two sections indicates that any operations, such as bulking and consolidation of hazardous wastes, will only be accomplished by personnel wearing the appropriate protective equipment. Equipment will include, but not be limited to: protective gloves, eye and face guards, overalls, and boots. Depending on the hazard associated with the particular material being handled and its volatility, self-contained breathing apparatus or masks equipped with chemical filtration cartridges will be required.

Prior to handling any hazardous wastes, the Disposal Turn-in Document (Figure 1, Attachment 1), HMIS data, chemical analysis, MSDS and/or other reference will be reviewed for the particular waste stream in question to determine which safety equipment will be utilized. Coordination will also be accomplished with the DRMR/Depot Safety and Health Offices.

Prevention of Reaction of Ignitable, Reactive, and Incompatible Wastes

Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Wastes

Containers, as discussed in Attachment 8, will be compatible with the contained wastes; therefore, the only source of ignition will be external to the containers.

Hazardous wastes received at the DRMO will be in non-leaking containers, safe to handle, and will comply with DOT container regulations (49 CFR Parts 173, 178 and 179). This will further minimize the potential for ignition and reaction of hazardous wastes.

Wastes will be separated at the storage facility and protected from sources of ignition or reaction, such as open flames, smoking, cutting and welding, hot surfaces, frictional heat, and sparks (static, electrical, or mechanical). Wastes will be classified as ignitables, reactives, corrosives, toxics, acids and bases. These determinations will be based upon HMIS information, other standard hazardous materials reference data, and/or lab analyses (refer to Waste Analysis Plan, Attachment 1). In order to prevent a possible source of external ignition, areas with drums containing ignitable and reactive wastes will prominently display a sign clearly marked with the legend "No Smoking." Spark-proof tools (brass hammers, wrenches, etc.) will be used on all containers storing ignitable materials.

Spark-arresting or nonsparking type forklifts will be used. Transport vehicles will have their engines turned off during loading and unloading. The only smoking area will be the office area of the hazardous waste storage building. No smoking signs will be placed as appropriate at direction of the DRMR-Memphis safety office.

General Precautions for Handling Ignitable or Reactive Wastes and Mixing of Incompatible Waste

General precautions for handling ignitable or reactive wastes were discussed previously in the previous section. Wastes are not mixed at this facility. Furthermore, incompatible wastes with the same hazardous waste characteristic will not be stored in the same bay.

The publication DRMS-M 4160.5, Storage Operations (Warehousing) at the Defense Reutilization and Marketing Offices is available at the DRMO. This publication is to assist personnel in determining the compatibility of wastes. Appendix 10-1, which is from this publication, presents storage compatibility procedures and a list of chemical substances and their hazardous characteristics.

Management of Ignitable or Reactive Wastes in Containers

The storage facilities at the DRMO will be located approximately 200 feet south of the nearest property line of Defense Depot Memphis and, therefore, will be in compliance with the National Fire Code Standards for container storage holding ignitable or reactive wastes.

Management of Incompatible Wastes in Containers

Incompatible wastes or materials will not be mixed at the DRMO. Containers will be segregated by waste type (Attachment 1 and previous sections) and stored in the appropriate storage bays containing similar waste types. The storage facility will have a bermed containment system to prevent mixing of spilled or leaked material or runoff containing waste residues from storage bays. Containers on pallets will be stacked on specified pallet racks. Typical storage acids to be used at the DRMO facility such as pallet racks and shelving units are shown in Figure 8-1, Attachment 8. Aisle space will be maintained to allow access for a forklift or a hand truck in the event removal is required at any time due to corrosion, leakage, etc.

BASIC STORAGE COMPATIBILITY GROUPS

- A. The storage guidance list being provided in the attachment consists of three columns. The first column provides an alphabetized list of hazardous materials/hazardous wastes (HM/HW) which may be received by the DRMO.
- B. The second column provides a partial listing of synonyms of the item appearing in the first column.
- C. The third column provides the basic storage groups (BG) into which the individual HM/HW may be segregated for storage. These BGs include:
1. Flammables and Combustibles (F). Where possible (room permitting) all flammables and combustibles will be stored in the flammable storage area. If indoor flammable storage space is inadequate to store all of the flammables and combustibles, priority for storage will be given to the flammables listed in the following HMIS storage code sequence: F1; F2; F3; F5; and F6.
 2. Bases (B), including all organic and inorganic base substances.
 3. Acids (A), organic and inorganic acids should be kept separated in storage. If the acid being turned in is not known as far as being organic or inorganic, look it up in your chemical dictionary or call your regional environmentalists.
 4. Oxidizers (O), this includes the oxidizing acids as well as any other oxidizers.
 5. Reactives (R), includes all of the water reactive substances.
 6. Toxics (T), includes all toxic substances which cannot be stored in general warehousing; and
 7. General Warehousing (G), those HM/HW items which can, with proper packaging, be placed in general warehousing (example - friable asbestos).
- D. There are also HM/HW items that are listed as explosives (E), but these are not to be accepted by the DRMO.
- E. If the hazardous property (HP) being turned in cannot be found herein, but can be found in the HMIS under a different storage coding system, the following system will be used to determine into which BG it will be placed. If questions exist for those groups which are followed by an asterisk, call your Regional Environmental Specialist.

BASIC CODE	COMPARABLE HMIS CODE
F	F1, F2, F3, F4, F5, F6
B	B1, B2
T	P1, P2, T3, T4

A	C1, C2*
O	R1
R	R3
PCB	T2**
G	L1, M1, J1***

F. There are items in some HMIS categories which the DRMO does not normally accept (see DOD 4160.21-M, Chapter VI, and DRMS-H 4160.3, Volume I, Chapter XVII).

A	Radioactives
E1, E2, E3	Explosives Classes A, B, & C
T5	Etiological Agents
R4	Pyrophorics

* When storing acids (C1 & C2) make sure that they are kept separated when placing them in the same storage area.

** The PCBs are listed in HMIS as having storage code T2 and must be stored in a manner which is in compliance with the Toxics Substance Control Act (TSCA). Other bioaccumulatives (such as lead and other heavy metals) may be stored in the most appropriate way.

*** Those items which are in HMIS storage codes L1, N1, and J1 can normally be stored in general warehousing.

HMIS storage codes for gases are G1, G2, G3, G4, G5, G6, and G7. These gases will be stored in accordance to the guidance in DOD 4145.19-R-1.

The HMIS storage for carcinogens is T1. These will be stored in accordance with DLAM 1000.1.

On all items which carry an HMIS storage code of S1 (Special hazard/multiple hazard) call your regional environmentalist for storage guidance.

G. Storage of the Hazardous Property (HP) received will be determined by the major hazardous ingredient (by volume of the substance). This should provide sufficient information for classification of the HM/HW into one or more of the basic groups. These basic groups include: Toxics; Flammables and combustibles; Acids; Bases; Oxidizers; Water Reactives; PCBs; and General Hazardous Warehousing. If a HM/HW item being turned in possess two or more hazards, the DOT hierarchy, as set forth in 49 CFR 173.2, will be used to determine where it is to be stored. This hierarchy is as follows:

1. Radioactives

2. Poison A
3. Flammable Gas
4. Non-Flammable Gas
5. Flammable Liquids
6. Oxidizer
7. Flammable Solids
8. Corrosive Liquids
9. Poison B
10. Corrosive Solids
11. Irritating Materials
12. Combustible Liquids (110 gallons or more)
13. ORM-B
14. ORM-A
15. Combustible Liquids (110 gallons or less)
16. ORM-E

H. Each DRMO will maintain a current inventory list in its receiving area or at the receiving area and each basic storage area.

LIST OF CHEMICAL SUBSTANCES

1. This lists the chemical substances that may be found in hazardous waste streams.
2. The list consists of three (3) columns. The first column lists the chemical or trade names of the materials in alphabetical order. The trade names are denoted by asterisks (*). The second column lists the synonyms or common names of the chemical substances when available. The third column lists the basic group to which the material is assigned. These include flammable (F), toxic (T), base (B), acid (A), oxidizer (O), reactive (R), and general warehousing (G). There are some chemicals which are listed as explosive (E) which the DRMO will normally not accept (see DOD 4160.21-M and DRMS-H 4160.3 Volume I). The double asterisk (**) after the BG denotes a strong reducing agent while a triple asterisk (***) behind the BG denotes a substance which will polymerize vigorously under certain conditions. When either (**) or (***) is encountered, special storage conditions may be necessary. Call your Regional Environmental Specialist for guidance on categories not identified.

<u>NAME</u>	<u>SYNONYMS</u>	<u>BG</u>
Abate*		G
Acenaphthene		G
Acetamide		G
Acetaldehyde		F
Acetic Acid		A
Acetic anhydride		R
Acetone	Dimethyl Ketone	F
Acetone cyanohydrin	Hydroxyisobutyronitrile	T
Acetonitrile	Methyl Cyanide	F
Acetophenone		G
Acetoxybutane	Butyl acetate	F
Acetoxypentane	Amyl acetate	F
Acetyl acetone	2,4-Pentanedione	G
Acetyl azide		E
Acetyl benzoyl peroxide		O
Acetyl bromide		R
Acetyl Chloride		R
Acetylene		F
Acetyl nitrate		E
Acetyl peroxide		O
Acrolein	Aqualin	F***
Acrylic acid		A***
Acrylonitrile		F***
Adhesive		F
Adhesive, liquid cement		F
Adhesive, plastic		G
Adhesive, rubber cement		F
Adhesive, resin epoxy		G
Adhesive, silicone		G
Adhesive, synthetic resin		F
Adipic acid		A
Adiponitrile		F

Agallel	Methoxyethylmercuric chloride	T
Agoloaretan	Methoxyethylmercuric chloride	T
Alcohol, denatured		F
Aldicarb	Temik*	T
Aldrin		T
Alkyl aluminum chloride		R
Alkyl resins		G
Allene		F
Allyl alcohol	2-Propan-1-01	F
Allyl bromide	Bromopropane	F
Allyl chloride	Chloropropane	F
Allyl chlorocarbonate	Allyl chloroformate	F
Allyl chloroformate	Allyl chlorocarbonate	F
Allyl trichlorosilane		F
Aluminum		G
Aluminum aminoborhydride		E
Aluminum borohydride		R
Aluminum bromide		R
Aluminum carbide		F
Aluminum chloride		O
Aluminum diethyl monchloride	Diethylaluminum chloride	E
Aluminum fluoride		G
Aluminum hydride		R
Aluminum hypophosphide		R
Aluminum phosphide		R
Aluminum tetraazidoborate		R
Aminobenzene	Aniline	T
Aminobutane	Butylamine	F
Aminochlorotoluene	Chlorotoluidine	G
Aminodiphenyl		T
Aminoethane	Ethylamine	F
Aminoethanol		F
Aminoethanolamine		G
Aminohexane	Hexylamine	F
Aminomethane	Methylamine	F
Aminopentane	Amylamine	F
Aminophenol		G
Aminopropane	Isopropyl amine	F
Amino propionitrile		G
Aminothiazole		G
Aminotoluene	Toluidine	T
Ammonia		B
Ammonium arsenate		T
Ammonium azide		E
Aminothiazole		G
Aminotoluene	Toluidine	T
Ammonia		B
Ammonium arsenate		T

Ammonium azide
 Ammonium bifluoride
 Ammonium chlorate
 Ammonium dichromate
 Ammonium fluoride
 Ammonium hexanitrocobaltate
 Ammonium hydroxide
 Ammonium hypophosphide
 Ammonium molybdate
 Ammonium nitrate
 Ammonium nitrodoosmate
 Ammonium nitrite
 Ammonium perchlorate
 Ammonium periodate
 Ammonium permanganate
 Ammonium persulfate
 Ammonium picrate
 Ammonium sulfide
 Ammonium tetrachromate
 Ammonium tetraperoxychromate
 Ammonium trichromate
 Amyl acetate
 Amyl alcohol
 Amyl chloride
 Amyl cyanide
 Amylamide
 Amylene
 Amyl mercaptan
 Aniline
 Anisole
 Anisole chloride
 Anthracene
 Antimony
 Antimony chloride
 Antimony fluoride
 Antimony nitride
 Antimony oxychloride
 Antimony oxide
 Antimony pentachloride
 Antimony pentafluoride
 Antimony pentasulfide
 Antimony perchlorate
 Antimony potassium tartrate
 Antimony sulfate
 Antimony sulfide
 Antimony tribromide
 Antimony trichloride
 Antimony trifluoride
 Antimony triiodide
 Antimony trioxide

Acetoxy pentane
 Chloropentane
 Aminopentane
 Pentene
 Pentanethiol
 Antimony trichloride
 Antimony trifluoride
 Antimony trioxide
 Antimony trisulfate
 Antimony trisulfide
 Antimony chloride
 Antimony fluoride
 Antimony oxide-

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Antimony trisulfate	Antimony sulfate	T
Antimony trisulfide	Antimony sulfate	T
Antimony trivinyl		R
Aqualin	Acrolein	F
Aqueous solutions & mixtures		G
Aretan*	Methoryethylec mercuric chloride	T
Aroclor*	Polychlorinated biphenyl	PCB
Arsenic		T
Arsenic bromide	Arsenic tribromide	R
Arsenic chloride	Arsenic trichloride	R
Arsenic disulfide	Arsenic sulfide	T
Arsenic iodide	Arsenic triiodide	R
Arsenic oxide	Arsenic pentoxide	T
Arsenic pentaselenide		T
Arsenic pentasulfide		T
Arsenic pentoxide	Arsenic oxide	T
Arsenic sulfide	Arsenic disulfide	T**
Arsenic tribromide	Arsenic bromide	R
Arsenic trichloride	Arsenic chloride	R
Arsenic trifluoride		T
Arsenic triiodide	Arsenic iodide	R
Arsenic trisulfide		T**
Arsine		T**
Askarel	Polychlorinated biphenyl	PCB
Asphalt		G
Azidocarbonyl guanidine		E
Azido-s-trizaole		T
Azinphos ethyl		T
Aziridine	Ethyleneimine	T
a,a'-Azidiisobutyronitrile		T
Azodrin*	Monocrotophos	T
Bakelite*		G
Banol	Carbonolate	T
Barium		F
Barium azide		E
Barium bromate		O
Barium carbide		T
Barium chlorate		O
Barium chloride		T
Barium chromate		T
Barium fluoride		T
Barium fluosilicate		T
Barium hydride		R**
Barium hydroxide		T
Barium hypophosphide		T**
Barium iodate		T
Barium iodide		T
Barium monoxide	Barium oxide	D
Barium nitrate		O

Barium oxide		B
Barium perchlorate		O
Barium permanganate		O
Barium peroxide		O
Barium phosphate		O
Barium stearate		T
Barium sulfide		T
Barium sulfite		T
Bassa*	BPMC	T
Bayer 25141	Fensulfothion	T
Baygon*	Isopropoxyphenal methylcarbama	T
	Topoide*	T
Benzadox		R
Benzal bromide		R
Benzal chloride		R
Benaldehyde		R
Benz-a-pyrane		G
Benzene		
Benzene diazonium chloride		F
Benzene phosphorus dichloride		E
Benzidine		R
Benzoic acid		A
Benzonitrile		T
Benzophenone		T
Benzoquinone	Quinone	T
Benzotriazole		T
Benzotribromide		T
Benzotrifluoride		T
Benzoyl chloride	Trifluoromethylbenzene	F
Benzoyl peroxide	Dibenzoyl chloride	A
Benzyl alcohol	Dibenzoyl peroxide	E
Benzylamine		G
Benzyl benzene	Diphenylmethane	G
Benzyl bromide	Bromotoluene	A
Benzyl chloride	Chlorotoluene	A
Benzyl chlorocarbonate	Benzyl chloroformate	A
Benzyl chloroformate	Benzyl chlorocarbonate	A
Benzyl silane		R**
Benzyl sodium		F**
Beryllium		T
Beryllium copper alloy		T
Beryllium fluoride		T
Beryllium hydride		R**
Beryllium hydroxide		B
Beryllium oxide		T
Beryllium sulfide		T**
Beryllium tetrahydroborate		R
Bidrin*		T
Bismuth		F

Bismuth chromate		G
Bismuthic acid		A
Bismuth nitride		G
Bismuth pentafluoride		R
Bismuth pentaoxide		G
Bismuth sulfide		G
Bismuth tribromide		T**
Bismuth trichloride		G
Bismuth triiodide		G
Bismuth trioxide		G
Bismuth trisulfide		T
Blada-fum*	Sulfotepp	T
Blue vitriol	Copper sulfate	T
Bomyl		T
Borane		T
Bordeaux arsenites		T
Boric acid		A
Boron arsenotribromide		T**
Boron bromodiiodide		G
Boron dibromiodide		G
Boron nitride		G
Boron phosphide		G
Boron triazole		E
Boron tribromide		E
Boron trichloride		R
Boron trifluoride		R
Boron triiodide		R
Boron trisulfide		T**
BPMC	Bassa*	T
Brass		G
Bromic acid		A
Bromine		O
Bromine azide		E
Bromine cyanide		T
Bromine monofluoride		O
Bromine pentafluoride		O
Bromine trifluoride		O
Bromoacetylene		T
Bromobenzoyl acetanilide		T
Bromobenzyl trifluoride		T**
Bromodiborane		T
Bromodiethylaluminum		T
Bromodimethoxyaniline		F
Bromoform	Tribromomethane	T
Bromomethane	Methyl bromide	T
Bromophenol		T
Bromopropene	Allyl bromide	O
Bromopropyne		F
Bromosilane		F**
Bromotoluene	Benzyl bromide	U
		G

Bromotrichloromethane		T
Bromotrifluoromethane		T
Bromozylnil	3.5 Dibromo-4hydroxy benzonitrile	T
Bronze		F
Bunker fuel oil		F
Butacarb		T
Butadiene		F***
Butadiyne	Diacetylene	G
Butanal	Butyraldehyde	F
Butane		F
Butanediol		F
Butanethiol	Butyl mercaptan	F
Butanetriol trinitrate		F
Butanol	Butyl alcohol	T
Butanone	Methyl ethyl ketone	F
Butenal	Crotonaldehyde	F
Butene		F
Butene-2-one	Methyl vinyl ketone	F
Butyl acetate	Acetoxybutane	F
n-Butyl acrylate		F**
Butylamine	Aminobutane	F
Butyl alcohol	Butanol	F
t-Butyl azidoformate		F
Butyl benzene	Phenylbutane	T
Butyl benzyl phthalate		G
Butyl cellusolve*	Ethylene glycol monobutyl ether	F**
Butyl dichloroborane		F
Butyl ether	Dibutyl ether	F
Butyl formate		F
Butyl fluoride		T
Butyl glycidyl ether		F
Butyl hydroperoxide		O
t-Butyl hypochlorite		E
n-Butyl lithium		R**
Butyl mercaptan	Butanethiol	F
Butyl peroxide		O
Butyl peroxyacetate	t-Butyl perbenzoate	O
Butyl peroxbenzoate		O
Butyl perozyvalate		O
t-Butyl perbenzoate	Butyl peroxyacetate	O
t-Butyl-3-Phenyl oxazirane		R
Butyl trichlorosilane		R
Butyramide		F
Butyraldehyde	Butanol	F
Butyric acid		F
Butyronitrile		F
Bux*	Bufenarb	T
Cacodylic acid	Dimethylarsenic acid	T
Cadmium		T

Cadmium Acetylde		R**
Cadmium amide		R
Cadmium azide		E
Cadmium bromide		T
Cadmium chlorate		O
Cadmium chloride		T
Cadmium cyanide		T
Cadmium fluoride		T
Cadmium hexamine chlorate		E
Cadmium hexamine perchlorate		E
Cadmium iodide		T
Cadmium nitrate		O
Cadmium nitride		E
Cadmium oxide		T
Cadmium phosphate		T
Cadmium sulfide		T**
Cadmium trihydrazine chlorate		E
Cadmium trihydrazine perchlorate		E
Calcium		R
Calcium arsenate		T
Calcium arsenite		T
Calcium bromate		O
Calcium carbide		R**
Calcium chlorate		O
Calcium chlorite		O
Calcium fluoride		T
Calcium hexammonite		F**
Calcium hydride		R**
Calcium hydroxide	Hydrated lime	B
Calcium hypochlorite	Calcium oxychloride (chlorinated lime)	O
Calcium hypophosphide		F**
Calcium iodate		O
Calcium-manganese-silicon alloy		T
Calcium nitrate	Lime nitrate, nitrocalcite	O
Calcium oxide	Slaked lime	R
Calcium oxychloride	Calcium hypochlorite	O
Calcium perchromate		O
Calcium permanganate		O
Calcium peroxide		O
Calcium phosphide		R
Calcium sulfide		F**
Calibrating fluid		G
Camphor oil		T
Capric acid		G
Caproic acid	Hexanoic acid	A
Caprylyl peroxide	Octyl peroxide	O
Carbacrol		T
Carbaryl	Sevin*	T
Carbetamide		T

Carbonolate		T
Carbofuran		T
Carbolic acid		T
Carbolic oil		T
Carbon, activated, spent		T
Carbon bisulfide	Carbon disulfide	F
Carbon dioxide, tech		G
Carbon disulfide	Carbon disulfide	F
Carbon tetrachloride	Tetrachloromethane	T
Carbon tetrafluoride		T
Carbon tetraiodide		T
Castrix	Crimidine	F
Catechol	Pyrocatechol	T
Caustic potash	Potassium hydroxide	B
Caustic soda	Sodium hydroxide	B
CDEC		T
Cellulose		F
Cellulose nitrate	Nitro cellulose	E
Cerium		G
Cerium hydride		R**
Cerium trisulfide		F**
Cerium phosphide		F**
Cesium		T
Cesium amide		F
Cesium azide		R
Cesium carbide		E
Cesium fluoride		T
Cesium hexahydroaluminate		T**
Cesium hydride		R**
Cesium phosphide		R
Cesium sulfide	Trichloroacetaldehyde	F
Cesium hydrate		T
Chlordane		T
Chlorestol	Polychlorinated biphenyl	T
Chlorfenvinphos		T
Chloric acid		O
Chlorine		O
Chlorine azide		O
Chlorine dioxide		E
Chlorine fluoroxide		E
Chlorine monofluoride		E
Chlorine monoxide		R
Chlorine pentafluoride		O
Chlorine trifluoride		R
Chlorine trioxide		R
Chloroacetaldehyde		E
Chloroacetic acid	Monochloroacetic acid	T
Chloroacetone	Monochloroacetone	A
Chloroacetophenone	Phenyl chloromethyl ketone	T
Chloroacetyl chloride		T

Chloroacetylene		R
Chloroacrylonitrile		E
Chloroazodin		G
Chlorobenzene		F
Chlorobenzotriazole		G
Chlorobenzoyl peroxide		E
Chlorbenzylidene malononitrile		G
Chlorobutyronitrile		G
Chloro chromic anhydride	Chromyl chloride	R
Chlorocresol	4 Chloro 3-methylphenol	T
Chlorodiborane		F**
Chlorodiisobutyl aluminum		R**
Chlorodimethylamine diborane		F**
Chlorodinitrobenzene	Dinitrochlorobenzene	T
Chlorodinitrotoluene		T
Chlorodipropyl borane		F**
Chlorethene	Ethyl chloride	F
Chloroethanol		T
Chloroethylenimine		F
Chloroform	Trichloromethane	T
Chlorohydrin		T
Chlormethane	Methyl chloride	F
Chloromethyl methyl ether		F
Chloromethyl phenoxyacetic acid		G
Chloronitroaniline		T
Chloronitrobenzene	Nitrochlorobenzane	T
Chloropentane	Amyl chloride	F
Chlorophenol		T
Chlorophenyl isocyanate		G
Chloropicrin	Chloropicrin, Trichloronitromethane	T
Chloropropane	Isopropyl chloride	F
Chloropropene	Allyl chloride	F
Chloropropylene oxide	Epichlorohydrin	F
Chlorosilane		F**
Chlorosulfonic acid		A
Chlorothion*		T
Chlorotoluene	Benzyl chloride	F
Chlorotoluidine		T
Chlorotrinitrobenzene	Picryl chloride	E
B-Chlorovinylidichloroarsine	Lewisite	T
Chlorpicrin	Trichloronitromethane	E
Chromic acid	Chromic anhydride, Chromium trioxide	O
Chromic anhydride	Chromium trioxide, Chromic acid	O
Chromic chloride	Chromium trichloride	T
Chromic fluoride	Chromium trifluoride	C

Chromic oxide		T
Chromic sulfate	Chromium sulfate	G
Chromic sulfide		T**
Chromium sulfate	Chromic sulfate	A
Chromium trichloride	Chromic chloride	T
Chromium trifluoride	Chromic fluoride	A
Chromium trioxide	Chromic acid,	O
	Chromic anhydride	
Chromyl chloride	Chloro chromic anhydride	R
Chrysene		T
CMME	methyl chloromethyl ether	F
Coal oil		F
Coal tar		F
Cobalt		G
Cobalt bromide	Cobaltous bromide	G
Cobalt chloride	Cobaltous chloride	G
Cobalt nitrate	Cobaltous nitrate	O
Cobaltous bromide	Cobalt bromide	G
Cobaltous chloride	Cobalt chloride	G
Cobaltous nitrate	Cobalt nitrate	O
Cobaltous resinate	Cobalt resinate	
Cobalt sulfate	Cobalt sulfate	G
Cobalt resinate	Cobaltous resinate	F
Cobalt sulfate	Cobaltous sulfate	G
Collodion	Pyroxylin cellulose nitrate	E
Copper		G
Copper acetoarsenite	Paris green	R**
Copper acetylde		E
Copper Arsenate	Cupric arsenate	T
Copper arsenite	Cupric arsenite	T
Copper chloride	Cupric chloride	G
Copper chlorotetrazole		
Copper cyanide	Cupric cyanide	T
Copper nitrate	Cupric nitrate	O
Copper nitride		O
Cooper sulfate	Cupric sulfate, Blue vitriol	T
Copper sulfide		T**
Compound 1836	Diethyl chlorvinyl phosphate	T
Coroxon*	Fungicide-insecticide	T
Coumafuryl	Fumarin	T
Coumatetralyl		T
Cresol		T
Cresol glydieyl ether		F
Cresote		F
Crimidine	Castrix	T
Crotonaldehyde	Butenal	F
Crotyl alcohol		F
Crotyl bromide		F
Crotyl chloride		F
Cumene	Isopropyl benzene	F

Cumene Hydroperoxide	Dimethyl hydriperoxide	O
Cupric arsenate	Copper arsenate	T
Cupric arsenite	Copper arsenite	T
Cupric chloride	Copper chloride	G
Cupric cyanide	Copper cyanide	T
Cupric nitrate	Copper nitrate	O
Cupric sulfate	Copper sulfate	T
Cupriethylenediamine		A
Cyanoacetic acid	Malonic nitrile	F
Cyanochloropentane		T
Cyanogen		F
Cyanogen bromide	Bromine cyanide	T
Cyanopenphos	Surecide*	T
Cyanuric triazide	(Explosive)	E
Cycloheptane		F
Cyclohexane		F
Cyclohexanol		F
Cyclohexanone		F
Cyclohexanone peroxide		O
Cyclohexylamine		R
Cyclohexenyl trichlorosilane		A
Cyclohexyl phenol		R
Cyclohexyl trichlorosilane		A
Cyclopentane		F
Cyclopentanol		F
Cyclopentene		F
Cyclopropane		F
Cyclotrimethylene trinitramine	RDX (Explosive)	E
Cymene		E
Cyolan*	Phospolan	T
2,4-D	Dichlorophenoyacetic acid	G
Dasanit*	Fensulfothinon	T
DBCP	Dibromochloropropane	G
DCB	Dichlorobenzene	F
DDD		T
DDMP	Diazodinitrophenol	E
DDT		T
DDVP	Dichlorovos, vapon*	T
DEAC	Diethylaluminum chloride	R**
Decaborne		R
Decahydronaphthalene	Decalin	O
Decalin	Decahydronaphthalene	F
Decane		F
Decanol		F
Decene		F
Decyl benzene		F
Delnav*	Dioxathion	T
Demeton-S-methyl sulfoxide	Metasystox R*	T
Diacetone alcohol		F
Diacetyl		F

Diacetylene	Butadiyne	F
Diamine	Hydrazine	F**
Diaminobenzene	Penylene diamine	F
Diaminonexane	Hexamethylenediamine	F
Diazioethane		E
Diazinon*		T
Diazodinitrophenol	DDNP	E
Dibenzoyl peroxide	Benzoyl peroxide	O
Diborane	Diboron hexahydride	R**
Dibutyl ether	Butyl ether	R**
Dibutyl phthalate		F
3,5-Dibromo-4-hydrobenzotrile	Bromoxynil	T
Dibromochloropropane	DBCP, funazone*, nemagon*	T
Dibromoethane	Ethylene dibromide	T
Dichloroacetone		F
Dichloroamine		O
Dichlorobenzene	DCB	T
Dichlorobenzidine		T
Dichlorodimethylsilane	Dimethyl dichlorosilane	F
Dichloroethane	Ethylene dichloride	F
Dichloroethene	Dichloroethylene	F
Dichloroether	Dichloroethyl ether	F
Dichloroethylarsine		R
Dichlorolsocyanuric acid	Dichloro-s-triazine- 2,4,5-trione	O
Dichloromethane	Methylene chloride	T
Dichlorophene		T
Dichlorophenol		T
Dichlorophenoxyacetic acid	2,4-D	T
Dichloropropane	Propylene dichloride	F
Dichloropropanol		F
Dichloropropene	Dichloropropylene	F
Dichloro-s-triazine-2,4,5-trione	Dichloroisocyanuric acid	O
Dichlorovos	DDVP	
Dicumyl peroxide		O
Dicyclopentadiene		F
Dieldrin		T
Diethanolamine		T
Diethylaluminum chloride	Aluminum diethylmonochloride	R**
Diethylamine		F
Diethyl benzene		F
Diethyl chlorovinyl phosphate	Compound 1836	T
Diethyl dichlorosilane		R
Diethylene dioxide	Dioxane	F
Diethylene glycol dinitrate		E
Diethylene glycol monobutyl		F
Diethylene triamine		T
Diethyl ether		F
Diethyl ketone		F
Diethyltoluamide		G

Diethyl zinc	Zinc ethyl	R**
Diesel Oil		F
Difluorophosphoric acid		A
Diglycidyl ether	Bis (2,3-epoxypropyl) ether	F
Dilsobutylene		F
Disobutyl ketone		F
Diisopropanolamine		B
Diisopropylbenzene hydroperoxide		F
Diisopropyl beryllium		R
Diisopropyl ether	Isopropyl ether	F
Diisopropyl peroxidicarbonate	Isopropyl percarbonate	O
Dimecon*	Phosphamidon	T
Dimefox	Hanane*	T
Dimethyl acetylene		F
Dimethyl amine		B
Dimethylamine azobenzene	Methyl yellow	F
Dimethyl arsenic acid	Cacodylic acid	A
Dimethylbenzyl hydroperoxide	Cumene hydroperoxide	O
Dimethyl butane	Neohexane	F
Dimethyl butyne		F
Dimethyl dichlorosilane	Dichlorodimethylsilane	R
Dimethyldithiophosphoric acid		T
Dimethyl ether		F
Dimethyl formal		F
Dimethyl formamide		G
Dimethylhexane dihydrperoxide		O
Dimethyl hydrazine	UDMH	F
Dimethyl ketone	Acetone	F
Dimethyl magnesium		R**
Dimethylnitrobenzene	Nitroxylen	G
Dimethylnitrosoamine	N-Nitrosodimethyl amine	T
Dimethyl sulfide	Methyl sulfide	F
Dimeton		T
Dinitrobenzene		E
Dinitrochlorobenzene	Chlorodinitrobenzene	E
2,4-Dinitro-6-sec-butyl-phenol	Dinosab	T
Dinitrocresol	DNOC, Elgetol 30	T
Dinitrophenol		T
Dinitrophenyl hydrazine		E
Dinitrotoluene		T
Dinoseb	2,4-Dinitro-6-sec-butyl-phenol	T
Dioxacarb		T
Dioxane	Diethylene dioxide	F
Dioxathion	Delnav*	T
Dipentaerythritol hexanitrate		E
Dipentene		F
Dipehnamide		G
Diphenyl	Phenylbenzene	G
Diphenyl acetylene	Tolan	G
Diphenylamine		T

Diphenylamine chloroarsine	Phenarsazine chloride	T
Diphenyl ethane		G
Diphenyl ethylene	Stilbene	G
Diphenyl methane	Benzylbenzene	R
Diphenylmethane diisocyanate		R
Diphenyl oxide		F
Diphenyl amine	Hexanitrodiphenylamine	E
Dipripyl amine		F
Disulfoton	Disyston*	T
Disulfuric acid		A
Disulfur dinitride		E
Disulfuryl chloride		R
Disyston*	Disulfoton	T
Dithane* M-45		T
Dithlone*	Sulfotepp	T
DNOC	Dinitrocresol	T
Dodecene		F
Dodecyl benzene		T
Dodecyl trichlorosilane		R
Dowco-139*	Mexacarbate	T
Dowicide I	o-Phenyl phenol	T
Dowtherm		F
Durene		F
Dyfonate*	Fonofos	T
Dynes Thinner		F
Elegtol 30	Dinitrocresol	T
Endosulfan	Thiodan*	T
Endothall		T
Endothion	Exothion	T
Endrin		T
EPN		T
Epichlorohydrin	Chloropropylene oxide	T
Epoxybutane		F
Epoxybutene		F
Epoxyethane	Ethylene oxide	F
Epoxyethylbenzene		F
Bis (2-2-Epoxypropyl) ether	Diglycidyl ether	F
Ethane		F
Ethanethiol	Ethyl mercaptan	F
Ethanol	Ethyl alcohol	F
Ethion*	Nialate	T
Ethoxyethanol		T
Ethyl acetate		F
Ethyl acetylene		F
Ethyl acrylate		F***
Ethyl alcohol	Ethanol	F
Ethylamine	Aminoethane	F
Ethyl benzene	Phenylethane	F
Ethyl butanoate	Ethyl butyrate	F
Ethyl butyrate	Ethyl butanoate	F

Ethyl chloride	Chloroethane	F
Ethyl chloroformate		F
Ethyl dichloroarsine	Dichloroethylarsine	T
Ethyl dichlorosilane		T
Ethyl ether	Diethyl ether	F
Ethylene		F
Ethylene chromic oxide		O
Ethylene chlorohydrin		T
Ethylene cyanohydrin	Hydroxypropionitrile	T
Ethylene diamine		T
Ethylene dibromide	Dibromoethane	T
Ethylene dichloride	Dichloroethane	F
Ethylene glycol		G
Ethylene glycol dinitrate	Glycol dinitrate	E
Ethylene glycol monomethyl ether		F
Ethyleneimine	Aziridine	F***
Ethylene oxide	Epoxyethane	F***
Ethyl formate		F
2-Ethylhexyl acrylate		F***
Ethyl mercaptan	Ethanethiol	F
Ethyl nitrate		E
Ethyl propionate		F
Ethyl trichlorosilane		R
Exothion	Endithion	T
Eugenol		F
Fensulfothion	Bayer 25141, Dasanit*	T
Ferbam		T
Ferric arsenate		T
Ferric sulfide		G
Ferric sulfide		F**
Ferrous sulfide		F
Fluoranthrene		F
Fluorent		F
Fluorine		R
Fluorine azide		E
Fluorine monoxide	Oxygen difluoride	R
Fluorocetanilide		T
Fluoroacetic acid		A
Fluoroboric acid		A
Fluorosulfonic acid	Fluosulfonic acid	R
Fluosulfonic acid	Fluosulfonic acid	R
Flusilicic acid		A
Fonofos	Dyfonate*	T
Formaldehyde	Methanal	F
Formamide		T
Formetanate hydrochloride		T
Formic acid	Methanoic acid	A
Fostion*	Prothoate	T
Freon*		T
Fumaric acid		A

Fumarin	Coumafuryl	T
Fumazone*	Dibromochloropropane	T
Furadan*	Carbofuran	T
Furan	Furfuran	F
Furfural		F
Furfuran		F
Gas oil, cracked		F
Gasoline		F
Germanium sulfide		T**
Glutaraldehyde		F
Glycerin		F
Glycidol		F
Glycol diacetate		F
Glycol dinitrate	Ethlene glycol dinitrate	E
Glycol ether		F
Glycolic acid		A
Glycol monolactate trinitrate		E
Glycolonitrile		T
Gold acetylde		R
Gold cyanate	Gold fulminate	E
Gold fulminate	Gold cyanate	E
Gold sulfide		F**
Grease		F
Guaiacol		T
Guanyl nitrosaminoguanylidene hydrazine		E
Guanidine nitrate		E
Gun cotton	Nitrocellulose	E
Gunthion*		T
Hafnium		E
Hanane*	Dimefox	T
Heminellitene		F
Heptachlor		T
Heptane		F
Heptanal		F
Heptanol		F
Hetanone		F
Heptene		F
Hexaborane		F**
Hexachlorobenzene		T
Hexadecyl trichlorosilane		R
Hexaethyl tetraphosphate		T
Hexafluorophosphoric acid		R**
Hexahydride diborane	Diborane	R
Hexamethyl benzene		F
Hexamethylenediamine	Diaminohexane	F
Hexamethylenetetramine		F
Hexanal		F
Hexanitrodiphenylamine	Dipicrylamine	E
Hexanol		F

Hexanoic acid	Caproic acid	A
Hexene		F
Hexylamine	Aminohexane	F
Hexyl trichlorosilane		R
Hexyne		F
HMX		E
Hopcide*		T
Hydrated lime	Calcium hydroxide	B
Hydrazine	Diamine	F**
Hydrazine axide		E
Hydrazoic acid	Hydrogen axide	E
Hydriodic acid	Hydrogen iodide	A
Hydrobromic acid	Hydrogen bromide	R
Hydrochloric acid	Muriatic acid	A
Hydrocyanic acid	Hydrogen cyanide	T
Hydrofluoric acid	Hydrogen fluoride	A
Hydrogen azide	Hydrazic acid	E
Hydrogen bromide	Hydrobromic acid	R
Hydrogen cyanide	Hydrocyanic acid	A
Hydrogen fluoride	Hydrofluoric acid	A
Hydrogen iodide	Hydroiodic acid	A
Hydrogen peroxide		O
Hydrogen phosphide	Phosphine	F
Hydrogen selenide		F
Hydrogen sulfide		F**
Hydroquinone		T**
Hydroxyacetiphenone		F
Hydroxydibromobenzoic acid		A
Hydroxydiphenol		F
Hydroxyhydroquinone	Acetone cyanobydrin	T
Hydroxyl amine		F**
Hydroxypropionitrile	Ethylene cyanohydrin	T
Hypochlorous acid		O
Indene		F
Indium		T
Interteen	Polychlorinated biphenyl	PCB
Iodine monochloride		R
Iodine pentoxide		O
Iron arsenate	Ferrous arsenate	T
Isobutane		F
Isobutanol		F
Isobutyl acetate		F
Isobutyl acrylate		F***
Isobutylene		F
Isodecyl acrylate		F
Isodurene		F
Isoeugenol		T
Isohexane		F
Isooctane	Trimethylpentane	F
Isocetene		F

Isopentane	Methylbutane	F
Isophorone		F
Isoprene	Methyl butadiene	F***
Isopropanol		F
Isopropyl acetate		F
Isopropyl acetylene		F
Isopropylamine	Aminopropane	B
Isopropyl benzene	Cumene	F
Isopropyl chloride	Chloropropane	F
Isopropyl ether	Diisopropyl ether	F
Isopropyl mercaptan		F
N-Isopropylethylcarbamate		F
a-Isopropyl methylphosphoryl fluoride		T
Isopropyl percarbonate	Diisopropyl peroxydicarbonate	O
Isotactic propylene		O
J-100		F
Jet oil		F
Kerosene		F
Lacquer thinner		F
Landrin*		T
Lannate*	Methomyl	T
Lauroyl peroxide		O
Lead		T
Lead acetate		T
Lead arsenate	Lead arsenate	T
Lead arsenite		T
Lead azide		T
Lead carbonate		T
Lead chloride		O
Lead cyanide		T
Lead dinitroresorcinate		E
Lead nitrate		O
Lead orthoarsenate	Lead orthoarsenate	T
Lead oxide		T
Lead styphnate	Lead trinitroresorcinate	E
Lead sulfide		O
Lead trinitroresorcinate		E
Lewisite	Lead styphnate	T
Lime nitrate	B-Chlorovinylchloroarsine	O
Lindane	Calcium nitrate	T
Lithium		R
Lithium aluminum hydride		R**
Lithium amide		R
Lithium ferrosilicon		R
Lithium hydride		R
Lithium hydroxide		R**
Lithium hypochlorite		B
Lithium nitride		O
		E

Lithium peroxide		R
Lithium silicon		R
Lithium sulfide		R**
London purple		T
Lye	Sodium hydroxide	B
Magnesium		F
Magnesium arsenate		T
Magnesium arsenite		T
Magnesium chlorate		T
Magnesium fluoride		O
Magnesium nitrate		T
Magnesium perchlorate		O
Magnesium peroxide		O
Magnesium sulfide		R**
Malathion		T
Maleic acid		T
Malonic nitrile	Cyanoacetic acid	T
Maneb		T
Manganese		T
Manganese acetate		G
Manganese arsenate	Manganous arsenate	T
Manganese bromide	Manganous bromide	T
Manganese chloride	Manganous chloride	G
Manganese methylcyclopentadienyl- tricarbonyl		T
Manganese nitrate	Manganous nitrate	O
Manganese sulfide		R**
Manganese arsenate	Manganese arsenate	T
Manganese bromide	Manganese bromide	T
Manganese chloride	Manganese chloride	G
Manganese nitrate	Manganese nitrate	O
Mannitol hexanitrate	Nitromannite	E
Matacil*		T
Mayer's reagent	Mercuric potassium iodide	T
Merdinoterb acetate		F
Meobal		T
Mercaptobenzothiazole		G
Mercatoethanol		F
Mercabam		T
Mercuric acetate		T
Mercuric ammonium chloride	Mercury ammonium chloride	T
Mercuric benzoate	Mercury benzoate	T
Mercuric bromide		T
Mercuric chloride	Mercury chloride	T
Mercuric cyanide	Mercury cyanide	T
Mercuric dioxysulfate	Mercuric subsulfate	T
Mercuric iodide	Mercury iodide	T
Mercuric nitrate	Mercury nitrate	O
Mercuric oleate	Mercury oleate	T
Mercuric oxide		T

Mercuric oxycyanide		E
Mercuric salicylate	Salicylated mercury	T
Mercuric subsulfate	Mercuric dioxysulfate	T
Mercuric sulfate	Mercuric sulfate	T
Mercuric sulfide		T
Mercuric thiocyanate	Mercury thiocyanide	T
Mercuric thiocyanide	Mercury thiocyanate	T
Mercuriol	Mercury nucleate	T
Mercurous bromide		T
Mercurous gluconate		T
Mercurous iodide		T
Mercurous nitrate		T
Mercurous oxide		T
Mercurous sulfate	Mercury bisulfate	T
Mercury		T
Mercury (vapor)		T
Mercury acetate	Mercuric acetate	T
Mercury Ammonium chloride	Mercuric ammonium chloride	T
Mercury benzoate	Mercuric benzoate	T
Mercury bisulfate	Mercurous sulfate	T
Mercury chloride	Mercuric chloride	T
Mercury cyanide	Mercuric cyanide	T
Mercury fulminate		E
Mercury iodide	Mercuric iodide	T
Mercury nitrate	Mercuric nitrate	O
Mercury nucleate	Mercuriol	T
Mercury oleate	Mercuric oleate	T
Mercury sulfate	Mercuric sulfate	T
Mesitylene	1,3,5-trimethylbenzene	F
Mesityl oxide		F
Mesuroi*		T
Metasystox-R*	Demeton-S-methyl sulfoxide	T
Metham		T
Methanal	Formaldehyde	F
Methane		F
Methanethiol	Methyl mercaptan	F
Methanoic acid	Formic acid	A
Methanol	Methyl alcohol	F
Methomyl	Lannate*	T
Methoxyethylmercuric chloride	Agallolaretan*	T
Methyl acetate		F
Methyl acetone		F
Methyl acetylene	Methyl butyne	F
Methyl acrylate		F***
Methyl alcohol	Methanol	F
Methyl aluminum sesquibromide		R***
Methyl aluminum sesquichloride		R***
Methylamine	Aminomethane	B
Methyl amyl acetate		F
N-Methyl aniline		F

Methyl aziridine	Propyleneimine	
Methylbenzene	Toluene	F
Methyl bromide	Bromomethane	G
Methyl butadiene	Isoprene	F
Methyl butane	Isopentane	F
Methyl butene		F
Methyl butyl ether		F
Methyl t-butyl ketone		F
Methyl butyne	Isopropyl acetylene	F
Methyl butyate		F
Methyl chloride	Chloromethane	G
Methyl chlorocarbonate	Methyl chloroformate	F
Methyl chloroform		G
Methyl chloroformate	Methyl chlorocarbonate	F
Methyl chloroarsine	CMME	F
Methyl cyanide	Acetonitrile	F
Methyl cyclohexane		F
Methyl dichloroaraine		T
Methyl dichlorosilane		R
Methylene chloride	Dichloromethane	G
Methylene diisocyanate		R
4,4-Methylene bis (2-chloroaniline)		G
Methyl ethyl chloride		F
Methyl ethyl ether		F
Methyl ethyl ketone	Butanone	F
Methyl ethyl ketone peroxide		O
Methyl ethyl pyridine		G
Methyl formate		F
Methyl hydrazine	Monomethyl hydrazine	F
Methyl iodide		T
Methyl isobutyl ketone		F
Methyl isopropenyl ketone		R**
Methyl magnesium bromide		R**
Methyl magnesium chloride		R**
Methyl magnesium iodide		R
Methyl mercaptan	Methanethiol	F***
Methyl methacrylate		F
Methyl naphthalen		F
Methyl parathion		T
Methyl pentanoate	Methyl valerate	F
Methyl propionate		F
Methyl n-propyl ketone		F
Methyl styrene		F***
Methyl sulfide	Dimethyl sulfide	F
Methyl trichlorosilane		R
Methyl valerate	Methyl pentanoate	F
Methyl vinyl ketone	Butne-2-one	F
Methyl yellow	Dimethylamine azobenzene	T
Mevinphos	Phosdrin*	T
Mexacarbate	Dowco-139*	T

Mineral spirits		F
Mintacol*	Paroxon	T
Mipcin*		T
Moban*		T
Mocap*	Ethoprop	T
Molybdenum		F
Molybdenum anhydride	Molybdenum trioxide	T
Molybdenum sulfide		G
Molybdenum trioxide	Molybdenum anhydride	R**
Molyboic acid		F
Monochloroacetone	Chloroacetone	F
Monochloroacetic acid	Chloracetic acid	A
Monocrotophos	Azodrin*	T
Monoethanol amine		F
Monofluorophosphoric acid		A
Monoisopropanolamine		G
Monomethyl hydrazine	Methyl hydrazine	F
Morpholine		F
Municipal solid waste	Refuse	F
Muriatic acid	Hydrochloric acid	A
Nabam		T
Nack	Sodium-potassium alloy	R
Nak	Sodium-potassium alloy	R
Naphtha		F
Naphthol		F
Naphthylamine	A & B Naphthylamine	T
Naphthyl mercaptan		T
Naphtite	Trinitronaphthalene	E
Nemagon*	Dibromochloropropane	T
Neohexane	Dimethyl butane	F
4-NBP	Nitrobiphenyl, ONB	T
Niacide*	Dimethyl dithiocarbamates (mix)	G
Nialate	Ethion-NIA 12, 14-Diethion	T
Nickel (dus or fume)		F
Nickel acetate		T
Nickel antimonide	Breithauptite (reacts wH ₂ O)	R
Nickel arsenate	Nickelous arsenate	T
Nickel arsenite	Nickelous arsenite	T
Nickel carbonyl	Nickel tetracarbonyl	F
Nickel chloride	Nickelous chloride	G
Nickel cyanide	Reacts w/Mg	T
Nickel nitrate	Nickel nitrate	O
Nickelous arsenate	Nickel arsenate, toxic	T
Nickelous arsenite	Nickel arsenite, toxic	T
Nickelous chloride	Nickel chloride	T
Nickelous nitrate	Nickel nitrate	T
Nickel selenide		T
Nickel subsulfide		T**
Nickel sulfate		G
Nickel tetracarbonyl	Nickel carbonyl	F

o-Nitraniline	o-Nitroaniline MOD toxic	T
Nitric acid		O
p-Nitroaniline	p-Nitraniline	T
Nitrobenzene	Nitrobenzol	T
Nitrobenzol	Nitrobenzene	T
Nitrobiphenyl	4-NBP	T
Nitrocalcium	Cellulose nitrate	O
Nitrocellulose	Cellulose nitrate, gun cotton	E
Nitrochlorbenzene	Chloronitrobenzene	T
Nitrogen dioxide	Nitrogen tetroxide, peroxide	O
Nitromannite	Mannitol hexanitrate	E
Nitrogen mustard	HN-1	T
Nitrogen tetroxide	Nitrogen dioxide, peroxide	O
Nitroglycerin	Trinitroglycerin	R
Nitrohydrochloric acid	Aquaregia	O
Nitrophenol	m-Hydroxynitrobenzene	T
2-Nitropropane	2-NP, isonitropropane	F
Nitrosodimethylamine	Dimethylnitrosoamine	T
Nitroxylene	Nitroxylol, dimethyl- nitrobenzene	E
Nitrolol	Nitroxylene, dimethyl- nitrobenzene	E
N-Nitrosodimethylamine	Dimethylnitrosoamine	T
Nonane	n-Nonane	F
Nonanone		F
Nonanal	Pelargonic aldehyde, aldehyde C-9	F
Nonanol	Nonyl alcohol, octyl carbinol	F
Nonene	Propylene trimer, n-Heptylethylene	F
Nonyl phenol		T
Nonyl trichlorosilane		R
Octadecyl trichlorosilane		R
Octadecyne	1-Octa decene, hexadecyl acetylene	G
Octamethylpyrophosphoramidate	Schradan (insecticide)	T
Octanal	n-Octyl aldehyde, carpylic aldehyde	F
Octane		F
Octanone	Methyl hexyl ketone	F
Octanol	Octyl alcohol, hexylcarbinol	F
Octene		F
Octyl peroxide	Caprylyl peroxide	O
Octyl trichlorosilane	Trichloronotosilane	R
Oil of bergamot		F
Oil of vitriol	Sulfuric acid, hydrogen sulfate	A
Oleum	Sulfuric acid, battery acid	O
Orris root	White flag	F
Orthoxenol	o-Phenyl phenol	T
Osmium		T

Osmium amine nitrate		O
Osmium amine perchlorate		O
Oxamyl		T
Oxalic acid	Ethanedioic acid	A
Oxygen difluoride	Oxygen fluoride, fluoride monoxide	R
PCB	Polychlorinated biphenyl	PCB
Paraoxon	Mintacol*, Diethyl-p- nitrophenyl-phosphate	T
Parathion		T
Paris green	Copper acetoarsenite	T
Pentaborane		F**
Pentachlorophenol		T
Pentaerythritol tetranitrate	Pentaerythryl tetranitrate PETN	E
Pentamethyl benzene		F
Pentane		F
Pentanethiol	Amyl mercaptan	F
Pentanal	n-Valeraldehyde amyl aldehyde	F
Pentanone	Methyl propyl ketone, diethyl ketone	F
Pentene	Amylene propylethylene	F
Pentylamine	n-Amylamine, aminopentane	F
Pentyne	n-Propyl acetylene	F
Peracetic acid	Peroxyacetic acid	O
Perbromic acid		O
Perchloric acid		O
Perchloroethylene	Tetrachloroethylene	T
Perchloromethyl mercaptan	Trichloromethylsulfenylchloride	T
Perchlorous acid		O
Perchloryl fluoride		O
Periodic acid		O
Permonosulfuric acid	Caro's acid	A
Peroxyacetic acid	Peracetic acid	O
PETD	Polyram combi*	T
PETN ("primacord")	Pentaerythryl tetranitrate, Pentaerythritol tetranitrate	E
Petroleum naphtha	Petroleum solvent	F
Petroleum oil		F
Phenanthrene		T
Phenarazine chloride	Diphenylamine chloroarsine	T
Phenol	Carbolic	F
Phenyl acetic acid	Alpha-toluic acid	T
Phenyl acetonitrile	Benzyl cyanide	T
Phenyl acetylene		F
Phenylaniline	Diphenylamine anilinobrnzene	G
Phenylbenzene	Diphenyl biphenyl	T
Phenylbutane	Butylbenzene	F
Phenylchloromethyl ketone	Chloroacetophenone "tear gas"	T
Phenyl dichloroarsine	Phenylarsenic dichloride	T

Phenylene diamine	Diaminobenzene	T
Phenylethane	Ethylbenzene	F
Phenyl hydrazine hydrochloride		T
o-Phenyl phenol	Orthozenol, dowicide 1	F
Phenyl trichlorosilane		R
Phenyl valerylnitrile		F
Phenylpropane	Propylbenzene	F
Phloroglucinol		F
Phorate	Timet*	T
Phoadrin*	Mevinphos	T
Phosphamidon	Dimecron*	T
Phosphine	Hydrogen phosphide	F**
Phospholan	Cyolan*	F
Phosphonium iodide		R**
Phosphoric acid		A
Phosphoric anhydride	Phosphorus pentoxide	A
Phosphoric sulfide	Phosphorus pentasulfide	R**
Phosphorus (amorphous red)		R**
Phosphorus (white-yellow)		F**
Phosphorus heptasulfide		F**
Phosphorus oxybromide	Phosphoryl bromide	R
Phosphorus oxychloride	Phosphoryl chloride	R
Phosphorus pentachloride	Phosphoric chloride	R
Phosphorus pentasulfide	Phosphoric sulfide	R**
Phosphorus pentoxide	Phosphoric anydride	R
Phosphorus sesquisulfide	Tetraphosphorus trisulfide	R**
Phosphorus tribromide		R
Phosphorus trichloride		R
Phosphorus trisulfide		R**
Phosphoryl bromide	Phosphorus oxybromide	R
Phosphoryl chloride	Phosphorus oxychloride	R
Phthlic acid		A
Picramide	Trinitroaniline	E
Picric acid	Trinitrophenol	E
Picridine		B
Picryl chloride	Chlorotrinitrobenzene	E
Piperdine		T
Pirimicarb		T
Polyglycol ether		F
Polyamide resin		F
Polybrominated biphenyl		T
Polybutene		G
Polychlorinated biphenyls	PCB, Askarel, Archlor *, Chlorextol, Inerteen	PCB
Polychlorinated triphenyls		F
Polyethylene	Propene polyner	F
Polyester resin		F
Polyram combi *	PETD	R
Polysulfide polymer		R
Polystyrene		R

Polyurethane			R
Polyvinyl acetate			F
Polyvinyl chloride			F
Polyvinyl nitrate			E
Potasan			E
Potassium			E
Potassium acid fluoride	Potassium fluoride	R	
Potassium aluminate			B
Potassium arsenate			T
Potassium arsenite		T	
Potassium bifluoride	Potassium fluoride	B	
Potassium bichromate	Potassium dichromate		O
Potassium bromate			O
Potassium butoxide			B
Potassium cyanide		T	
Potassium dichloroisocyanurate			O
Potassium dichromate	Potassium bichromate		O
Potassium dinitrobenzfuroxan			E
Potassium fluoride	Potassium acid fluoride		B
Potassium hydride		R**	
Potassium hydroxide	Caustic potash		B
Potassium nitrate	Salt peter		E
Potassium nitride			B
Potassium nitrite			O
Potassium oxide			R
Potassium perchlorate			O
Potassium permanganate		O	
Potassium peroxide			O
Potassium sulfide			F
Promecarb			T
Propanal	Propionaldehyde		F
Propane			F
Propanethiol	Propyl mercaptan		F
Propanoic acid	Propionic acid		A
Propanol	Propyl alcohol		F
Propargyl bromide			F
Propargyl chloride			G
2-Propen-1-ol	Allyl alcohol		F
Propioacetone			F
Propionaldehyde	Propanol		F
Propionamide			F
Propionic acid	Propanoic acid		A
Propionitrile			F
Propyl acetate			F
Propyl alcohol			F
Propylamine			B
Propyl benzene	Phenyl propane		F
Propylene dichloride	Dichloropropane		F
Propylene glycol			F
Propylene glycol monomethyl ether			F

Propylene oxide		F***
Propyleneimine	Methyl aziridine	F
Propyl ether		T
Propyl formate		F
Propyl mercaptan	Propanethiol	F
Propyl trichlorosilane		R
Prothoate	Fostion*	F
Pseudocumene	1,2,4 trimethylbenzene	T
Pyridine		F
Pyrogallol		F
Pyrosulfuryl chloride	Disulfuryl chloride	R
Pyroxylin	Collodion	F
Quinone	Benzoquinone	F
Raney nickel		T
RDX	Cyclomethylene trinitramine	E
Resina		F
Resorcinol		T
Rubidium		E
Salicylated mercury	Mercuric salicylate	T
Saligenin	Salicyl alcohol	F
Salt peter	Potassium nitrate	E
Schradan	Octamethyl pyrophosphoramidate, OMPA	T
Selenious acid	Selenous acid	T
Selenium		G
Selenium diethyldithiocarbamate		T
Selenium fluoride		T
Selenous acid	Selenious acid	T
Silicochloroform	Trichlorosilane	R
Silicon tetrachloride	Silicon chloride	R
Silicon tetrafluoride		R**
Silver acetylide		E
Silver azide		E
Silver chloride		G
Silver cyanide, reagent		T
Silver cyanite, technical		T
Silver nitrate		O
Silver nitride		E
Silver styphnate	Silver trinitroresorcinate	E
Silver sulfide		T**
Silver tetrazene		E
Silver trinitroresorcinate	Silver styphnate	E
Silver lime	Calcium oxide	R
Smokeless powder		E
Sodamide	Sodium amide	R
Soda niter	Sodium nitrate	O
Sodium		R**
Sodium acid fluoride	Sodium difluoride	T
Sodium aluminate		B**
Sodium aluminum hydride		R**

Sodium amide
 Sodium arsenate
 Sodium arsenite
 Sodium azide
 Sodium bichromate
 Sodium bifluoride
 Sodium bromate
 Sodium cacodylate
 Sodium carbonate
 Sodium carbonate peroxide
 Sodium chlorate
 Sodium chlorite
 Sodium chromate
 Sodium cyanide
 Sodium dichloroisocyanurate
 Sodium dichromate
 Sodium dimethylarsenate
 Sodium fluoride
 Sodium hydride
 Sodium hydroxide
 Sodium hypochlorite
 Sodium hyposulfite
 Sodium methlate
 Sodium methoxide
 Sodium molybdate
 Sodium monoxide
 Sodium nitrate
 Sodium nitride
 Sodium oxide
 Sodium pentachlorophenate
 Sodium perchlorate
 Sodium permanganate
 Sodium peroxide
 Sodium phenolsulfonate
 Sodium picramate
 Sodium polysulfide
 Sodium potassium alloy
 Sodium selenate
 Sodium sulfide
 Sodium thiosulfate
 Stannic chloride
 Stannic sulfide
 Starch nitrate
 Stilbene
 Stoddard solvent
 Strontium
 Strontium arsenate
 Strontium dioxide
 Strontium monosulfide
 Strontium nitrate

Sodamide

 Sodium dichromate
 Sodium difluoride

 Sodium dimethylarsenate

 Sodium bichromate
 Sodium cacodylate

 Caustic soda, Lye

 Sodium thiosulfate
 Sodium methoxide
 Sodium methylate

 Sodium oxide
 Soda niter

 Sodium monoxide

 Sodium sulfocarbonate

 Nak, Nack
 Selenious acid

 Tin tetrachloride
 Tin bronze, Tin disulfide
 Nitrostarch
 Diphenyl ethylene, Toluelene

 Strontium peroxide
 Strontium sulfide

R
 T
 T
 E
 O
 T
 O
 T
 B
 O
 O
 T
 T
 O
 O
 T
 R**
 F
 B
 O
 G
 R
 R
 T
 R
 O
 E
 B
 R
 O
 O
 R
 G
 E
 F
 E
 T
 T**
 T**
 R
 T**
 E
 F
 F
 F
 T
 E
 F
 T**

Strontium peroxide	Strontium dioxide	O
Strontium tetrasulfide		T**
Styphnic acid	Trinitroresorcinol	E
Styrene	Vinylbenzene	F***
Succinic acid		F
Succinic acid peroxide		O
Sulfonyl chloride	Sulfuryl chloride	R
Sulfonyl fluoride		R
Sulfotepp	Dithione*, Blada-Fum*	T
Sulfur chloride	Sulfur monochloride	R
Sulfur (elemental)		G
Sulfuric acid	Oil of Vitriol, Oleum	O
Sulfuric anhydride	Sulfur trioxide	R
Sulfur monochloride	Sulfur chloride	R
Sulfur oxychloride	Thionyl chloride	R
Sulfur pentafluoride		R
Sulfur trioxide	Sulfuric anhydride	R
Sulfuryl chloride	Sulfonyl chloride	R
Sulfuryl fluoride	Sulfonyl fluoride	R
Supracide*	Ultracide*	T
Surecide*	Cyanofenphos	T
Synthetic rubber		G
Tall oil		F
Tar		F
TCDO	Tetrachlorodibenzo-p-dioxin	T
TEDP	Tetraethyl dithiopyrophosphate	T
TEL	Tetraethyl lead	T
Tellurium hexafluoride		T
Temik*	Aldicarb	T
TEPP	Tetraethyl pyrophosphate	T
Tetrachlorodibenzo-p-dioxin	TCDD	T
Tetrachloroethane		A
Tetrachloroethylene	Perchloroethylene	T
Tetrachloromethane	Carbon tetrachloride	G
Tetrachlorophenol		T
Tetrachloropropyl ether		F
Tetradecene		G
Tetraethyl dithiopyrophosphate	TEDP	B
Tetraethyl lead	TEL	F
Tetraethyl pyrophosphate	TEPP	T
Tetrahydrofuran	THF	F
Tetramethylenedimine		G
Tetramethyl lead	THL	F
Tetramethyl succinonitrile		T
Tetraphenyl ethylene		F
Tetraphosphorus trisulfide	Phosphorus sesquisulfide	R**
Tetraselenium tetranitride		E
Tetrasul	Animert* V-101	T
Tetrasulfur tetranitride		E
Thallium		T

Thallium nitride		R
Thallium sulfide		T**
Thallium sulfate		T
THF	Tetrahydrofuran	F
Thimet*	Phorate	T
Thionyl chloride	Sulfur oxychloride	R
Thiocarbonyl chloride	Tiophosgene	R
Thiodan*	Endosulfan	T
Thionazin	Zinophos*	T
Thionyl chloride	Sulfur oxychloride	R
Thiophosgene	Thiocarbonyl chloride	R
Thiophosphoryl chloride		R
Thiram		T
Tin tetrachloride	Stannic chloride	R
Titanic chloride	Titanium tetrachloride	R
Titanium		E
Titanium sesquisulfide		T**
Titanium sulfate		T
Titanium sulfide		T**
Titanium tetrachloride	Titanic chloride	R
TMA	Trimethylamine	F
TML	Tetramethyl lead	F
TNB	Trinitrobenzene	E
TNT	Trinitrotoluene	E
Tolualdehyde		F
Toluene	Toluol, Methylbenzene	F
Toluene, diisocyanate		R
Toluic acid		A
Toluidine	Aminotoluene	F
Toluol	Toluene, Methylbenzene	F
Topcide*	Benzadox	F
Triamiphos	Wepsyn* 155	T
Tribromoethane	Bromoform	G
Tri-n-butylaluminum		R
Tricadmium dinitride		O
Tricalcium dinitride		O
Tricesium nitride		O
Trichloroacetaldehyde	Chloral hydrate	T
Trichloroborane		R
Trichlorethane		
Trichlorethene	Trichloroethylene	T
Trichloroisocyanuric acid		O
Trichloromethane	Chloroform	T
Trichloromethyl sulfenyl chloride	Perchloromethyl mercaptan	T
Trichloronitromethane	Chloropierin	E
Trichlorophenoxyacetic acid		T
Trichloropropane		T
Trichlorosilane	Silicochloroform	R
Tridecene		F
Triethanolamine		G

Triethyl aluminum		R**
Triethyl antimony	Triethylstibine	R**
Triethyl arsine		R
Triethyl bismuthine		E
Triethylamine		E
Triethylene phosphoramidate	Tris (1-aziridinyl) phosphine oxide	T
		T
Triethylene tetraamine	Triethyl antimony	R**
Triethyl stibine		T
Trifluoroethane	Benzotrifluoride	E
Trifluoromethylbenzene		R**
Triisobutyl aluminum		E
Trilead dinitride		E
Trimercury dinitride		R**
Trimethyl aluminum	TMA	F
Trimethylamine	Trimethylstibine	F**
Trimethyl antimony	Trimethylarsine	R
Trimethyl arsenic	Pseudocumene	F
1,2,4-Trimethylbenzene	Mesitylene	F
1,3,5-Trimethylbenzene		F
Trimethyl bismuthine	Isooctane	F
Trimethyl pentane	Trimethyl antimony	R**
Trimethylstibine		R**
Tri-n-butylborane	Picramide	E
Trinitroaniline	Trinitrophenylmethyl ether	E
Trinitroanisole	TNB	E
Trinitrobenzene		E
Trinitrobenzoic acid	Nitroglycerin	E
Trinitroglycerin	Naphtite	E
Trinitronaphthalene	Picric acid	E
Trinitrophenol	Trinitroanisole	E
Trinitrophenyl methyl ether	Styphnic acid	E
Trinitroresorcinol	TNT	E
Trinitrotoluene		R**
Trioctyl aluminum		G
Triphenyl ethylene		G
Triphenyl methane		R
Tripropylamine		R
Tripropyl stibine		R
Trisilyl arsine		T
Tris-(1-aziridinyl) phosphine oxide	TEPA, Triethylene phosphoramidate	T
Trithion		T
Trithorium tetranitride		O
Triviny stibine		R
Tsumacide*		T
Turpentine		F
UDMH	Dimethyl hydrazine	F
Ultracide*	Supracide*	R
Undecene	Hendecane	G

Unisolve		T**
Uranium nitrate	Uranyl nitrate	O
Uranium sulfide	Uranyl sulfide	F
Uranyl nitrate	Uranium nitrate	O
Urea formaldehyde	Melamine resin	G
Urea nitrate		E
VC	Vinylidene chloride	F
Valeraldehyde	Pentanal	F
Valeramide		G
Valeric acid		A
Vanadic acid anhydride	Vanadium pentoxide	T
Vanadium oxytrichloride		A
Vandaium pentoxide	Vanacid acid anhydride	A
Vanadium sulfate	Vanadyl sulfate	T
Vanadium tetroxide		T
Vanadium trichloride		R
Vanadium trioxide		T
Vanadyl sulfate	Vanadium sulfate	T
Vapona*	DDVP	T
Vinyl acetate		F***
Vinyl azide		E
Vinylbenzene	Styrene	F
Vinyl chloride		F***
Vinyl cyanide		F***
Vinyl ethyl ether		F
Vinyl ispropyl ether		F
Vinylidene chloride	VC	F***
Vinyl toluene		F***
Vinyl trichlorosilane		R
VX		T
Water		G
Waxes		F
Wepayn* 155	Triamiphos	T
Wood		G
Xylene		F
Zectran*	Dowco 139*	T
Zinc		E
Zinc acetylide		R**
Zinc ammonium nitrate		O
Zinc arsenate		T
Zinc arsenite		T
Zinc chloride		A
Zinc dioxide	Zinc peroxide	E
Zinc ethyl	Diethyl zinc	R**
Zinc cyanide		T
Zinc fluoborate		T
Zinc nitrate		O
Zinc permanganate		O
Zinc peroxide	Zinc dioxide	R
Zinc phosphide		R

Zinc salts of dimethyl Dithiocarbamic acid		R
Zinc sulfate		T
Zinc sulfide		G
Zineb*		T
Zinophos*	Tioazin	T
Ziram*		T
Zirconium		F
Zirconium chloride	Zirconium tetrachloride	R
Zirconium picramate		O
Zirconium tetrachloride	Zirconium chloride	R

REFERENCES

1. 40 CFR 165.10 - Recommended procedures and criteria for storage of pesticides.
2. 40 CFR 262.21 - Required information (manifest)
3. 40 CFR 264.13 - General waste analysis
4. 40 CFR 262.17 - General requirements for ignitable, reactive, or incompatible waste
5. 40 CFR 264.171 - Condition of containers
6. 40 CFR 264.172 - Compatibility of waste with container
7. 40 CFR 264.173 - Management of containers
8. 40 CFR 264.174 - Inspections
9. 40 CFR 264.176 - Special requirements for ignitable or reactive waste
10. 40 CFR 265.177 - Special requirements for incompatible wastes
11. 40 CFR 761.42 - Storage for disposal (PCB)
12. 40 CFR 761.20 - Marking requirements (PCB)
13. 49 CFR 172.01 - Hazardous materials table
14. 49 CFR 172.202 - Description of hazardous material on shipping papers
15. 49 CFR 172.203 - Additional description requirements
16. Chemical Hazardous Response Information System (CHRIS)
Department of Transportation
U.S. Coast Guard (G-WEP-4/73)
Washington, DC 20590
17. Consolidated Hazardous Item List (CHIL)
Navy Fleet Material Support Office
Mechanicsburg, PA 17055
18. Fire Protection Guide on Hazardous Materials 7th Edition
National Fire Protection Assoc.
470 Atlantic Avenue
Boston, MA 02210
19. Handbook of Toxic and Hazardous Chemicals
Woyes Publications
Park Ridge, New Jersey
Marshall Sittig (1981)

20. Hazardous Chemicals Data Book
G. Weiss
Noyes Data Corporation
Park Ridge, NJ
21. Hazardous Waste Disposal Guide
Navy Environmental Support Office
Naval Const. Battalion Center
Port Hueneme, CA 93043
22. A Method for Determining the Compatibility of Hazardous Wastes PB80-221005
U.S. Department of Commerce
National Technical Information Service
Springfield, VA 22161
23. Occupational Health Guidelines for Chemical Hazards
U.S. Department of Health & Human Services
Public Health Service

ATTACHMENT 11

SOLID WASTE MANAGMENT UNIT SUMMARY

APPENDIX A-1

List of Solid Waste Management Units and Areas of Concern requiring an RFI:

<u>SWMU/ACC No.</u>	<u>Description</u>	<u>Investigation Requirements</u>
25	Golf Course Pond	Soil, Surface Water Pond Sediment, Ground Water
26	Lake Danielson	Soil, Surface Water, Pond Sediment, Ground Water
27	Former Recoup Area	Soil, Surface Water, Ground Water
32	Sandblasting Waste Accumulation Area	Soil, Surface Water Ground Water
ADC H	Building 629 Spill Area	Soil, Surface Water, Ground Water

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APPENDIX A-2

List of Solid Waste Management Units or Areas of Concern that require no further action at this time.

<u>SWMU/AOC No.</u>	<u>Description</u>
18	Plane Crash Residue
22	Hardware Burial Site
23	Construction Debris and Foods Burial Site
28	Recoup Area Building
30	Paint Spray Booths (3)
33	Sandblasting Waste Drum Storage Area
40	Safety-Kleen Units (9)
41	Satellite Drum Accumulation Area (5)
44	Former Wastewater Treatment Unit Area
45	Former Contaminated Soil Staging Area
47	Former Contaminated Soil Drum Storage Area
49	Medical Waste Storage Area
AOC D	X-25 Flammable Solvents Storage Area
AOC E	DRMO Drainage Ditch
AOC F	North Run-off Area
AOC G	West Run-Off Area

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APPENDIX A-3

List of Solid Waste Management Units required by the State's portion of the RCRA permit:

<u>SWMU/AOC No.</u>	<u>Description</u>
35	DRMO Building T-308 Hazardous waste Storage Building
36	DRMO Hazardous Waste Concrete Storage Pad
37	DRMO Hazardous Waste Gravel Storage Pad
38	DRMO Damaged and Empty Hazardous Materials Drum Area
39	DRMO Damaged and Empty Lubricant Container Area

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APPENDIX A-4

List of Solid Waste Management Units and Areas of Concern Requiring Confirmatory Sampling

<u>SWMU No.</u>	<u>Description</u>	<u>Investigation Requirements*</u>
1	Mustard Gas Burial Site	Soil, Ground Water
2	Ammonia Hydroxide Burial Site	Soil, Ground Water
3	Mixed Chemical Burial Site A	Soil, Ground Water
4	POL Burial Sites	Soil, Ground Water
5	Methyl Bromide Burial Site A	Soil, Ground Water
6	Eye Ointment Burial Site	Soil, Ground Water
7	_____ Metric Acid Burial Site	Soil Ground Water
8	Methyl Bromide Burial Site B	Soil Ground Water
9	Ashes and Metal Burial Site	Soil Ground Water
10	Solid Waste Burial Site	Soil Ground Water
11	Trichloroacetic Acid Burial Site	Soil, Ground Water
12	Sulfuric and Hydrochloric Acid Burial Site	Soil, Ground Water
13	Mixed Chemical Burial Site B	Soil, Ground Water
14	Municipal Waste Burial Site	Soil, Ground Water
15	Sodium Burial Sites	Soil, Ground Water
16	Unknown Acid Burial Site	Soil, Ground Water
17	Mixed Chemical Burial Site C	Soil, Ground Water
19	Former Tear Gas Canister Burn Site	Soil, Ground Water, Surface Water
20	Probable Asphalt Burial Site	Soil, Ground Water
21	XXCC-3 Probable Burial Site	Soil, Ground Water
24	Former Miscellaneous Burn Site	Soil, Ground Water
29	Former Underground Waste Oil Storage Tank	Soil, Ground Water
31	Former Paint Spray Booth	Soil, Ground Water Surface Water
34	Building 770 Underground Water Oil Storage Tanks (2)	Soil, Ground Water
42	Former PCP DIP Vat Area	Soil
43	Former Underground PCP Tank Area	Soil
46	Former PCP Drying Area	Soil
48	Former PCP Transformer Storage Area	Soil, Surface Water
AOC A	Drum Field Drainage Ditch	Soil, Surface Water
AOC B	Lake Danielson Outlet Ditch	Soil, Surface Water
AOC C	Golf Course Pond Outlet Ditch	Soil, Surface Water

*Additional investigations may be required based upon sampling/analysis results.

APPENDIX B

**RCRA Facility Investigation (RFI)
Workplan Outline**

APPENDIX B

RCRA FACILITY INVESTIGATION (RFI) WORKPLAN OUTLINE

I. RFI WORKPLAN REQUIREMENTS

The Permittee shall prepare a RCRA Facility Investigation (RFI) Workplan that meets the requirements of Part II of this document and the RFI Guidelines, EPA-530/SW-89-031. This Workplan shall also include the development of the following plans, which shall be prepared concurrently:

A. Project Management Plan

Permittee shall prepare a Project Management Plan which will include a discussion of the technical approach, schedules and personnel. The Project Management Plan will also include a description of qualifications of personnel performing or directing the RFI, including contractor personnel. This plan shall also document the overall management approach to the RCRA Facility Investigation.

B. Sampling and Analysis Plan (s)

The Permittee shall prepare a plan to document all monitoring procedures: field sampling, sampling procedures and sample analysis, performed during the investigation to characterize the environmental setting, source, and releases of hazardous constituents, so as to ensure that all information and data are valid and properly documented. The Sampling Strategy and Procedures shall be in accordance with Characterization of Hazardous Waste Sites A Methods Manual: Volume II., Available Sampling Methods, EPA-600/4-84-076, or EPA Region IV Engineering Support Branch's Standard Operating Procedure and Quality Assurance Manual (SOP). Any deviations from these references must be requested by the applicant and approved by TDHE. The Sampling and Analysis Plan must be specifically discuss the following unless the EPA-600/4-84-076 or SOP procedures are specifically referenced.

1. Sampling Strategy

- a. Selecting appropriate sampling locations, depths, etc.;
- b. Obtaining all necessary ancillary data;
- c. Determining conditions under which sampling should be conducted;
- d. Determining which media are to be samples (e.g., groundwater, air, soil, sediment, subsurface gas);
- e. Determining which parameters are to be measured and where;
- f. Selecting the frequency of sampling and length of sampling period;

- g. Selecting the types of samples (e.g., composites vs. grabs) and number of samples to be collected.

2. Sampling Procedures

- a. Documenting field sampling operations and procedures, including;
 - i) Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters, preservatives, and absorbing reagents);
 - ii) Procedures and forms for recording the exact location and specific consideration associated with sample acquisition;
 - iii) Documentation of specific sample preservation method;
 - iv) Calibration of field instruments;
 - v) Submission of field-based blanks, where appropriate;
 - vi) Potential interferences present at the facility;
 - vii) Construction materials and techniques, associated with monitoring wells and perimeters;
 - viii) Field equipment listing and sampling container;
 - ix) Sampling order; and
 - x) Decontamination procedures.
- b. Selecting appropriate sample containers;
- c. Sampling preservation; and
- d. Chain-of-custody, including:
 - i) Standardized field tracking reporting forms to establish sample custody in the field prior to shipment; and
 - ii) Pre-prepared sample labels containing all information necessary for effective sample tracking.

3. Sample Analysis

Sample analysis shall be conducted in accordance with SW-846: "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods" (third edition). The sample analysis of the Sampling and Analysis Plan shall specify the following:

- a. Chain-of-custody procedures, including:
 - i) Identification of a responsible party to act as sampling custodian at the laboratory facility authorized to sign for incoming field samples, obtain documents of shipment, and verify the data entered onto the sample custody records;
 - ii) Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracking report sheets; and
 - iii) Specification of laboratory sample custody procedures for sample handling, storage, and dispersement for analysis.
- b. Sample storage;
- c. Sample preparation methods;
- d. Analytical Procedures, including:
 - i) Scope and application of the procedure;
 - ii) Sample matrix;
 - iii) Potential interferences;
 - iv) Precision and accuracy of the methodology; and
 - v) Method detection limits.
- e. Calibration procedures and frequency;
- f. Data reduction, validation and reporting;
- g. Internal quality control checks, laboratory performance and systems audits and frequency, including:
 - i) Method blank (s);
 - ii) Laboratory control sample(s);
 - iii) Calibration check sample(s);
 - iv) Replicate sample(s);
 - v) Matrix-spiked sample(s);
 - vi) Control charts;
 - vii) Surrogate samples;

- viii) Zero and span gases; and
- ix) Reagent quality control checks.
- h. Preventive maintenance procedures and schedules;
- i. Corrective action (for laboratory problems); and
- j. Turnaround time.

c. Data Management Plan

The Permittee shall develop and initiate a Data Management Plan to document and track investigation data and results. This plan shall identify and set up data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The plan shall also provide the format to be used to present the raw data and conclusions of the investigation.

1. Data Record

The data record shall include the following:

- a. Unique sample or field measurement code;
- b. Sampling or field measurement location and sample or measurement type;
- c. Sampling or field measurement raw data;
- d. Laboratory analysis ID number;
- e. Property or component measures; and
- f. Result of analysis (e.g., concentration).

2. Tabular Displays

The following data shall be presented in tabular displays:

- a. Unsorted (raw) data;
- b. Results for each medium, or for each constituent monitored;
- c. Data reduction for statistical analysis, as appropriate;
- d. Sorting of data by potential stratification factors (e.g., location, soil layer, topography); and
- e. Summary data

3. Graphical Displays

The following data shall be presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transits, three dimensional graphs, etc.):

- a. Display sampling location and sampling grid:
- b. Indicate boundaries of sampling area, and area where more data are required;
- c. Display geographical extent of contamination;
- d. Illustrate changes in concentration in relation to distances from the source, time, depth or other parameters; and
- e. Indicate features affecting inter-media transport and show potential receptors.

II. RCRA Facility Investigation (RFI) Requirements

RCRA Facility Investigation

The Permittee shall conduct those investigations necessary to: characterize the facility (Environmental Setting); define the source (Source Characterization); define the degree and extent of release of hazardous constituents (Contamination Characterization); and identify actual or potential receptors.

The investigations should result in data of adequate technical content and quality to support the development and evaluation of the corrective action plan if necessary. The information contained in a RCRA Part B permit application and/or RCRA Section 3019 Exposure Information Report may be referenced as appropriate.

All sampling and analysis shall be conducted in accordance with the Sampling and Analysis Plan. All sampling locations shall be documented in a log and identified on a detailed site map.

A. Environmental Setting

The Permittee shall collect information to supplement and/or verify Part B information on the environmental setting at the facility. The Permittee shall characterize the following as they relate to identified sources, pathways and areas of releases of hazardous constituents from Solid Waste Management Units.

1. Hydrogeology

The Permittee shall conduct a program to evaluate hydrogeologic conditions at the facility. This program shall provide the following information:

- a. A description of the regional and facility specific geologic and hydrogeologic characteristics affecting ground-water flow beneath the facility, including:
 - i) Regional and facility specific stratigraphy: description of strata including strike and dip, identification of stratigraphic contacts;
 - ii) Structural geology; description of local and regional structural features (e.g., folding, faulting, tilting, jointing, etc.);
 - iii) Depositional history;
 - iv) Regional and facility specific ground-water flow patterns; and
 - v) Identification and characterization of areas and amounts of recharge and discharge.
- b. An analysis of any topographic features that might influence the ground-water flow system.
- c. Based on field data, tests, and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the facility (i.e., the aquifers and any intervening saturated and unsaturated units), including:
 - i) Hydraulic conductivity and porosity (total and effective);
 - ii) Lithology, grain size, sorting, degree of cementation;
 - iii) An interpretation of hydraulic interconnections between saturated zones; and
 - iv) The attenuation capacity and mechanisms of the natural earth materials (e.g., ion exchange capacity, organic carbon content, mineral content, etc.).
- d. Based on data obtained from groundwater monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring including:
 - i) Water-level contour and/or potentiometric maps;
 - ii) Hydrologic cross sections showing vertical gradients;
 - iii) The flow system, including the vertical and horizontal components of flow; and
 - iv) Any temporal changes in hydraulic gradients, for example, due to tidal or seasonal influences.

- e. A description of man-made influences that may affect the hydrology of the site, identifying:
 - i) Local water-supply and production wells with an approximate schedule of pumping; and
 - ii) Man-made hydraulic structures (pipelines, french drains, ditches, etc.).

2. Soils

The Permittee shall conduct a program to characterize the soil and rock units above the water table in the vicinity of contaminant release(s). Such characterization may include, but not be limited to, the following types of information as appropriate:

- a. Surface soil distribution;
- b. Soil profile, including ASTM classification of soils;
- c. Transects of soil stratigraphy;
- d. Hydraulic conductivity (saturated and unsaturated);
- e. Relative permeability;
- f. Bulk density;
- g. Porosity;
- h. Soil sorption capacity;
- i. Cation exchange capacity (CEC);
- j. Soil organic content;
- k. Soil pH;
- l. Particle size distribution
- m. Dept of water table;
- n. Moisture content;
- o. Effect of stratification on unsaturated flow;
- p. Infiltration;
- q. Evapotranspiration;
- r. Storage capacity;
- s. Vertical flow rate; and
- t. Mineral content.

3. Surface Water and Sediment

The Permittee shall conduct a program to characterize the surface water bodies in the vicinity of the facility. Such characterization may include, but not be limited to, the following activities and information.

- a. Description of the temporal and permanent surface water bodies including:
 - i) For lakes and estuaries: location, elevation, surface area, inflow, outflow, depth, temperature stratification, and volume;
 - ii) For impoundments: location, elevation, surface area, depth, volume, freeboard, and construction and purpose;

- iii) Elevation, flow, velocity, depth, width, seasonal fluctuations, flooding tendencies (i.e., 100 year event), discharge point(s), and general contents.
 - iv) Drainage patterns; and
 - v) Evapotranspiration.
- b. Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients, chemical oxygen demand, total organic carbon, specific contaminant concentrations, etc.
- c. Description of sediment characteristics including:
- i) Deposition area;
 - ii) Thickness profile; and
 - iii) Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.)

4. Air

The Permittee shall provide information characterizing the climate in the vicinity of the facility. Such information may include, but not be limited to:

- a. A description of the following parameters:
- i) Annual and monthly rainfall averages;
 - ii) Monthly temperature averages and extremes;
 - iii) Wind speed and direction;
 - iv) Relative humidity/dew point;
 - v) Atmospheric pressure;
 - vi) Evaporation data;
 - vii) Development of inversions; and
 - viii) Climate extremes that have been known to occur in the vicinity of the facility, including frequency of occurrence. (i.e. Hurricanes)
- b. A description of topographic and man-made features which affect air flow and emission patterns, including:

- i) Ridges, hills or mountain areas;
- ii) Canyons or valleys;
- iii) Surface water bodies (e.g. rivers, lakes, bays, etc.); and
- iv) Buildings.

B. Source Characterization

For those sources from which releases of hazardous constituents have been detected the Permittee shall collect analytical data to completely characterize the wastes and the areas where wastes have been placed, to the degree that is possible without undue safety risks, including: type, quantity; physical form; disposition (containment or nature of deposits); and facility characteristics affecting release (e.g., facility security, and engineering barriers). This shall include quantification of the following specific characteristics, at each source area:

1. Unit/Disposal Area Characteristics:

- a. Location of unit/disposal area;
- b. Type of unit/disposal area;
- c. Design features;
- d. Operating practices (past and present)
- e. Period of operation;
- f. Age of unit/disposal area;
- g. General physical conditions; and
- h. Method used to close the unit/disposal area.

2. Waste Characteristics:

- a. Type of wastes placed in the unit;
 - i) Hazardous classification (e. g., flammable, reactive, corrosive, oxidizing or reducing agent);
 - ii) Quantity; and
 - iii) Chemical composition.
- b. Physical and chemical characteristics such as;
 - i) Physical form (solid, liquid, gas);
 - ii) Physical description (e.g., powder, oily sludge);
 - iii) Temperature;
 - iv) pH;

- v) General chemical class (e. g., acid, base, solvent);
 - vi) Molecular weight;
 - vii) Density;
 - viii) Boiling point;
 - ix) Viscosity;
 - x) Solubility in water;
 - xi) Cohesiveness of the waste; and
 - xii) Vapor pressure.
- c. Migration and dispersal characteristics of the waste such as:
- i) Sorption capability
 - ii) Biodegradability, bioconcentration, biotransformation;
 - iii) Photodegradation rates;
 - iv) Hydrolysis rates; and
 - v) Chemical transformations.

The Permittee shall document the procedures used in making the above determinations.

C. Characterization of Releases of Hazardous Constituents

The Permittee shall collect analytical data on groundwater, soils, surface water, sediment, and subsurface gas contamination in the vicinity of the facility in accordance with the sampling and analysis plan as required above. These data shall be sufficient to define the extent, origin, direction, and rate of movement of contamination. Data shall include time and location of sampling, media sampled, concentrations found, conditions during sampling, and the identify of the individuals performing the sampling and analysis. The Permittee shall address the following types of contamination at the facility:

1. Groundwater Contamination

The Permittee shall conduct a groundwater investigation to characterize any plumes of contamination detected at the facility. This investigation shall at a minimum provide the following information:

- a. A description of the horizontal and vertical extent of any plume(s) of hazardous constituents originating from or within the facility.

- b. The horizontal and vertical direction of contamination movement;
- c. The velocity of contaminant movement;
- d. The horizontal and vertical concentration profiles of hazardous constituents in the plume(s);
- e. An evaluation of factors influencing the plume movement; and
- f. An extrapolation of future contaminant movement.

The Permittee shall document the procedures used in making the above determination (e.g., well design, well construction, geophysics, modeling, etc.).

2. Soil Contamination

The Permittee shall conduct an investigation to characterize the contamination of the soil and rock units above the saturated zone in the vicinity of any contaminant release. The investigation may include the following information:

- a. A description of the vertical and horizontal extent of contamination;
- b. A description of appropriate contaminant and soil chemical properties within the contaminant source area and plume. This may include contaminant solubility, speciation, absorption, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation and other factors that might affect contaminant migration and transformation;
- c. Specific contaminant concentrations;
- d. The velocity and direction of contaminant movement; and
- e. An extrapolation of future contaminant movement.

The Permittee shall document the procedures used in making the above determinations.

3. Surface Water and Sediment Contamination

The Permittee shall conduct a surface water investigation to characterize contamination in surface water bodies resulting from releases of hazardous constituents at the facility.

The investigation may include, but not be limited to, the following information;

- a. A description of the horizontal and vertical extent of any plume(s) originating from the facility, and the extent of contamination in underlying sediments;
- b. The horizontal and vertical direction of contaminant movement;
- c. The contaminant velocity;

- d. An evaluation of the physical, biological and chemical factors influencing contaminant movement;
- e. An extrapolation of future contaminant movement; and
- f. A description of the chemistry of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.

4. Air Contamination

The Permittee shall conduct an investigation to characterize gaseous releases of hazardous constituents into the atmosphere or any structures or buildings. This investigation may provide the following information:

- a. a description of the horizontal and vertical direction and velocity of contaminant movement;
- b. The rate and amount of the releases; and
- c. The chemical and physical composition of the contaminant(s) released, including horizontal and vertical concentration profiles.

The Permittee shall document the procedures used in making the above determinations.

D. Potential Receptors

The Permittee shall collect data describing the human populations and environmental systems that are susceptible to contaminant exposure from the facility. Chemical analysis of biological samples and/or data on observable effects in ecosystems may also be obtained as appropriate. The following characteristics shall be identified:

1. Current local uses and planned future uses of groundwater:
 - a. Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial); and
 - b. Location of ground water users, to include withdrawal and discharge wells, within one mile of the impacted area.

The above information should also indicate the aquifer or hydrogeologic unit used and/or impacted for each item.

2. Current local uses and planned future uses of surface waters directly impacted by the facility:
 - a. Domestic and municipal (e.g., potable and lawn/gardening watering);
 - b. Recreational (e.g., swimming, fishing);
 - c. Agricultural;
 - d. Industrial; and

- e. Environmental (e.g., fish and wildlife propagation).
3. Human use of or access to the facility and adjacent lands, including but not limited to:
 - a. Recreation;
 - b. Hunting;
 - c. Residential;
 - d. Commercial; and
 - e. Relationship between population locations and prevailing wind direction.
 4. A general description of the blots in surface water bodies on, adjacent to, or affected by the facility.
 5. A general description of the ecology within the area adjacent to the facility.
 6. A general demographic profile of the people who use or have access to the facility and adjacent land, including, but not limited to: age; sex; and sensitive subgroups.
 7. A description of any known of documented endangered or threatened species near the facility.

APPENDIX C

**Corrective Measures Study (CMS)
Plan Outline**

APPENDIX C

CORRECTIVE MEASURE STUDY (CMS) PLAN OUTLINE

- I. Identification and Development of the Corrective Measure Alternatives
 - A. Description of Current Situation
 - B. Establishment of Corrective Action Objectives
 - C. Screening of Corrective Measures Technologies
 - D. Identification of the Corrective Measure Alternatives
- II. Evaluation of the Corrective Measure Alternatives
 - A. Technical/Environmental/Human Health/Institutional
 - B. Cost Estimate
- III. Justification and Recommendation of the Corrective Measure or Measures
 - A. Technical
 - B. Environmental
 - C. Human Health
- IV. Reports
 - A. Draft
 - B. Final
 - C. Public Review and Final Selection of Corrective Measure

I. IDENTIFICATION AND DEVELOPMENT OF THE CORRECTIVE MEASURES ALTERNATIVES

Based on the results of the RCRA Facility Investigation and consideration of the identified potential corrective measure technologies, the Permittee shall identify, screen and develop the alternatives for removal, containment, treatment and/or other remediation of the contamination based on the objectives established for the corrective action.

A. Description of Current Situation

The Permittee shall submit an update to the information describing the current situation at the facility and the known nature and extent of the contamination as documented by the RCRA Facility Investigation (RFI) Report. The Permittee shall provide an update to information presented in the RFI regarding previous response activities and interim measures which have or are being implemented at the facility. The Permittee shall also make a facility-specific statement of the purpose for the response, based on the results of the RFI. The statement of purpose should identify the actual or potential exposure pathways that should be addressed by corrective measures.

B. Establishment of Corrective Action Objectives

The Permittee shall propose facility-specific objectives for the corrective action. These objectives shall be based on public health and environmental criteria, information gathered during the RFI, EPA guidance, and the requirements of any applicable Federal statutes. At a minimum, all corrective actions concerning ground water releases from regulated units must be consistent with, and as stringent as, those required under 40 CFR §264.100.

C. Screening of Corrective Measure Technologies

The Permittee shall review the results of the RFI and assess the technologies which are applicable at the facility. The Permittee shall screen the corrective measure technologies to eliminate those that may prove infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective measure objective within a reasonable time period. This screening process focuses on eliminating those technologies which have severe limitations for a given set of waste and site-specific conditions. The screening step may also eliminate technologies based on inherent technology limitations.

Site, waste, and technology characteristics which are used to screen inapplicable technologies are described in more detail below:

1. Site Characteristics

Site data should be reviewed to identify conditions that may limit or promote the use of certain technologies. Technologies whose use is clearly precluded by site characteristics should be eliminated from further consideration.

2. Waste Characteristics

Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited by these waste characteristics should be eliminated from consideration. Waste characteristics particularly affect the feasibility of in-situ methods, direct treatment methods, and land disposal (on/off-site).

3. Technology Limitations

During the screening process, the level of technology development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. For example, certain treatment methods have been developed to a point where they can be implemented in the field without extensive technology transfer or development.

D. Identification of the Corrective Measure Alternatives

The Permittee shall develop the Corrective measure alternatives based on the corrective action objectives and analysis of potential corrective measure technologies. The Permittee shall rely on engineering practice to determine which of the previously identified technologies appear most suitable for the site. Technologies can be combined to form the overall corrective action alternatives. The alternatives developed should represent a workable number of option(s) that each appear to adequately address all site problems and corrective action objectives. Each alternative may consist of an individual technology or a combination of technologies. The Permittee shall document the reasons for excluding technologies.

II. EVALUATION OF THE CORRECTIVE MEASURE ALTERNATIVES

The Permittee shall describe each corrective measure alternative that passes through the initial screening and evaluate each corrective measure alternative and its components. The evaluation shall be based on technical, environmental, human health and institutional concerns. The Permittee shall also develop cost estimates of each corrective measure.

A. Technical/Environmental/Human Health/Institutional

The Permittee shall provide a description of each corrective measure alternative which includes but is not limited to the following: preliminary process flow sheets; preliminary sizing and type of construction for buildings and structures; and rough quantities of utilities required. The Permittee shall evaluate each alternative in the four following areas:

1. Technical;

The Permittee shall evaluate each corrective measure alternative based on performance, reliability, implementability and safety.

a. The Permittee shall evaluate performance based on the effectiveness and useful life of the corrective measure:

i) Effectiveness shall be evaluated in terms of the ability to perform intended functions, such as containment, diversion, removal, destruction, or treatment. The effectiveness of each corrective measure shall be determined either through design specifications or by performance evaluation. Any specific waste or site characteristics which could potentially impede effectiveness shall be considered. The evaluation should also consider the effectiveness of combinations of technologies; and

ii. Useful life is defined as the length of time the level of desired effectiveness can be maintained. Most corrective measure technologies, with the exception of destruction, deteriorate with time. Often, deterioration can be slowed through proper system operation and maintenance, but the technology eventually may require replacement. Each corrective measure shall be evaluated in terms of the projected service lives of its component technologies. Resource availability in the future life of the technology, as well as appropriateness of the technologies, must be considered in estimating the useful life of the project.

b. The Permittee shall provide information on the reliability of each corrective measure including their operation and maintenance requirements and their demonstrated reliability:

i) Operation and maintenance requirements include the frequency and complexity of necessary operation and maintenance. Technologies requiring frequent or complex operation and maintenance activities should be regarded as less reliable than technologies requiring little or straightforward operation and maintenance. The availability of labor and materials to meet these requirements shall also be considered; and

- ii) Demonstrated and expected reliability is a way of measuring the risk and effect of failure. The Respondent should evaluate whether the technologies have been used effectively under analogous conditions; whether the combination of technologies have been used together effectively; whether failure of any one technology has an immediate impact on receptors; and whether the corrective measure has the flexibility to deal with uncontrollable changes at the site.
- c. The Permittee shall describe the implementability of each corrective measure including the relative ease of installation (constructability) and the time required to achieve a given level of response:
 - i) Constructability is determined by conditions both internal and external to the facility conditions and include such items as location of underground utilities, depth to water table, heterogeneity of subsurface materials, and location of the facility (i.e., remote location vs. a congested urban area). The Permittee shall evaluate what measures can be taken to facilitate construction under these conditions. External factors which affect implementation include the need for special permits or agreements, equipment availability, and the location of suitable off-site treatment or disposal facilities; and
 - ii) Time has two components that shall be addressed: the time it takes to implement a corrective measure and the time it takes to actually see beneficial results. Beneficial results are defined as the reduction of contaminants to some acceptable, pre-established level.
- d. The Permittee shall evaluate each corrective measure alternative with regard to safety. This evaluation shall include threats to the safety of nearby communities and environments as well as those to workers during implementation. Factors to consider are fire, explosion, and exposure to hazardous substances.

2. Environmental;

The Permittee shall perform an Environmental Assessment for each alternative. The Environmental Assessment shall focus on the facility conditions and pathways of contamination actually addressed by each alternative. The Environmental Assessment for each alternative will include, at a minimum, an evaluation of: the short- and long-term beneficial and adverse effects of the response alternative; any adverse effects on environmentally sensitive areas; and an analysis of measures to mitigate adverse effects.

3. Human Health

The Permittee shall assess each alternative in terms of the extent to which it mitigates short- and long-term potential exposure to any residual contamination and protects human health both during and after implementation of the corrective measure. The assessment will describe the concentrations and characteristics of the contaminants on-site, potential exposure routes, and potentially affected population. Each alternative will be evaluated to determine the level of exposure to contaminants and the reduction over time. For management of mitigation measures, the relative reduction of impact will be determined by comparing residual levels of each alternative with existing criteria, standards, or guidelines acceptable to EPA.

4. Institutional

The Permittee shall assess relevant institutional needs for each alternative. Specifically, the effects of Federal, state and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations on the design, operation, and timing of each alternative. If the selected remedy is capping and closure in place, a notation must be made in the land deed.

B. Cost Estimate

The Permittee shall develop an estimate of the cost of each corrective measure alternative (and for each phase or segment of the alternative). The cost estimate shall include both capital and operation and maintenance costs.

1. Capital costs consist of direct (construction) and indirect (nonconstruction and overhead) costs.

a. Direct capital costs include:

- i) Construction costs: Costs of materials, labor (including fringe benefits and worker's compensation), and equipment required to install the corrective measure.
- ii) Equipment costs: Costs of treatment, containment, disposal and/or service equipment necessary to implement the action; these materials remain until the corrective action is complete;
- iii) Land and site-development costs: Expenses associated with purchase of land and development of existing property; and
- iv) Buildings and services costs: Costs of process and nonprocess buildings, utility connections, purchased services, and disposal costs.

- b. Indirect capital costs include:
 - i) Engineering expenses: Costs of administration, design, construction supervision, drafting, and testing of corrective measure alternatives;
 - ii) Legal fees and license or permit costs: Administrative and technical costs necessary to obtain licenses and permits for installation and operation;
 - iii) Startup and shakedown costs: Costs incurred during corrective measure startup; and
 - iv) Contingency allowances: Funds to cover costs resulting from unforeseen circumstances, such as adverse weather conditions, strikes, and inadequate facility characterization.

- 2. Operation and maintenance costs are post-construction costs necessary to ensure continued effectiveness of a corrective measure. The Permittee shall consider the following operation and maintenance cost components:
 - a. Operating labor costs: Wages, salaries, training, overhead, and fringe benefits associated with the labor needed for post-construction operations;
 - b. Maintenance materials and labor costs: Costs for labor, parts, and other resources required for routine maintenance of facilities and equipment;
 - c. Auxiliary materials and energy: Costs of such items as chemicals and electricity for treatment plant operations, water and sewer service, and fuel;
 - d. Purchased services: Sampling costs, laboratory fees, and professional fees for which the need can be predicted;
 - e. Disposal and treatment costs: Costs of transporting, treating, and disposing of waste materials, such as treatment plant residues, generated during operations;
 - f. Administrative costs: Costs associated with administration of corrective measure operation and maintenance not included under other categories;
 - g. Insurance, taxes, and licensing costs: Costs of such items as liability and sudden accident insurance; real estate taxes on purchased land or right-of-way; licensing fees for certain technologies; and permit renewal and reporting costs;

- h. Maintenance reserve and contingency funds: Annual payments into escrow funds to cover (1) costs of anticipated replacement or rebuilding of equipment and (2) any large unanticipated operation and maintenance costs; and
- i. Other costs: Items that do not fit any of the above categories.

III. JUSTIFICATION AND RECOMMENDATION OF THE CORRECTIVE MEASURE OR MEASURES

The Permittee shall justify and recommend a corrective measure alternative using technical, human health, and environmental criteria. This recommendation shall include summary tables which allow the alternative or alternatives to be understood easily. Tradeoffs among health risks, environmental effects, and other pertinent factors shall be highlighted. The Regional Administrator will select the corrective measure alternative or alternatives to be implemented based on the results obtained from work completed under Section II and III. At a minimum, the following criteria will be used to justify the final corrective measure or measures.

A. Technical

1. Performance - corrective measure or measures which are most effective at performing their intended functions and maintaining the performance over extended periods of time will be given preference;
2. Reliability - corrective measure or measures which do not require frequent or complex operation and maintenance activities and that have proved effective under waste and facility conditions similar to those anticipated will be given preference;
3. Implementability - corrective measure or measures which can be constructed and operating to reduce levels of contamination to attain or exceed applicable standards in the shortest period of time will be preferred; and
4. Safety - corrective measure or measures which pose the least threat to the safety or nearby residents and environments as well as workers during implementation will be preferred.

B. Human Health

The corrective measure(s) must comply with existing U.S. EPA criteria, standards, or guidelines for the protection of human health. Corrective measures which provide the minimum level of exposure to contaminants and the maximum reduction in exposure with time are preferred.

C. Environmental

The corrective measure(s) posing the least adverse impact (or greatest improvement) over the shortest period of time on the environment will be favored.

IV. REPORTS

The Permittee shall prepare a Corrective Measure Study Report presenting the results obtained from Sections I through III and recommending a corrective measure alternative. Copies of the preliminary report shall be provided by the Permittee to the Regional Administrator (RA) for review and approval.

A. Draft

The Report shall at a minimum include:

1. A description of the facility;
 - a. Site topographic map & preliminary layouts.
2. A summary of the corrective measure(s) and rationale for selection;
 - a. Description of the corrective measure(s) and rationale for selection;
 - b. Performance expectations;
 - c. Preliminary design criteria and rationale;
 - d. General operation and maintenance requirements; and
 - e. Long-term monitoring requirements.
3. A summary of the RCRA Facility Investigation and impact on the selected corrective measure or measures;
 - a. Field studies (ground-water, surface water, soil, air); and
 - b. Laboratory studies (bench scale, pick scale).
4. Design and Implementation Precautions;
 - a. Special technical problems;
 - b. Additional engineering data required;
 - c. Permits and regulatory requirements;

- d. Access, easements, right-of-way;
 - e. Health and safety requirements; and
 - f. Community relations activities.
5. Cost Estimates and Schedules;
- a. Capitol cost estimate;
 - b. Operation and maintenance cost estimate; and
 - c. Project schedule (design, construction, operation).

Copies of the draft shall be provided by the Permittee to EPA.

B. Final

The Permittee shall finalize the Corrective Measure Study Report incorporating comments received from EPA on the Draft Corrective Measure Study Report. The report shall become final upon approval by the RA.

C. Public Review and Final Selection of Corrective Measures

Upon receipt of the Final Corrective Measure Study Report, EPA shall announce its availability to the public for review and comment. At the end of the comment period, the RA shall review the comments and then inform the Permittee of the final decision as to the approved Corrective Measures to be implemented.

APPENDIX D

Schedule of Compliance

APPENDIX D

Schedule of Compliance

Schedule of Compliance	Due Date
Notification of Newly Identified SWMUs and AOCs Condition II.B.1. and Condition II.B.2.	Within fifteen (15) calendar days of discovery
SWMU Assessment Report Condition II.B.3.	Within ninety (90) calendar days of notification
Notification for Newly Discovered Releases at Previously Identified SWMUs and AOCs Condition II.C.1.	Within fifteen (15) calendar days of discovery
Confirmatory Sampling Workplan for SWMUs identified in Appendix A-4 Condition II.D.1.	Within ninety (90) calendar days after effective date of permit
Confirmatory Sampling Report Condition II.D.4.	In accordance with the schedule indicated in the approved CS Workplan
RFI Workplan for SWMU(s) identified in Appendix A-1, Condition II.E.1.a	Within two hundred seventy (270) calendar days after effective date of permit
RFI Workplan for SWMU(s) and AOC(s) identified under Condition II.B.4., Condition II.C.2., and Condition II.D.5., Condition II.E.1.b.	Within ninety (90) calendar days after receipt of notification by RA which SWMUs or AOCs require an RFI
RFI Progress Reports Condition II.E.3.a.	Quarterly, beginning ninety (90) calendar days from the start date specified by the RA*
Draft RFI Report Condition II.E.3.b.	In accordance with the approved RFI Workplan
Final RFI Report Condition II.E.3.b.	Within thirty (30) calendar days after receipt of RA comments on Draft RFI Report
Interim Measures Plan Condition II.F.1.a.	Within thirty (30) calendar days of notification by RA
Interim Measures Progress Reports Condition II.F.3.a.	Quarterly, beginning 90 days from start date specified by the RA**

APPENDIX D

Schedule of Compliance

Schedule of Compliance	Due Date
Interim Measure Report Condition II.F.3.b.	Within ninety (90) calendar days of completion
CMS Plan Condition II.G.1.a.	Within ninety (90) calendar days of notification by RA that a CMS is needed
Draft CMS Report Condition II.G.3.a.	Within ninety (90) calendar days of RA's approval of CMS Plan
Final CMS Report Condition 11.G.3.d.	Within thirty (30) calendar days of RA's comments on draft CMS Report
Imminent Hazard Report Condition II.J.1. and II.J.2.	Oral within 24 hours; Written within fifteen (15) calendar days
Waste Minimization Certification Condition III	Annually from effective date of permit

The above reports must be signed and certified in accordance with 40 CFR §270.11.

*This applies to Workplan execution that requires more than one hundred eighty (180) calendar days.

**This applies to Workplan execution that requires more than one year.

APPENDIX E

**Modification of the Corrective Action
Schedule of Compliance**

MODIFICATION OF THE CORRECTIVE ACTION SCHEDULE OF COMPLIANCE

- I. If at any time the Regional Administrator determines that modifications of the Corrective Action Schedule of Compliance is necessary, he or she may initiate a modification to the Schedule of Compliance according to this procedure. If the Regional Administrator initiates a modification, he or she shall:
 - A. Notify the Permittee in writing of the proposed modification and the date by which comments on the proposed modification must be received; and
 - B. Publish a notice of the proposed modification in a locally distributed newspaper, mail a notice to all persons on the facility mailing list maintained according to 40 CFR §124.10(c)(viii), and place a notice in the facility's information repository (i.e., a central source of all pertinent documents concerning the remedial action, usually maintained at the facility or some other public place, such as a public library, that is accessible to the public) if one is required.
 1. If the Regional Administrator receives no written comment on the proposed modification, the modification shall become effective [five (5)] calendar days after the close of the comment period.
 2. If the Regional Administrator receives written comment on the proposed modification, the Regional Administrator shall make a final determination concerning the modification after the end of the comment period.
 - C. Notify the Permittee in writing of the final decision.
 1. If no written comment was received, the Regional Administrator shall notify individuals on the facility mailing list in writing that the modification has become effective and shall place a copy of the modified Corrective Action Schedule of Compliance in the information repository, if a repository is required for the facility.
 2. If written comment was received, the Regional Administrator shall provide notice of the final modification decision in a locally distributed newspaper and place a copy of the modified Corrective Action Schedule of Compliance in the information repository, if a repository is required for the facility.

- II. Modifications that are initiated and finalized by the Regional Administrator according to this procedure shall not be subject to administrative appeal.
- III. Modifications to the Corrective Action Schedule of Compliance do not constitute a reissuance of the Permit.

APPENDIX F

Waste Minimization Objectives

- Description of how departments are held accountable for the wastes they generate.
- Comparison of waste management costs with costs of potential reduction and recycling techniques applicable to each waste.

5. Technology Transfer

- Description of efforts to seek and exchange technical information on waste minimization from other parts of the company, other firms, trade associations, technical assistance programs, and professional consultants.

6. Program Evaluation

- Description of types and amounts of hazardous waste reduced or recycled.
- Analysis and quantification of progress made relative to each performance goal established and each reduction technique to be implemented.
- Amendments to waste minimization plan and explanation.
- Explanation and documentation of reduction efforts completed or in progress before development of the waste minimization plan.
- Explanation and documentation regarding impediments to hazardous waste reduction specific to the individual facility.

References: "Draft Guidance to Hazardous Waste Generators on the Elements of a Waste Minimization Program", 54 FR 25056, June 12, 1989.

"Waste Minimization Opportunity Assessment Manual", EPA/625/7-88/003, July 1988.